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13 (cont.)		Given the uncertainty of a mobile source air toxic health risk assessment, the Federal Highway Administration instead addresses the potential impacts of mobile source air toxics through an emissions assessment in its National Environmental Policy Act documents. For smaller projects with a lower likelihood of a meaningful impact, this discussion is qualitative. For larger projects, emissions analysis is conducted. The Federal Highway Administration approach is consistent with the Council on Environmental Quality's direction in Section 1502.2(b) to discuss impacts in proportion to their significance. The results of an emissions analysis can be summarized concisely in a National Environmental Policy Act document and provide useful information for decision makers (e.g., an alternative that has lower emissions is likely to be "better" from a mobile source air toxics health risk standpoint than one that has higher emissions). While the U.S. Environmental Protection Agency and the Federal Highway Administration both agree on the usefulness of addressing mobile source air toxics in National Environmental Policy Act documents for highway projects, the agencies disagree about the value of health risk assessment as a method for doing so.

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13 (cont.)		Another consideration with respect to health impacts is that the Preferred Alternative would also reduce in-vehicle mobile source air toxics exposure as opposed to the No Action Alternative. The U.S. Environmental Protection Agency has found that in-vehicle benzene concentrations were between 2.5 and 40 times higher than nearby ambient concentrations, based on a review of studies discussed in the Regulatory Impact Analysis for the U.S. Environmental Protection Agency's 2007 mobile source air toxics rule-making (Final Regulatory Impact Analysis, Environmental Protection Agency 420-R-07-002, 3-17 [February 2007]). Construction of the Preferred Alternative would result in a reduction in benzene exposure to drivers and passengers for two reasons: decreased travel times (motorists would spend less time in traffic to reach their destinations) and lower emissions rates (attributable to speed improvements). Reducing on-road exposure would provide a health benefit for motorists using the roadway network. Congestion relief resulting from the proposed freeway would provide localized air quality emissions reductions on area freeways and arterial streets and at interchanges, benefiting users of area highways and those living near congested roads. The Federal Highway Administration determined that a supplemental environmental impact statement is not required at this time because there were no changes to the proposed action that will result in significant environmental impacts not evaluated in the Draft Environmental Impact Statement nor is there new information relevant to environmental concerns and bearings on the proposed action or its impacts that will result in significant environmental impacts not evaluated in the Draft Environmental Impact Statement.

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- Keystone Montessori, 1025 E. Liberty Lane (0.2 mi.)
- Summit School of Ahwatukee, 4515 East Muirwood Drive (0.6 mi.)
- Horizon Community Learning Center, 16233 South 48th Street (0.4 mi.)
- St. John Bosco Interparish Catholic School, 16035 S 48th St. (0.5 mi.)
- Betty Fairfax High School, 8225 S. 59th Ave. (0.1 mi.)
- Cheatham Elementary School, 4725 W. South Mountain Avenue (0.4 mi.)
- Country Gardens Charter School, 6313 West Southern Ave. (0.5 mi.)
- Sunridge Elementary School, 6244 West Roosevelt St. (0.4 mi.)
- Western Valley Middle School, 6250 West Durango St. (0.4 mi.)

14 15 Clearly, the proposed highway will cause new and additional noise and air pollution impacts to many school-age children during the school week, exacerbating their respiratory symptoms, especially for children with asthma, as discussed above, and putting children who do not have asthma at greater risk of getting the disease. Moreover, as shown in Figure 4 below, there are many homes located near these schools, in which many of the students will reside. Thus, these children's exposure will be even greater, as they will be exposed to much higher traffic air pollution and noise throughout the entire day. Not only will this increase their risk of asthma symptoms, there is now evidence indicating that it can also increase the risk of healthy children contracting asthma.

While the HEI Publication 17 Review of the health effects of traffic air pollution concluded that the evidence showing associations between exposure to traffic air pollution and the onset of new asthma in healthy children was only suggestive at that time (i.e. not enough to conclude causality), that report was published in January 2010, before more definitive evidence of this relationship was published. Notably, McConnell et al (2010) later published a study of the relationship of new-onset asthma with traffic-related pollution near homes and schools of children participating in the highly regarded California Children's Health Study. Physician diagnosis of new-onset asthma (n = 120) was identified during 3 years of follow-up of a cohort of 2,497 kindergarten and first-grade children who were asthma- and wheezing-free at study entry into the Southern California Children's Health Study. The researchers assessed traffic-related pollution exposure based on a line source dispersion model of traffic volume, distance from home and school, and local meteorology. They found that asthma risk increased with modeled traffic-related pollution exposure from roadways near homes [HR 1.51; 95% confidence interval (CI), 1.25–1.82] and near schools (HR 1.45; 95% CI, 1.06–1.98). Thus, these findings more definitively indicate that the risk of new asthma was increased by

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14	**Noise, Air Quality**	With regard to noise impacts, schools were included in the categories of activities considered in the noise pollution analysis for the project in keeping with 23 Code of Federal Regulations Part 772 (see page 4-80 of the Draft Environmental Impact Statement). As stated in the Draft and Final Environmental Impact Statements, sensitive receivers, including schools, would be affected by implementation of the project. These impacts, however, will be mitigated as discussed beginning on page 4-91 of the Final Environmental Impact Statement. The noise analysis was updated for the Final Environmental Impact Statement (beginning on page 4-88). It is important to note that no substantial differences between the analyses in the Draft and Final Environmental Impact Statements resulted from the update. With regard to the use of chemicals in the context of the project, such use would not likely result in the exposure of children to hazardous materials as children are not expected to be employed in project construction. As detailed in the section of Chapter 4 related to *Temporary Construction Impacts*, windbreaks, when applicable, will be used to prevent accidental dust pollution. It is anticipated that these precautions will mitigate any potential exposure to dust suppressants (see page 4-173 of the Final Environmental Impact Statement). See Federal Highway Administration's position on the preparation of a health risk assessment as presented in the last response.
15	**Health Effects**	A common theme in public comments on the proposed project has been the potential impacts of the project on children's health, primarily through vehicle emissions and noise. Many commenters raised concerns about the proximity of the project to schools or other aspects of the project that may affect children. In addition, the U.S. Environmental Protection Agency requested that the Final Environmental Impact Statement address Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. Throughout the Final Environmental Impact Statement, potential impacts on and subsequent mitigation for human health are disclosed and identified, as inherent in the environmental impact statement process. The Final Environmental Impact Statement incorporates an assessment of the potential impacts of the proposed project on all populations, including children. The Final Environmental Impact Statement addresses potential impacts of the project on children in the Chapter 4 environmental consequences analyses. The U.S. Environmental Protection Agency's Toxicity and Exposure Assessments for Children's Health report (see page 4-73 of the Final Environmental Impact Statement) indicated that indoor air concentrations of benzene are usually higher than outdoor levels and that indoor air in smokers' homes is a significant contributor to children's exposures. It mentioned children when identifying the effects of acute exposure to naphthalene. The Final Environmental Impact Statement acknowledges and fully discloses public scoping comments that raised the topic of health effects on neighborhoods and adjacent schools (see page 4-31 of the Final Environmental Impact Statement).

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approximately 50% among children exposed to roadway pollution, vs. children who went to school and/or lived further away from the roadways. It is now clear that living and/or going to school near a major roadway is a significant risk to healthy children of developing asthma.

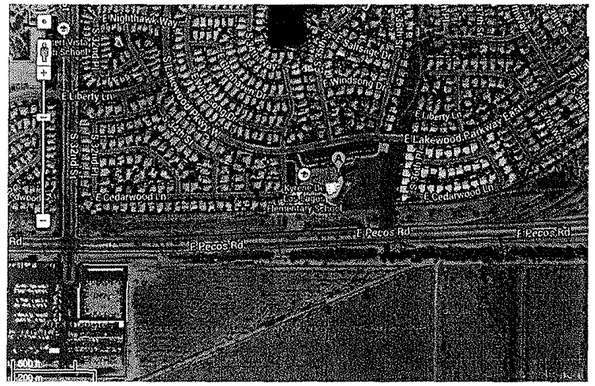

Figure 4. More children, like those attending Kyrene de los Lagos Elementary (shown here), will reside and go to school with much higher traffic noise and air pollution exposures if the proposed South Mountain Freeway is built.

In Phoenix, a recent study by Grineski et al (2010) found an association between traffic-related air pollution (as indicated by nitrogen dioxide, NO_2) and increased children's daily asthma hospital admissions in that city. As shown in Figure 1 from this study, NO_2 air pollution is strongly associated with traffic pollution in the Phoenix area, as concentrations consistently peak following the morning and evening rush hours (e.g., 8AM and 8PM). The authors found, similar to other studies, that there was an increased risk of asthma hospitalization on days of high traffic-related NO_2 air pollution, but also that the risk estimates for asthma hospital admissions were 2.25(95% CI: 1.47–3.46) times greater for black children as compared to white children. In addition, the study found that, among all Hispanic children, those without health insurance have 1.9 (95% CI: 1.3-3.0) times greater risk than those with private insurance of being admitted to the hospital for asthma from NO_2 exposure, and the same finding held for Hispanic children without insurance vs. Hispanic children with Medicaid. Thus, traffic related air pollution adversely affects children in the Phoenix area, and most severely those children lacking health insurance.

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15 (cont.)		The Final Environmental Impact Statement evaluates Clean Air Act criteria air pollutant concentrations in Maricopa County and the Phoenix area (see pages 4-75 to 4-77 of the Final Environmental Impact Statement). With regard to air quality impacts, the Final Environmental Impact Statement addresses children's health impacts within the broader discussion regarding health impacts under the National Ambient Air Quality Standards. Clean Air Act Section 109(b)(1) requires the U.S. Environmental Protection Agency to promulgate primary National Ambient Air Quality Standards at levels that allow an adequate margin of safety and are requisite to protect the public health. As noted by the U.S. Environmental Protection Agency in its 2013 rulemaking for particulate matter, Clean Air Act Section 109's legislative history demonstrates that the primary standards are "to be set at the maximum permissible ambient air level... which will protect the health of any [sensitive] group of the population" (78 *Federal Register* 3086 and 3090) (quoting S. Rep. No. 91-1196, 91st Cong., 2 Sess. 10 [1970]) (alterations in original). Accordingly, the Final Environmental Impact Statement National Ambient Air Quality Standards-based evaluation of criteria air pollutants includes a health-based review of sensitive populations, including children, given the National Ambient Air Quality Standards inherent consideration of those factors. Furthermore, the National Ambient Air Quality Standards-based assessment ensures adequate consideration of health-based issues as "[t]he requirement that primary standards provide an adequate margin of safety was intended to address uncertainties associated with inconclusive scientific and technical information ... and to protect against hazards that research has not yet identified" (78 *Federal Register* 3090). Sensitive receivers for air and noise are already included in the air quality and noise analyses in accordance with State and federal guidance. Both sections, *Air Quality* and *Noise*, beginning on Final Environmental Impact Statement pages 4-68 and 4-88, respectively, have addressed requirements under the National Environmental Policy Act. As stated on page 4-89 of the Final Environmental Impact Statement, over 220 sensitive receivers were evaluated at exterior locations from a traffic noise perspective. All of the receivers represent noise-sensitive land uses in proximity to the proposed project, including homes, schools, and parks, and these receivers would have higher noise levels than similar facilities more distant from the proposed action. Each modeled school was reexamined to determine whether noise impacts would result from the proposed freeway and whether appropriate mitigation of these impacts was provided. Of the nine schools modeled in the analysis for the Final Environmental Impact Statement, all were predicted to exceed the Federal Highway Administration noise abatement criteria (see Table 4-40, beginning on page 4-93). Mitigation, in the form of noise walls, was proposed for all schools. After applying this mitigation, all schools except one were mitigated according to the Arizona Department of Transportation noise policy. According to Arizona Department of Transportation policy, noise mitigation should achieve a reduction of 5 to 7 A-weighted decibels and result in a noise level of less than 64 A-weighted decibels for residential and similar areas. These criteria were not reached for one school (receiver 67, Santa Maria Elementary School) because the policy limits wall heights to 20 feet. A wall taller than 20 feet would be required to bring levels at this receiver down to 64 A-weighted decibels. However, a 5-A-weighted decibels reduction would be provided by the 20-foot wall proposed in this area. It is important to note that this receiver would be affected only by the W71 Alternative, which is not the Preferred Alternative.

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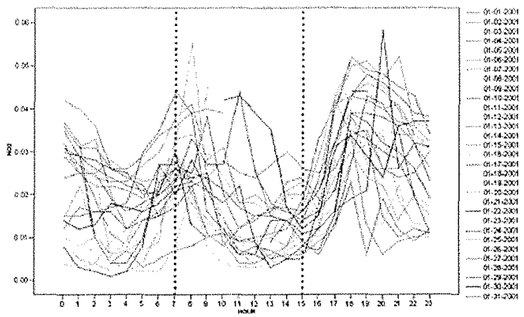
15	S.E. Grineski et al. / Environmental Research 110 (2010) 178–188  Figure 5. NO_2 in the Phoenix Area are highest following rush hour periods, documenting the large role of traffic-related pollution in air pollution impacts in the Phoenix Metro area • *Reduced lung function* Research by Svendsen et al. (2012) has found both long-term and short-term reductions in lung function (i.e., ability to inhale and exhale air) as a result of traffic-related air pollution exposure. For example, investigators examined 5,654 children enrolled in the El Paso, Texas, public school district by questionnaire in 2001. School-level and residence-level exposures to traffic-related air pollutants were estimated using a land use regression model. For 1,529 children with spirometry, residential levels of traffic-related ambient air pollution were associated with a 2.4% decrement in forced vital capacity (95% confidence interval (CI): -4.0, -0.7) after adjustment for demographic, anthropomorphic, and socioeconomic factors and spirometer/technician effects. In my own work in the South Bronx, NY, I have found reduced lung function among elementary school children occurs on days of elevated traffic-related EC concentrations (Spira-Cohen et al, 2011). As shown in the plots below, the impact of diesel traffic related EC was larger and more significant that particles in general ($PM_{2.5}$). 9

Code	Issue	Response
15 (cont.)		The Arizona Department of Transportation noise policy also states that noise abatement shall be considered if "substantial increases" (defined as a 15 A-weighted decibels or greater increase) are predicted. Of the nine schools modeled, substantial increases were predicted at six schools. As discussed above, however, noise walls would reduce noise levels at all schools according to the Arizona Department of Transportation noise policy, with the exception of Santa Maria Elementary School, which would be affected only by the W71 Alternative, which is not the Preferred Alternative. According to the Federal Highway Administration's 1995 Highway Traffic Noise Analysis and Abatement Policy and Guidance, in most cases, if the exterior area can be protected, the interior will also be protected. Receptor placement met the criteria for selecting modeling locations as specified in 40 Code of Federal Regulations § 93.123(a). The carbon monoxide analysis was updated in the Final Environmental Impact Statement. Although a qualitative analysis of particulate matter (PM_{10}) was presented in the Draft Environmental Impact Statement, a quantitative project-level particulate matter (PM_{10}) hot-spot analysis is included in the Final Environmental Impact Statement. The results of the air quality updates are summarized in the prologue to the Final Environmental Impact Statement (page xiii) and are more fully described beginning on page 4-68 of the Final Environmental Impact Statement. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones. Through analysis, the Federal Highway Administration has determined that the proposed project would not produce disproportionate impacts on children.

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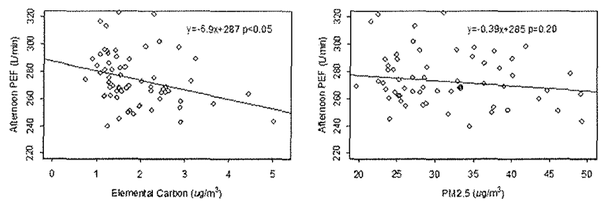

Figure 6. Lung Function in Children Decreases with Increasing Exposure to Traffic Related EC.

• *Reduced Lung Development and Growth*

Traffic-related air pollution has also been indicated to inhibit the growth of young lungs among children over the long-term of exposure. Schultz et al (2012) followed more than 1,900 children in the Swedish birth cohort BAMSE with repeated questionnaires, dynamic spirometry, and IgE measurements until 8 years of age. Outdoor concentrations of particulate matter with an aerodynamic diameter less than 10 μm (PM_{10}) from road traffic were estimated for residential, day care, and school addresses from birth and onward using dispersion modeling. The relationship between time-weighted average exposure during different time windows and FEV at 8 years was analyzed by linear regression, adjusting for potential confounding factors, including short-term exposure to air pollution. The authors found that a 5th to 95th percentile difference in traffic-related average PM_{10} exposure during the first year of life was associated with a reduced FEV1 of 259.3 ml (95% confidence interval, 2113 to 25.6) at 8 years of age. Clearly, exposure to traffic-related air pollution reduces the ability for children to properly grow and develop their full lung capacity.

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• *Cardiac effects*

Exposure to air pollution from road traffic has also been linked to a number of other health issues including heart attack, coronary artery disease and increased risk of death from cardiac conditions in adults. For example, Peters et al. (2000) compared patient implanted defibrillator discharge interventions among 100 patients with such devices in eastern Massachusetts, according to variations in concentrations of particulate matter, black carbon, and gaseous air pollutants that were measured daily for the years 1995 through 1997. Patients with ten or more interventions experienced increased arrhythmias in association with nitrogen dioxide, carbon monoxide, black carbon, and fine particle mass. A stronger association was found for NO_2 and black carbon than for $PM_{2.5}$. Consistent positive associations were observed with black carbon, CO, and NO_2 (noted markers for

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13	local traffic-related pollution), with the strongest associations observed for NO_2. A 26-ppb increase in nitrogen dioxide was associated with nearly a doubling of defibrillator interventions (odds ratio = 1.8; 95% confidence interval = 1.1–2.9). These results indicate that exposure to elevated levels of these traffic-related air pollutants are associated with potentially life-threatening arrhythmias. In January 2010, the HEI Publication 17 Report (HEI, 2010) concluded that the evidence supporting the effects of traffic-related air pollution on cardiac morbidity and mortality were suggestive, but that was also concluded before newer, more definitive evidence was published. In my own work (Lall et al, 2010) in New York City, daily $PM_{2.5}$ speciation measurements collected in Mid-town Manhattan were analyzed via Positive Matrix Factorization source apportionment to determine the original source of different components of air pollution. Daily and distributed-lag Generalized Linear Models of Medicare respiratory and cardiovascular hospital admissions during 2001-2002 considered $PM_{2.5}$ mass and $PM_{2.5}$ from five sources: transported sulfate, residual oil, traffic, steel/construction and soil. Traffic-related $PM_{2.5}$ was significantly associated with an increase in the risk of cardiovascular hospital admissions. Investigations have also found biological markers of cardiac effects by traffic-related air pollution. Hoffmann et al. (2007) conducted a cross-sectional analysis of data collected at baseline for 4,494 residents of Germany followed from 2000 to 2003. The age of participants ranged from 45-74 yrs. of age. The authors estimated 1-yr avg. exposure to $PM_{2.5}$ in 2002 (the midpoint of the baseline exam). They found a 43% (95% CI: -15 to 115) increase in coronary-artery calcification (CAC) per 10 $\mu g/m^3$ increase in $PM_{2.5}$. The strength of association was similar across demographic and clinical characteristics subgroups. The authors reported a more consistent association of CAC with traffic exposure (i.e., distance from a major roadway) than with $PM_{2.5}$ mass in general, indicating a stronger role by traffic particles. In a subsequent analysis of these data, Hoffmann et al. (2009) examined the association between Ankle-Brachial Index (ABI, an index of Peripheral Arterial Disease, PAD) and $PM_{2.5}$ in this population. In both studies, residing near a major roadway was the strongest predictor of atherosclerotic disease progression. • *Premature mortality* Premature mortality, especially for cardiac causes, has been widely found to be associated with traffic-related air pollution. In my own research in New York City, We analyzed daily deaths and emergency hospitalizations for CVDs among persons ≥ 40 years of age for associations with $PM_{2.5}$, its chemical components, nitrogen dioxide (NO_2), carbon monoxide (CO), and sulfur dioxide for the

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13	years 2000-2006 using a Poisson time-series model adjusting for temporal and seasonal trends, temperature effects, and day of the week (Ito et al, 2011). We estimated excess risks per interquartile-range increases at lags 0 through 3 days for warm (April through September) and cold (October through March) seasons. We found that increased CVD mortality and increased CVD hospitalizations were both associated with increased exposure to traffic–related elemental carbon and NO_2 throughout the year in New York City, NY. Similarly, Beckermann et al. (2012) assessed the association between the occurrence of Ischemic Heart Disease (IHD) and air pollutants in Toronto, Ontario, Canada. Confounding was controlled with individual and neighborhood-level covariates. After adjusting for multiple covariates, nitrogen dioxide(NO_2) (a pollutant derived from traffic, as per Figure 5 above) was significantly associated with increased IHD risk, relative risk (RR) = 1.33 (95% confidence interval [CI]: 1.2, 1.47). Subjects living near major roads and highways had a trend toward an elevated risk of IHD, RR = 1.08 (95% CI: 0.99, 1.18). In Phoenix, research by Mar et al (2000) evaluated the association between mortality outcomes in elderly individuals and particulate matter (PM) of varying aerodynamic diameters (in micrometers) [PM10, PM2.5, and PMCF (PM_{10} minus $PM_{2.5}$)], and selected particulate and gaseous phase pollutants in Phoenix, Arizona, using 3 years of daily data (1995–1997). Although source apportionment and epidemiologic methods have been previously combined to investigate the effects of air pollution on mortality, this was the first study to use detailed PM composition data in a time–series analysis of mortality. These authors found that total and cardiovascular disease mortality was significantly associated with air pollution factors associated with motor vehicle emissions. Total mortality was significantly associated with CO and NO_2 ($p < 0.05$). Increase cardiovascular mortality was significantly associated with CO, NO_2, SO_2, $PM_{2.5}$, PM_{10}, PMCF ($p < 0.05$), and EC soot (related to diesel truck emissions). Thus, the evidence indicating that the risk of cardiac illness and mortality from exposure to traffic-related air pollution has expanded since the HEI Publication 17 report in 2010, and I conclude that adults are at increased risk of cardiac illness and/or mortality from increased exposure to traffic-related air pollution exposure. *Other Potential Health Effects* There are a host of other adverse health effects that could result from human exposures to the air pollution emitted by the proposed Freeway that, while less well proven, are also not sufficiently 12			

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acknowledged by the DEIS. These other potential adverse effects of air pollution exposure from traffic-related air pollution exposure may include increased risk of lung cancer (especially from increased exposure to diesel particulate matter) and adverse birth outcomes (e.g., low birth weight, small for gestational age, and perinatal mortality). In my own research in the largest cohort studied to date, we have found an increased risk of lung cancer to be associated with increased exposure to $PM_{2.5}$ air pollution (Pope et al, 2002). For these outcomes, as noted by the HEI Publication 17, there is presently only "limited evidence of associations, but the data were either inadequate or insufficient to draw firmer conclusions." While not as well proven as the above effects of exposure to traffic-related air pollution, the risk of lung cancer from traffic air pollution is considered too lightly in the DEIS, and possible adverse birth outcomes are not even discussed in Chapter 4's "Air Quality" section of the draft DEIS.

Conclusions

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Based upon my review of the published scientific and medical literature, including my own relevant research, I conclude that the increased exposure to residents living or going to school near to the proposed South Mountain Freeway will be at substantially increased risk of adverse health effects if the freeway is built as proposed, and I further note that these various health impacts are ignored or not sufficiently addressed in the draft DEIS. In particular, if the freeway is built as planned, children with asthma will be at much greater risk of experiencing asthma exacerbations (e.g., asthma attacks, wheezing, cough, etc.). Healthy children will be at significantly higher risk of getting new-onset asthma, and all children living near the proposed Freeway will likely have their lung growth and development inhibited from what it would have been without the Freeway. In adults, the primary health threat from the proposed Freeway air pollution will be increased risks of chronic cardiovascular illness (e.g., PAD), acute myocardial infarctions (MIs), and premature mortality.

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REFERENCES

Beckerman BS, Jerrett M, Finkelstein M, Kanaroglou P, Brook JR, Arain MA, Sears MR, Stieb D, Balmes J, Chapman K. (2012). The association between chronic exposure to traffic-related air pollution and ischemic heart disease. J Toxicol Environ Health A. 2012;75(7):402-11.

Brauer M, Hoek G, van Vliet P, Meliefste K, Fischer PH, Wijga A, Koopman LP, Neijens HJ, Gerritsen J, Kerkhof M, Heinrich J, Bellander T, Brunekreef B. (2002). Air pollution from traffic and the development of respiratory infections and asthmatic and allergic symptoms in children. Am J Respir Crit Care Med 166:1092–1098.

Brauer M, Hoek G, Smit HA, de Jongste JC, Gerritsen J, Postma DS, Kerkhof M, Brunekreef B. (2007). Air pollution and development of asthma, allergy and infections in a birth cohort. Eur Respir J 29:879–888.

Dales R; Wheeler A; Mahmud M; Frescura AM; Smith-Doiron M; Nethery E; Liu L (2008). The Influence of Living Near Roadways on Spirometry and Exhaled Nitric Oxide in Elementary Schoolchildren. Environ Health Perspect, 116: 1423-1427.

Hoffmann B; Moebus S; Kroger K; Stang A; Mohlenkamp S; Dragano N; Schmermund A; Memmesheimer M; Erbel R;
Jockel K-H (2009). Residential exposure to urban pollution, ankle-brachial index, and peripheral arterial disease.
Epidemiology, 20: 280-288.

Gehring U, Cyrys J, Sedlmeir G, Brunekreef B, Bellander T, Fischer P, Bauer CP, Reinhardt D, Wichmann HE, Heinrich J. 2002. Traffic-related air pollution and respiratory health during the first 2 yrs of life. Eur Respir J 19:690–698.

Grineski SE, Staniswalis JG, Peng Y, Atkinson-Palombo C. Children's asthma hospitalizations and relative risk due to nitrogen dioxide (NO2): effect modification by race, ethnicity, and insurance status. Environ Res. 2010 Feb;110(2):178-88. doi: 10.1016/j.envres.2009.10.012. Epub 2009 Nov 26.

Health Effects Institute (HEI) (2010). Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects. Special Report 17. January, 2010. Boston, MA

Hoffmann B, Moebus S, Möhlenkamp S, Stang A, Lehmann N, Dragano N, Schmermund A, Memmesheimer M, Mann K, Erbel R, Jöckel K-H. 2007. Residential exposure to traffic is associated with coronary atherosclerosis. Circulation 116:489–496.

Hoffmann B; Moebus S; Kroger K; Stang A; Mohlenkamp S; Dragano N; Schmermund A; Memmesheimer M; Erbel R; Jockel K-H (2009). Residential exposure to urban pollution, ankle-brachial index, and peripheral arterial disease. Epidemiology, 20: 280-288.

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16		References

Code	Comment Document

Ito K, Mathes R, Ross Z, Nádas A, Thurston G, Matte T. (2011). Fine particulate matter constituents associated with cardiovascular hospitalizations and mortality in New York City. Environ Health Perspect. 2011 Apr;119(4):467-73. doi: 10.1289.ehp.1002667.

Lall R, Ito K, Thurston G. Distributed Lag Analyses of Daily Hospital Admissions and Source-Apportioned Fine Particle Air Pollution. Environmental Health Perspectives (EHP). 2011 Apr; 119(4):455-60.

Levy JI; Bennett DH; Melly SJ; Spengler JD (2003). Influence of traffic patterns on particulate matter and polycyclic aromatic hydrocarbon concentrations in Roxbury, Massachusetts. J Expo Sci Environ Epidemiol, 13: 364-371.

Mar TF, Norris GA, Koenig JQ, Larson TV. Associations between air pollution and mortality in Phoenix, 1995-1997. Environ Health Perspect. 2000 Apr;108(4):347-53.

McConnell et al. (2006) Prevalence of asthma in 1,330 children ages 5-7 yr by distance of residence to a major road in longterm residents, no family history of asthma. Environ Health Perspect 2006;114:766–772.

McConnell R, Islam T, Shankardass K, Jerrett M, Lurmann F, Gilliland F, Gauderman J, Avol E, Künzli N, Yao L, Peters J, Berhane K. (2010). Childhood incident asthma and traffic-related air pollution at home and school. Environ Health Perspect. 2010 Jul;118(7):1021-6.

Morgenstern V, Zutavern A, Cyrys J, Brockow I, Gehring U, Koletzko S, Bauer CP, Reinhardt D, Wichmann HE, Heinrich J. 2007. Respiratory health and individual estimated exposure to traffic-related air pollutants in a cohort of young children. Occup Environ Med 64:8–16.

Peters, A.; Liu, E.; Verrier, R. L.; Schwartz, J.; Gold, D. R.; Mittleman, M.; Baliff, J.; Oh, J. A.; Allen, G.; Monahan, K.; Dockery, D. W. (2000) Air pollution and incidence of cardiac arrhythmia. Epidemiology 11: 11-17.

Schultz ES, Gruzieva O, Bellander T, Bottai M, Hallberg J, Kull I, Svartengren M, Melén E, Pershagen G. (2012). Traffic-related air pollution and lung function in children at 8 years of age: a birth cohort study. Am J Respir Crit Care Med. 2012 Dec 15;186(12):1286-91. doi: 10.1164/rccm.201206-1045OC. Epub 2012 Oct 26.

Reponen T, Grinshpun SA, Trakumas S, Martuzevicius D, Wang ZM, LeMasters G, Lockey JE, Biswas P. 2003. Concentration
gradient patterns of aerosol particles near interstate highways in the greater Cincinnati airshed. J Environ Monit 5:557–562.

Svendsen ER, Gonzales M, Mukerjee S, Smith L, Ross M, Walsh D, Rhoney S, Andrews G, Ozkaynak H, Neas LM. GIS-modeled indicators of traffic-related air pollutants and adverse pulmonary health among children in El Paso, Texas. Am J Epidemiol. 2012 Oct 1;176 Suppl 7:S131-

Code	Issue	Response

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41. doi: 10.1093/aje/kws274.

Reponen T, Grinshpun SA, Trakumas S, Martuzevicius D, Wang ZM, LeMasters G, Lockey JE, Biswas P. 2003. Concentration gradient patterns of aerosol particles near interstate highways in the greater Cincinnati airshed. J Environ Monit 5:557–562.

Spira-Cohen A, Chen LC, Kendall M, Sheesley R, Thurston GD. (2010). Personal exposures to traffic-related particle pollution among children with asthma in the South Bronx, NY. J Expo Sci Environ Epidemiol. 2010 Jul;20(5):446-56. Epub 2009 Oct 28.

Spira-Cohen A, Chen LC, Kendall M, Lall R, Thurston GD. Personal Exposures to Traffic-Related Air Pollution and Acute Respiratory Health Among Bronx School Children with Asthma. Environ Health Perspect. 2011 Apr;119(4):559-65 (Epub. Dec. 2010 ahead of print)

U.S. EPA (2009). Integrated Science Assessment for Particulate Matter. EPA/600/R-08/139F. National Center for Environmental Assessment-RTP Division. Office of Research and Development. U.S. Environmental Protection Agency. Research Triangle Park, NC. December, 2009.

Venn AJ, Lewis SA, Cooper M, Hubbard R, and Fritton J. (2001) Living Near a Main Road and the Risk of Wheezing Illness in Children. Am J Respir Crit Care Med. 2001 Dec 15;164(12):2177-80.

Zhu Y, Hinds WC, Kim S, Sioutas C. 2002. Concentration and size distribution of ultrafine particles near a major highway. J Air Waste Manag Assoc 52:1032–1042.

Zhu Y; Kuhn T; Mayo P; Hinds WC (2005). Comparison of Daytime and Nighttime Concentration Profiles and Size Distributions of Ultrafine Particles near a Major Highway. Environ Sci Technol, 39: 2531-2536.

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July 2013

Curriculum Vitae

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Email: george.thurston@nyu.edu
http://www.med.nyu.edu/biosketch/gdt1/research

Education

Degree	Field	Institution
Diploma	Academic	Barrington High School, RI
Sc.B. (Honors)	Environmental Engineering	Brown University
A.B.	Environmental Studies	Brown University
S.M.	Environmental Health Sciences	Harvard Univ. Schl. of Public Health
Sc.D.	Environmental Health Sciences	Harvard Univ. Schl. of Public Health

Postdoctoral Training

Specialty	Mentor	Place of Training
Environ. Epidemiology	Dr. H. Ozkaynak	Harvard Univ., Kennedy Schl. of Gov., Camb., MA

Internships and Residencies N/A

Clinical and Research Fellowships N/A

Licensure and Certification N/A

Academic Appointments

1987-1993	Assistant Professor, Dept. of Environmental Medicine, New York University School of Medicine, New York City, NY.
1993-2006	Associate Professor (Tenured), Dept. of Environmental Medicine, New York University School of Medicine, New York City, NY.
2007-present	Professor (Tenured), Dept. of Environmental Medicine, New York University School of Medicine, New York City, NY.
2007-present	Affiliated Faculty, Environmental Studies Program, College of Arts and Sciences, New York University, New York City, NY.
2012-present	Affiliated Faculty, Marron Institute on Cities and the Urban Environment, New York University, New York City, NY
2012-present	Faculty Mentoring Champion, Dept. of Environmental Medicine, New York University School of Medicine, New York City, NY.

Hospital Appointments: N/A

Other Professional Positions and Visiting Appointments:
Oak Ridge Institute for Science and Education Fellow (2008-2010)

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Major Administrative Responsibilities

Year	*Title, Place of Responsibility*
1995-2004	Director, Community Outreach and Environmental Education Program, NYU-NIEHS Center of Excellence, Nelson Inst. of Environ. Med., NYU School of Medicine, Tuxedo, NY
2002-2012	Deputy Director, NYU Particulate Matter Research Center, Nelson Inst. of Environmental Medicine, NYU School of Medicine, Tuxedo, NY
2007-2008	Director, Environmental Epidemiology Core, NYU-NIEHS Center of Excellence, Department of Environmental Medicine, Tuxedo, NY
2010-present	Co-Leader, Metals Research Focus Group, NYU-NIEHS Center of Excellence, Department of Environmental Medicine, Tuxedo, NY.
2012-present	Director, Program in Exposure Assessment and Human Health Effects, Department of Environmental Medicine, NYU School of Medicine.
2012-present	Chair, Appointments and Promotions Committee, Department of Environmental Medicine, NYU School of Medicine.

Teaching Experience

Year	*Name of course*		*Type of Teaching/Contact Hrs.*
1984-1994	Air Poll. Transport Modeling	(G48.2048)	Course Director
2006-present	Weather, Air Pollution, and Health	(G48.1010)	Course Director
1986-present	Aerosol Science	(G48.2033)	Course Director
1984-2010	Environmental Contamination	(G48.2305)	Lecturer
1984-present	Environ. Hygiene Measurements	(G48.2035)	Lecturer/Lab
1990-1998	Environmental Toxicology	(G48.1006)	Lecturer
1993-1995	Environmental Epidemiology I	(G48.2039)	Lecturer
2001-2003	NYU Summer Institute, Wagner School		Lecturer
2006-present	Environmental Epidemiology I	(G48.2039)	Lecturer
2006-present	Science, Health & Envir. Journalism	(G54.1017.0)	Lecturer
2009-2011	Global Environmental Health	(U10.2153.1)	Course Director
2009-2012	Global Issues in Environ. Health	(G48.1011)	Course Director
2009-present	Earth Systems Science (undergrad)	(V36.0200)	Lecturer
2011-present	Principles of Environmental Health	(G48.1004)	Course Director

Awards and Honors

November 1999	Orange Environment Citizens Action Group, OE Award for Excellence in Translating Science to the Public
December 2000	NYU School of Medicine Dean's Research Incentive Award
October 2012	Recipient of the "Haagen Smit Prize" for Best Paper, Atmospheric Environment. http://geo.arc.nasa.gov/sgg/singh/winners12.html
March 2013	Recipient of the "Top Science Paper of the Year – Science" Award from ES&T http://pubs.acs.org/doi/full/10.1021/es400924t

Major Committee Assignments

New York University Committees

2007-present: University Sustainability Task Force
2010-2012: University Faculty Senate Alternate
2012-present: University Faculty Senator

NYU School of Medicine Departmental Committees

1992-1998:	Sterling Forest Library Committee, Member, NYU SOM Dept of Environ. Medicine
1991-1994	Health & Safety Committee, Member, NYU SOM Dept. of Environ.. Medicine
1992-2004	Community Outreach and Education Comm., Chairman, NYSOM Dept. of Environ. Med.

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1999-2004	Dept. Chairman's Internal Advisory Comm., Member, NYUSOM Dept. of Environ. Med.
2005-present	Dept. Academic Steering Committee, Member, NYUSOM Dept. of Environ. Medicine
2007-2012	Dept. Appointments & Promotions Comm., Member, NYUSOM, Dept. of Environ. Medicine
2012-present	Dept. Appointments & Promotions Comm., Chair, NYUSOM, Dept. of Environ. Medicine

Advisory Committees

Regional

1983-1984	Massachusetts Acid Rain Advisory Board, Member, Mass. Dept. of Env. Protection
1984-1986	Committee on Environ. And Occup. Health. , NY State American Lung Association
1991-1996	Air Management Advisory Comm., Member of Health Effects Subcom., NY State DEC
1995-1999	Engineering Advisory Board, Member, Tuxedo, NY
1997-1998	Advisory Committee to the Mayor on the Port of Newburgh, Member, Newburgh, NY
1996-1999	CUES Asthma Working Group, Member, New York Academy of Medicine
2008-2010	New York City Community Air Study (NYCCAS) Advisory Panel

National

1995-1999	Comm. on Health Effects of Waste Incineration, Member, National Academy of Sciences
1995-1999	National Air Conservation Commission, Member, American Lung Association
2000-2004	National Action Panel on Environment, Member, American Lung Association
2005-present	National Clean Air Committee, Member, American Lung Association
2007-2010	U.S. EPA Clean Air Science Advisory Committee (CASAC) for SOx and NOx
Mar. 2012	EPA Panelist for "Kickoff Workshop to Inform EPA's Review of the Primary NO_2 NAAQS"

International

1996-1997	Sulfur in Gasoline Health and Environment Panel, Chairperson, Health Canada
Sept. 2007	Illness Cost of Air Pollution Expert Committee, Canadian Medical Association
2008-2012	Global Burden of Disease (GBD), Committee on the Human Health Effects of Outdoor Air Pollution, World Health Organization (WHO)

Grant Review Committees (National)

March 1989	EPA Air Chemistry and Physics Extramural Grants Review Panel (*ad hoc member*)
Oct. 1989	NIEHS P30 Center Special Review Panel (*ad hoc member*)
July 1992	NIH R01 Epidemiology & Disease Control Study Section (*ad hoc member*)
Nov. 1992	NIEHS P20 Center Development Grant Special Study Section, (*ad hoc member*)
June 1996	EPA Special Review Panel of the Health Effects Institute (HEI) (*ad hoc member*)
March 1997	EPA Office of Res. and Development External Grant Review Panel (*ad hoc member*)
April 1997	NIEHS Community-Based Participatory Res. R01 Special Study Sect. (*ad hoc member*)
July 1997	EPA National Environ. Research Lab Intramural Research Review Panel (*ad hoc member*)
June 1998	EPA Office of Res. and Development External Grant Review Panel (*ad hoc member*)
July 1998	EPA Climate Policy and Programs Division Grant Application Review (*ad hoc member*)
Oct. 1998	Mickey Leland Center for Air Toxics Grant Review Panel (*ad hoc member*)
April 2000	NIEHS P30 Center Special Review Panel (*ad hoc member*)
July 2001	NIEHS Community-Based Participatory Res. R01 Special Study Sect. (*ad hoc member*)
Dec. 2001	NIEHS Program Project P01 Site Visit Review Panel (*ad hoc member*)
April 2003	NIH R21 Fogarty Health, Env. and Economic Development Study Sect. (*ad hoc member*)
Nov. 2003	U.S. EPA STAR Grant Panel (Epidemiologic Research on Health Effects of Long-Term Exposure to Ambient Particulate Matter and Other Air Pollutants) (*member*)
October 2004	NIEHS Program Project P01 Review Panel (*ad hoc member*)
June 2005	NIH Special Emphasis Panel (ZRG1 HOP Q 90 S) (*ad hoc member*)
Nov. 2005	NIH Infectious Disease, Reproductive Health, Asthma/Allergy, and Pulmonary (IRAP) Conditions Study Section Review Panel (*ad hoc member*)

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Feb. 2006	NIH Infectious Disease, Reproductive Health, Asthma/Allergy, and Pulmonary (IRAP) Conditions Study Section Review Panel (*ad hoc member*)
June 2006	NIH Infectious Disease, Reproductive Health, Asthma/Allergy, and Pulmonary (IRAP) Conditions Study Section Review Panel (*ad hoc member*)
Dec. 2006	NIEHS Special Emphasis Panel on Genetics, Air Pollution, and Respiratory Effects (ZES1 TN-E FG P) (*member*)
Nov. 2007	NIH Special Emphasis Panel on Community Participation in Research (ZRG1 HOP-S) (*member*)
June 2009	NIH Study Section Review Panel on Challenge Grants in Health & Science Research
March 2011	U.S. EPA Science to Achieve Results (STAR) Graduate Fellowship Review Panel – Clean Air Panel (*chair*)
Sept. 2011	NIH Special Epidemiology Study Section (ZRG1 PSE K 02 M) (*member*)
Oct. 2012	NIH Cardiac and Sleep Epidemiology (CASE) Study Section (*ad hoc member*)
June 2013	NIH Special NHLBI Dataset Study Section (ZRG1 PSEQ 56) (*member*)
July 2013	NIH "Career Awards" Study Section (ZES1 LWJ-D, K9) (*member*)

Memberships, Offices, And Committee Assignments In Professional Societies

Year	*Society/Committees*
1980-1996	Air and Waste Management Association (Comm. on Health Effects and Exposure,)
1992-Present	American Thoracic Society (ATS): Environmental and Occup. Health (EOH) Assembly, 1995-1999, 2012-present: ATS EOH Long Range Planning Committee; 1993-1994, 2002-2004: ATS Program Committee 2006-2007 Chairman of the ATS-EOH Nominating Committee 2010-present: ATS Environmental Health Policy Committee, member 2012-present: ATS Environmental Health Policy Committee, Vice-Chairman
1990-present	International Society of Exposure Analysis
1992-present	International Society for Environmental Epidemiology (Annual Meeting Program Committee: 1998, 2000, 2003, 2004, 2006) (ISEE Conference Planning Committee: 2006-present)
2007-present	New York Academy of Sciences (membership given in appreciation for a 1/23/07 NYAS forum presentation)

Editorial Positions

Journal Board Membership

Year	*Name of Board*
1993-2008	International Society of Exposure Analysis (J. of Exp. Anal. and Environ. Epid.)

Ad Hoc Manuscript Reviewer

Years	*Journal*
1996-1998	American Journal of Epidemiology
1994	Archives of Environmental Health
1995-present	Atmospheric Environment
1995-present	Environmental Health Perspectives
1994-present	Environmental Research
2004-present	Environmental Science and Technology
2011-present	Epidemiology
1993-present	Journal of Exposure Analysis and Environmental Epidemiology
1994-present	Journal of the Air and Waste Management Association
1996-present	Journal of the American Medical Association

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1997-present	Journal of Occupational and Environmental Medicine
1997-present	Journal of Respiratory and Critical Care Medicine
2006-present	Thorax

Scientific Report Reviewer

August, 1986	Reviewer for the National Academy of Sciences, Board on Environmental Studies and Toxicology report "The Airliner Cabin Environment: Air Quality and Safety"
October, 2002	Reviewer for the National Academy of Sciences, Board on Environmental Studies and Toxicology report "Estimating the Public Health Benefits of Proposed Air Pollution Regulations"

Mentoring of Graduate Students, Residents, Post-Doctoral Fellows in Research

Under direct supervision:

Student Name	*Type of Position*	*Time Period*	*Present Position*
Mark Ostapczuk	Masters	1984-1986	Industrial Hyg., Barr Labs, Pomona, NJ
Kazuhiko Ito	Masters/Doctoral	1984-1990	Scientist, NYC Dept. of Health, NYC, NY
Peter Jaques	Masters/Doctoral	1988-1998	Assoc. Prof., Clarkson Univ., Potsdam, NY
R. Charon Gwynn	Masters/Doctoral	1992-1999	Epidemiologist, Columbia Univ., NY
Ramona Lall	Masters/Doctoral	2000-2007	Research Sci. IV, NYC Dept. of Health, NY
Ariel Spira-Cohen	Masters/Doctoral	2003-2009	Research Sci. III, NYC Dept. of Health, NY
Kevin Cromar	Masters/Doctoral	2008-2012	Assistant Professor, NYU School Of Medicine
Lital Yinon	Doctoral	2011-present	Doctoral Candidate, NYU School of Medicine

In advisory function (thesis committee):

Student Name	*Advisory Role*	*Time Period*	*Student's Supervisor*
Shao-Keng Liang	Doctoral Committee member	1990-1994	Dr. J. Waldman, UMDNJ, Rutgers
Jerry Formisano	Doctoral Committee member	1997-2000	Dr. M. Lippmann, NYU SOM
Yair Hazi	Doctoral Committee member	1993-2001	Dr. B. Cohen, NYU SOM
Samantha Deleon	Doctoral Committee member	1997-2003	Dr. K Ito, NYU SOM
Chun Yi Wu	Doctoral Committee member	2000-2004	Dr. L.C. Chen, NYU SOM
Carlos Restrepo	Doctoral Committee member	2002-2004	Dr. R. Zimmerman, Wagner, NYU
Shaou-I Hsu	Doctoral Committee member	2000-2009	Dr. M. Lippmann, NYU-SOM
Steven Schauer	Doctoral Committee member	2007-2009	Dr. B. Cohen, NYU-SOM
Christine Ekenga	Doctoral Committee Chair	2009-2011	Dr. G. Friedman-Jimenez, NYU-SOM
Rebecca Gluskin	Doctoral Committee Chair	2009-2012	Dr. Kazuhiko Ito, NYU SOM
Jiang Zhou	Doctoral Committee Chair	2008-2012	Dr. Kazuhiko Ito, NYU SOM

Teaching Awards Received

N/A

Major Research Interests

1) Air Pollution Epidemiology: The study of real-world air pollution exposures and human health effects in the general population and in study cohorts of suspected susceptible individuals (e.g., children, older adults, and those with asthma).

2) Aerosol Science: The study of ambient particulate matter aerosol exposures, including designing and implementing air monitoring equipment to collect human exposures to air pollution.

3) Environmental Exposure Assessment: The study of methods to assess human exposures and health effects from air pollution, especially the development of source apportionment models to separate human effects on the basis of pollution source, as well as the design of epidemiological

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	models and methods that better incorporate potential confounders/effect modifiers in the air pollution-health link, such as weather and genetic influences on health. 6

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Grants Received

Prior:

Agency	Title	Grant #	Period	Total Direct Costs	Role	% Effort
USEPA	Effects of Acute Exposure to Summertime Haze Episodes on the Health of Humans	R811563	05/01/84-09/30/87	$538,586	CO-I	50%
NIH	Acid Aerosol Exposure: Effect on Respiratory Morbidity	R01 ES04612	09/25/87-08/31/92	$846,966	PI	30%
USEPA	Acid Aerosol Chamber Experiments	OD2524AEX	7/2/90-7/31/9	$5,810	PI	9%
USEPA	Analysis of Acid Aerosol Experiments	00422248NAEX	8/1/90-9/30/9	$3,364	PI	5%
USEPA	Air Pollutants and Human Health	R814023	05/18/87-05/17/91	$690,921	CO-I	50%
USEPA	Development and Field Applic. of an Automated Sequential Weekly Average H+ Sampler	Subcontract to EPA Grant CR816740-03	6/1/92-2/28/9	$13,156.	PI	15%
NIH	Acid Aerosol Exposure: Effect on Respiratory Morbidity	R01 ES04612	09/01/92-08/31/95	$377,298.	PI	30%
HEI	Retrospective Characterization of Ozone Exposures	Health Effects Institute Grant	11/1/93-10/31/94	$98,238	CO-I	10%
NIH	Temperature and Air Pollution Effects on Human Mortality	R01 ES05711	6/1/92-5/31/9	$371,993	PI	30%
NYUSOM	Environmental Effects on Human Mortality and Morbidity	Bridge Grant	9/1/95-8/31/9	$48,400	PI	-
USEPA	Effects of Exposure to Ambient Air Pollutants on Human Health	R808325	10/1/91-09/30/96	$870,565	CO-I	50%
USEPA	Investigation of Acid Aerosol Exposures in Metropolitan Settings	Subcontract to Grant No. CR822050	11/1/93-10/31/96	$200,499	PI	10%
USEPA	An Evaluation of Potential Confounders in PM10 Mortality Associations	R825271	11/25/96-11/24/01	$219,410	CO-I	10%
USEPA	Acidic PM and Daily Human Mortality in Three U.S. Cities	#R825264	11/25/96-11/24/00	$232,671	PI	15%
NYS-ERDA	Environmental Monitoring, Evaluation, and Protection Program	6084-ERTER-ES00	12/01/99-11/30/02	$341,926	PI	20%
HEI	Children's Asthma Incidence and Personal Exposures to Diesel Particles and Traffic in NYC		01/01/02-12/31/02	$154,800	PI	30%
USEPA	Influence of Alternate Indicators of Exposure to PM and PM Components in Statistical Associations with Mortality and Hospital Admissions	R827358	03/01/99-02/28/03	$183,089	PI	30%

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NIH	NIEHS Center Supplement: Health Issues Related to the World Trade Center Disaster, Outreach Project	ES00260-S1	04/01/02-03/31/03	Total=$ 936,487 Outreach=$172,031	CO-PI PI	10% 15%
NIH	Effects of Ambient Air Pollutants on Annual Mortality	RO1 ES09560	9/15/99-8/31/03	$471,408	PI	30%
USEPA	Particle Exposures of High-Risk Sub Populations	R827164	10/01/98-09/30/03	$1,327,240	CO-I	10%
USEPA	A Source Oriented Evaluation o the Combined Effects of Fine Particles and Co-pollutants	R827997	02/01/00-01/31/04	$291,407	CO-I	15%
NIH	NIEHS Center Grant: Outreach and Education Program	ES00260	04/01/00-03/31/05	Total=$5,000,000 Outreach=$240,365	CO-I PI	5% 5%
USEPA	EPA PM Health Effects Center Project 6: "A Prospective Study of Asthma Susceptibility to PM Epidemiologic Investigations of Key PM Components and Biomarkers of Effects & Community Outreach Project	R827351	06/01/99-05/31/05	Total=$6,000,000 Project 6=$134,923 Outreach=$77,779	CO-PI PI PI	15% 10% 10%
NIH	Genetic/Epigenetic Susceptibility to Superfund Chemicals: Outreach Project	ES010344	05/08/00-03/31/06	$156,812	CO-I	5%
USEPA	Env. Issues in the South Bronx. Thurston Project: S. Bronx Backpack Study	X1982152	08/01/00-09/30/06	Total=$921,922 Project=$307,131	CO-I PI	5% 15%
NIH	NIEHS Center Supplement: Health Issues Related to the World Trade Center Disaster, Source Attribution (Project 4) & Community Outreach	ES00260-S2	04/01/02-03/31/04	Total=$660,000 Project 4=$69,999 Outreach=$172,03	Co-PI PI PI	10% 10% 15%
USEPA	The role of traffic-related pollution in PM health effects associations among inner-city children with asthma	16511	09/01/06-08/31/09	$51,516	PI	-
California Air Resources Board (CARB)	Spatio-temporal Analysis of Air Pollution and Mortality in California Based Upon the ACS Cohort (Thurston: Consulting Project)		06/01/07-5/31/10	Project=$13,634	Co-I	4%
USEPA	Real time modeling of weather, air pollution, health outcome indicators in NYC.	RD-83362301-0	12/07-11/10	$130,496	Co-I	5%
NIH	Fine Particles and Out-of-Hospital Cardiac Arrest in New York City	R01ES014387-01A2	04/09-12/11	$200,000	C0-I	10%
Health Effects Institute (HEI)	Characteristics of PM Associated with Health Effects. *Thurston Project*: "Study Of PM Components and U.S. Human Mortality In The ACS Cohort.	4750	01/01/07-3/31/11	Total=$3,247,567 Project=$355,920	Co-I PI	5% 20%

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Current:

Agency	Title	Grant #	Period	Total Direct Costs	Role	% Effort
New York State DOT	Mobile Source Air Toxics (MSATs) Mitigation Measures		09/01/10 06/31/13	SubProject=$89,062	Co-I	10%
Robert Wood Johnson Foundation	The Effect of Peak-Shaving Regulations on the Activity, Toxic Emissions, and Health Impacts of Local Power Plants	Public Health Law Research	1/12-7/13	$151,500	Co-I	10%
NIH	Long-term Air Pollution Exposure and Mortality in the NIH-AARP Cohort.	R01ES019584 -01A1	1/01/12-10/30/15	$1,070,000	MPI	20%
The Public Health Research Institute of Abu Dhabi	Development of a Public Health Research Institute in Abu Dhabi. *Thurston Project*: "Air Pollution in Abu Dhabi".		3/2012-2/2017	$9,993,960	Co-I	10%
NIH	Dietary Influence on Mortality from Air Pollution Exposure in the NIH-AARP Cohort (R21)	1R21ES02119 4-01	7/12-6/14	$150,000	MPI	8%

Patents
None

Boards and Community Organizations
1990-1995 St. Mary's Episcopal Church, Tuxedo, NY, Vestry member
1992-present Monroe-Woodbury Soccer Club, Coach (Board Member: 1999-2000)
1994-present Orange County Citizen's Foundation, Member
1999-2009 Y2CARE Monroe-Woodbury, NY School District Residents Action Group, Founder
2005-present St. Mary's Episcopal Church, Tuxedo, NY, Community Outreach Committee, Member
2006-present EPISCOBUILD-Newburgh, NY Habitat for Humanity Advisory Board, Member
2012-present St. Mary's Episcopal Church, Tuxedo, NY, Vestry member

Military Service
None

International Scientific Meetings Organized

May 28-30, 2003 "Workshop on the Source Apportionment of PM Health Effects." U.S. EPA PM Centers, Harriman, NY.
Aug. 1-4, 2004 "Sixteenth Conference of the International Society for Environmental Epidemiology," Kimmel Conference Center, Washington Square, New York University, New York City, NY.

Scientific Forums for the Public Organized
June 2001 "Science and Community Interaction Forum on the Environment." Held at Hostos Community College, Bronx, , New York City, NY.

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October 2001 "Forum on Environmental Health Issues Related to the World Trade Center Disaster." Held at NYU Law School, Washington Square, New York City, NY.

October 2002 "2nd Annual Forum on the Environmental Health Issues Related to the World Trade Center Disaster." Held at Manhattan Borough Community College, New York City, NY.

October 2003 "3nd Annual Forum on the Environmental Health Issues Related to the World Trade Center Disaster." Held at NYU Lower Manhattan Campus, New York City, NY.

Invited U.S. House and Senate Congressional Testimony

Feb. 5, 1997 "Human Health Effects of Ambient Ozone Exposures" Statement before the Committee on Environment and Public Works, Subcommittee On Clean Air, Wetlands, Private Property, And Nuclear Safety, U.S. Senate, Washington, DC. http://epw.senate.gov/105th/thurston.htm

April 16, 1997 "Human Health Effects of Ambient Ozone and Particulate Matter Exposures." Statement before the Government Reform and Oversight Committee of the U.S. House of Representatives, Washington, D.C.

May 8, 1997 "Human Health Effects of Ambient Ozone and Particulate Matter Exposures." Statement before the Subcommittee on Health and Environment, Committee on Commerce of U.S. House of Representatives, Washington,. D.C.

July 29, 1997, "The Human Health Effects of Ambient Ozone And Particulate Matter Air Pollution." Statement before the Subcommittee on Commercial and Administrative Law of the Judiciary Committee of the U.S. House of Representatives, Washington,. D.C. http://judiciary.house.gov/legacy/commercial.htm

October 22, 1997 "Ozone and Particulate Matter Air Pollution Health Effects." Statement before the U.S. Senate Committee on Environment and Public Works Subcommittee on Clean Air, Wetlands, Private Property, and Nuclear Safety. Washington, DC. http://epw.senate.gov/105th/thursto2.htm

July 15, 1999: "The Mandated Release of Government-Funded Research Data." Statement before the Committee On Government Reform, Subcommittee on Government Management, Information And Technology, U.S. House of Representatives

July 26, 2001 "The Human Health Effects Of Air Pollution From Utility Power Plants." Statement before the Committee on Environment and Public Works, U.S. Senate, Washington, D.C. http://www.c-spanvideo.org/program/PlantE

Feb 11, 2002: "The Air Pollution Effects of The World Trade Center Disaster." Statement before the Committee On Environment And Public Works, Subcommittee On Clean Air, Wetlands, And Climate Change. United States Senate, New York, NY. http://www.c-spanvideo.org/program/Qualitya

March 5, 2002 "The Use of the Nationwide Registries to Assess Environmental Health Effects." Statement before the Committee On Health, Education, Labor, And Pensions, Subcommittee On Public Health, U.S. Senate, Washington, DC.

Sept. 3, 2002 "The Clean Air Act and The Human Health Effects of Air Pollution from Utility Power Plants." Statement before the U.S. Senate Committee on Health, Education, Labor, and Pensions, Subcommittee on Public Health, Washington, D.C. http://www.c-spanvideo.org/program/AirStand

April 1, 2004 "The Human Health Benefits Of Meeting the Ambient Ozone And Particulate Matter Air Quality Standards." Statement before the Committee on Environment and Public Works, Subcommittee on Clean Air, Climate Change, and Nuclear Safety, U.S. Senate, Washington, D.C.

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http://epw.senate.gov/epwmultimedia/epw040104.ram

July 19, 2006 "The Science And Risk Assessment Of Particulate Matter (PM) Air Pollution Health Effects." Statement before the Committee on Environment and Public Works, U.S. Senate, Washington, D.C.
http://epw.senate.gov/hearingstatements.cfm?id=258766

May 7, 2008 "Science And Environmental Regulatory Decisions." Statement before the Committee On Environment And Public Works of The U.S. Senate, Subcommittee on Public Sector Solutions to Global Warming, Oversight, and Children's Health Protection, U.S. Senate, Washington, D.C.
http://www.c-spanvideo.org/program/RegulatoryD
http://epw.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&HearingID=a1954f70-802a-23ad-4192-fc2995dda7f4

October 4, 2011 "The Science of Air Pollution Health Effects and the Role of CASAC in EPA Standard Setting" Statement before the Subcommittee on Energy and the Environment, Committee on Science, Space and Technology, U.S. House Of Representatives, Washington, DC.
http://science.house.gov/hearing/energy-and-environment-subcommittee---hearing-quality-science-quality-air

Other Invited Presentations

Regional Presentations

April 21, 1993 "Summertime Smog and Hospital Admissions for Respiratory Illness", Environmental and Occupational Health Sciences Institute Seminar Series Lecture, UMDNJ-Robert Wood Johnson Medical School, Piscataway, NJ.

Dec .14, 1995 "Health Effects of Acidic Aerosols", NY State Dept. of Health, Wadsworth Center Seminar, Albany, NY

Jan. 18, 1996 "Outdoor Air Pollution and Asthma in Children " American Lung Association Press Briefing, New York, NY.

June 1, 1996 "Asthma and Urban Air Pollution", WHEACT, Harlem Hospital, New York, NY.

July17, 1996 "Asthma and Outdoor Air Pollution", Making the Connection: Urban Air Toxics & Public Health. Northeast States for Coordinated Air Use Management (NESCAUM), Roxbury, MA

Feb. 11, 1997 "Outdoor Air Pollution and Asthma", Bellevue Hospital Asthma Clinic *Grand Rounds*. New York City, NY.

Feb. 26, 1998 "Scientific Research for Ozone and Fine Particulate Standards ", Pace University School of Law, White Plains, NY

Nov. 30, 1998 "Outdoor Air Pollution and Asthma", Center for Urban and Environmental Studies (CUES), NY Academy of Medicine,, New York, NY

Feb. 22, 1999 "Asthma and Air Pollution", Cornell University, Ithaca, NY

April 28, 2001 "Asthma and Air Pollution in New York City", NYC Council Environmental Candidate School, NY League of Conservation Voters, New York, NY.

Nov. 1, 2001 "Air Quality and Environmental Impacts Due to the World Trade Center Disaster", Testimony before the Comm. on Environ. Protection, NYC Council, New York, NY.

Nov. 13, 2001 "WTC Pollution Impacts in Lower Manhattan", Stuyvesant High School Parents Association General Meeting, Stuyvesant High School, New York, NY

Feb. 28, 2002 "Lung Cancer Effects of Long-Term Exposure to Ambient Fine Particulate Matter", Mailman School of Public Health, Columbia University, New York, NY.

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April 5, 2002	"Air Pollution Impacts of the WTC Disaster", 23rd Annual Scientific Conference of the NY/NJ Education and Research Center: "Worker Health and Safety: Lessons Learned in the Aftermath of Sept. 11, 2001," Mt. Sinai School of Medicine, NYC, NY
April 21, 2002	"Adverse Health Effects of Power Plant Air Pollution on Children" Earth Day 2002, 14th Street Y, New York City, NY.
May 23, 2002	"Human Health Effects of Power Plant Pollution", Rockland County Conservation Association, Suffern, NY
May 31, 2002	"Environmental Health Impacts of the World Trade Center Disaster", University of Rochester Medical School, Rochester, NY.
Sept. 19, 2002	"Community Air Pollution Related to the World Trade Center Disaster". NYC Council Forum: The Environmental Health Consequences of 9/11: Where Do We Stand One Year Later? Borough of Manhattan Community College, New York City, NY.
Oct. 3, 2002	"Community Exposures to Particulate Matter Air Pollution from the World Trade Center Disaster", Mount Sinai School of Medicine *Grand Rounds*, New York City, NY.
April 11, 2003	"Environmental Impacts of the World Trade Center Disaster", NIEHS Public Interest Liaison Group, New York City, NY.
April 21, 2003	"Asthma and Air Pollution", Airborne Threats to Human Health, NIEHS Town Hall Meeting, Syracuse, NY.
May 7, 2003	"Asthma and Air Pollution in NY City" Environmental Candidate School for New York City Council Candidates, Wagner School, NYU, New York City, NY.
July 21, 2003	"Health Effects of Particulate Matter Air Pollution", Ozone Transport Commission, Philadelphia, PA.
Nov. 18, 2004	"Ambient Air Pollution Particulate Matter (PM): Sources and Health Impacts". U.S. Environmental Protection Agency, Region 2, New York City, NY.
Feb. 17, 2005	"Community Air Pollution Aspects Of The Demolition Of 9-11 Contaminated Buildings". Testimony before the Committee On Lower Manhattan Redevelopment, New York City Council, New York City, NY.
Oct. 19, 2005	Air Pollution Health Effects: Consideration of Mixtures. Fall Meeting of the Mid-Atlantic Chapter of the Society of Toxicology (MASOT), East Brunswick, NJ.
Dec.7, 2006	Asthma and Air Pollution Effects in the South Bronx. New York City Child Health Forum, The Children's health Fund, Harlem, NYC, NY.
Jan. 18, 2007	Air Pollution Effects in New York City. NYU Environmental Sciences Seminar Lecture, Washington Square, NYC, NY.
Jan. 23, 2007	The South Bronx Backpack Study: Asthma and Air Pollution in NYC. Presented at the forum "High Asthma Rates in the Bronx: What Science Now Knows and Needs to Learn." New York Academy of Sciences, 7 World Trade Center, NYC, NY.
Oct. 2, 2009	"Diesel Air Pollution and Asthma in New York City". Brown Superfund Research Program. http://www.brown.edu/Research/SRP/thurston%20oct%202.pdf , Brown University, Providence, RI.
June 19, 2012	"The Backpack Study of Asthma and Diesel Air Pollution in the South Bronx". Region 1 U.S. EPA, Citizen Science Workshop, New York City, NY.

National Presentations

Oct. 20, 1987.	NIEHS Symposium on the Health Effects of Acid Aerosols: "Re-examination of London, England, Mortality in Relation to Exposure to Acidic Aerosols During 1963-1972 Winters" RTP, NC.
Aug. 13, 1991	"Kuwait Mortality Risks from SO_2 and Particles: Insights from the London Fogs"' The Kuwait Oil Fires Conf., American Academy of Arts and Sciences, Cambridge, MA.

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Jan. 24, 1994	"Air Pollution Epidemiology: Is the Model the Message?" The First Colloquium on Particulate Air Pollution and Human Morbidity and Mortality". Beckman Center of the NAS, Irvine, CA.
May 23, 1994	" Epidemiological and Field Studies". American Thoracic Society Annual Meeting, Boston, MA.
May 25, 1994	"Epidemiological Evidence Linking Outdoor Air Pollution and Increased Hospital Admissions for Respiratory Ailments" American Thoracic Society Annual Meeting, Boston, MA.
May 6, 1996	"Associations Between PM_{10} & Mortality in Multiple US Cities". Second Colloquium on Particulate Air Pollution and Health. Park City, Utah.
Sept. 5, 1996	"Particulate Matter Exposure Issues for Epidemiology" U.S. EPA Particulate Matter Workshop, RTP, NC
April 3, 1997	"Health Effects of Ambient Ozone & Particulate Matter" Air and Waste Assoc. Regional Conference On Impacts of EPA's Proposed Changes to Ozone and PM Standards, Oak Brook, IL
April 22, 1998	"The New EPA Standards for Ambient PM and Ozone" American Lung Association Annual Meeting, Chicago, IL.
Dec. 21, 1999	"Global Overview of Human Death and Illness due to Air Pollution". California Air Resources, Sacramento, CA.
March 24, 2000	"Estimating Ancillary Impacts, Benefits and Costs Of Proposed GHG Mitigation Policies For Public Health" Resources for the Future, Wash., DC.
June 24, 2002	"Investigations Into the Environmental Health Impacts Related to the WTC Disaster" Air And Waste Management Annual Meeting, Baltimore, MD.
July 15, 2002	"Air Pollution and Human Health" NIEHS Built Environment Conference, RTP, NC
July 26, 2002	"The Human Health Effects of Power Plant Emissions and Associated Air Pollution", The Environment & Health Forum, Physicians for Social Responsibility, Washington, DC.
October 7, 2002	"Community Exposures to Particulate Matter Air Pollution from the World Trade Center Disaster" Plenary Speaker at the American Association for Aerosol Research, Charlottesville, North Carolina.
Nov. 11, 2002	"Characterization of Community Exposures to World Trade Center Disaster Airborne and Settled Dust Particulate Matter Air Pollution", American Public Health Association Annual Meeting, Philadelphia, PA.
Dec. 5, 2002	"Susceptibility of Older Adults to Air Pollution", EPA Workshop on Differential Susceptibility of Older People to Environmental Hazards. National Academy of Sciences, Washington, DC.
Feb. 3, 2003	"Health Effects of Particulate Matter Air Pollution", National Air Quality Conference, U.S. EPA, San Antonio, Texas
May 17, 2003	"Assessing the Influence of Particle Sources and Characteristics on Adverse Health Effects of PM", PG18 - New Tools to Evaluate the Health Effects of Air Pollution in Epidemiologic Studies. American Thoracic Society Annual Meeting, Seattle, WA.
Sep. 10, 2003	"Nature and impact of World Trade Center Disaster fine particulate matter air pollution at a site in Lower Manhattan after September 11." Annual Meeting of the American Chemical Society, New York, NY.
October 20, 2003	"Translating Air Pollution Risks to the Community" Annual Meeting of the NIEHS Center Directors, Baltimore, MD.
May 18, 2004	"The Health Imperative for Implementation of the Clean Air Act" State and Territorial Air Pollution Program Administrators/ Association of Local Air Pollution Control Officials (STAPPA/ALAPCO) National Conference, Point Clear, Alabama.

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Oct. 18, 2004	"NIEHS Centers' Investigations of the World Trade Center Collapse Pollution Exposures and Effects: A Public Health Collaboration" National Institute of Environmental Health Sciences Center Directors' Meeting, Research Triangle Park, NC.
May 25, 2005	"PM/Sulfate and Coal Combustion Particle Effects: Epidemiologic and Toxicologic Evidence", American Thoracic Society Annual Meeting, San Diego, CA
Oct. 24, 2005	"The Science Behind the Particulate Matter (PM) Standards" State and Territorial Air Pollution Program Administrators/ Association of Local Air Pollution Control Officials (STAPPA/ALAPCO) National Conference, Alexandria, Virginia.
Oct. 14, 2008	"Diesel Air Pollution and Asthma Exacerbations in a Group of Children with Asthma" Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Pasadena, California.
Feb. 26, 2010	"What studies are appropriate to use to estimate health impacts from specific sources such as diesel PM?" CARB Symposium: "*Estimating Premature Deaths from Long-term Exposure to $PM_{2.5}$*". Sacramento, CA.
May 6, 2011	"Lung Cancer Risks from Exposure to Fine Particle Air Pollution" NYU Cancer Institute Symposium: "Cancer and the Environment", NYC, NY.
May 16, 2012	"The Human Health Effects of Air Pollution" The Air We Breathe: Regional Summit on Asthma and Environment at Allegheny General Hospital, Pittsburgh, PA.

International Presentations

May 1, 1987	"Acid Aerosols: Their Origins, Occurrence, and Possible Health Effects", Canadian Environmental Health Directorate Seminar, Health and Welfare Canada, Ottawa, Canada
July 2, 1987	"Health Effects of Air Pollution in the US", University of Sao Paulo, Sao Paulo, Brasil
Feb. 5, 1991	"Results from the Analysis of Toronto Summer Sulfate and Aerosol and Acidity Data", Workshop on Current Use and Future Directions of Hospital-Based Data in the Assessment of the Effects of Ambient Air Pollution on Human Health. Health and Welfare Canada, Ottawa, Canada.
April 23, 1997	"An Evaluation of the Role of Acid Aerosols in Particulate Matter Health Effects", Conference on the Health Effects of Particulate Matter in Ambient Air. Air & Waste Management Association, Prague, Czech Republic.
May 12, 1998	"The Health Effects of PM and Ozone Air Pollution", Air Pollution: Effects on Ontario's Health and Environment. Ontario Medical Association, Toronto, Canada
Nov. 1, 1999	"Climate Change and the Health Impacts of Air Pollution". The Public Health Opportunities and Hazards of Global Warming Workshop at the U.N. Framework Convention on Climate Change, Conference of Parties (COP5), Bonn, Germany.
August 31, 2000	"Particulate Matter Air Pollution and Health in three Northeastern Cities", World Congress on Lung Health, Florence, Italy
January 29, 2001	"PM Exposure Assessment and Epidemiology", NERAM International Colloquia: Health and Air Quality: Interpreting Science for Decision Makers. Ottawa, Canada.
Feb. 4-5, 2002:	"Air Pollution Exposure Assessment Approaches in U.S. Long-Term Health Studies", Workshop on Exposure Assessment in Studies on the Chronic Effects of Long-term Exposure to Air Pollution, World Health Organization, Bonn, Germany
May 2, 2002	"Health Effects of Sulfate Air Pollution" Air Pollution as a Climate Forcing Workshop, East-West Center, Honolulu, Hawaii
Sept. 24, 2003	"Identification and Characterization of World Trade Center Disaster Fine Particulate Matter Air Pollution at a Site in Lower Manhattan Following September 11." Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Perth, Australia.
Dec. 1, 2003	"Terrorism and the Pulmonary Effects of the World Trade Center Disaster Particulate Matter Air Pollution", British Thoracic Society, London, England.

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Sept 14, 2005	"Results And Implications of The Workshop on the Source Apportionment of PM Health Effects", Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Johannesburg, South Africa.
Sept. 4, 2006	"A Source Apportionment of U.S. Fine Particulate Matter Pollution for Health Effects Analysis", Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Paris, France.
Sept. 4, 2007	"Applying Attributable Risk Methods to Identify Susceptible Subpopulations", Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Mexico City, Mexico.
Aug. 27, 2009	"Ischemic Heart Disease Mortality Associations with Long-Term Exposure to $PM_{2.5}$ Components", Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Dublin, Ireland.
Dec. 1, 2010	"The Hidden Air Quality Health Benefits of Climate Change Mitigation". The Energy and Resources Institute (TERI), Lodhi Road, New Delhi, India.
July 17, 2012	"Recent Findings on the Mechanisms and Health Risks of Particulate Matter Air Pollution", European Centre for Environment & Human Health, Truro, England.
Aug. 29, 2012	"Health Effects of PM Components: NYU NPACT Epidemiology Results and their Integration with Toxicology Results", Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Columbia, SC.

Scientific Meeting Sessions Chaired

May 1, 1996	"Epidemiological Findings", 2nd Colloquium on Particulate Air Pollution & Health. Park City, UT.
May 14, 1996	"Particulate Toxicity", American Thoracic Society Annual Meeting, New Orleans, LA.
Jan. 30, 1998	"Evaluation of PM Measurement Methods". $PM_{2.5}$: A Fine Particulate Standard Specialty Conference. Los Angeles, CA.
August 18, 1998	"Communities and Airports: How to Co-Exist?", Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Boston, MA.
April 28, 1998	"Clean Air Act Update", American Thoracic Society Annual Meeting, Chicago, IL.
Oct. 21, 1998	"Health Effects and Regulatory Issues in PM", Particulate Methodology Workshop,. U.S. EPA Center, for Statistics and the Env., Univ. of Washington, Seattle, WA.
April 26, 1999	"Pulmonary Smoking and Air Pollution Epidemiology." American Thoracic Society Annual Meeting, San Diego, CA
Sept. 6, 1999	"Personal exposures to Gases and Particles", Annual Conference of the International Society for Environmental Epidemiology (ISEE), Athens, Greece.
March 31, 2000	"Epidemiology: Particles, Co-pollutants & Morbidity and Mortality", Workshop on Inhaled Environmental/Occupational Irritants and Allergens: Mechanisms of Cardiovascular Responses, American Thoracic Society, Scottsdale, AZ
Jan. 26, 2000	"Epidemiology of Particulate Matter Air Pollution", PM2000 Specialty Conference, Air & Waste Management Assoc., Charleston, SC
May 8, 2000	"Outdoor Air Pollution: Epidemiologic Studies", American Thoracic Society Annual Meeting, Toronto, Canada
Sept. 5, 2001	"Mortality Epidemiology Studies", Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Garmisch, Germany.
May 20, 2002	"After September 11: Bio-terrorism and The Environmental Health Aftermath of The World Trade Center Disaster", Plenary Session. American Thoracic Society Annual Meeting, Atlanta, GA.
April 1, 2003	"Epidemiology: Short-Term and Long-Term Health Effects", Conference on Particulate Matter: Atmospheric Sciences, Exposure, and the Fourth Colloquium on PM and Human Health, Pittsburgh, PA

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May 19, 2003	"Particulate Air Pollution and Diseases in Adults", American Thoracic Society Annual Meeting, Seattle, WA.
May 21, 2003	"Air Pollution as a Cause of Childhood Asthma and Chronic Airway Disease", American Thoracic Society Annual Meeting, Seattle, WA.
Sept. 2003	"Unexplained Medical Symptoms", Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Perth, Australia.
Sept. 25, 2005	"Technology and Health", Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Johannesburg, South Africa.
June 22, 2006	"Characteristics of PM and Related Considerations", Annual Meeting of the Air and Waste Management Association, New Orleans, LA.
Sept. 3, 2006	"Air Pollution Mechanisms", Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Paris, France.
Sept. 20, 2006	"Linkage and Analysis of Air Quality and Health Data", EPA & CDC Symposium on Air Pollution Exposure and Health, RTP, NC
Sept. 5, 2007	"Radiation Exposures and Health Risks", 2007 Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Mexico City, Mexico
Aug. 26, 2009	"Exploring the Range of Methodological Approaches Available for Environmental Epidemiology." 2009 Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Dublin, Ireland
March 23, 2010	"Exposure to and Health Effects of Traffic Pollution", 2010 American Association for Aerosol Research Conference on Air Pollution and Health, San Diego, CA.
Sept. 16, 2011	"Susceptibility to Air Pollution", 2011 Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Barcelona, Spain.
Aug. 27, 2012	"Source Apportionment Of Outdoor Air Pollution: Searching For Culprits". 2012 Annual Meeting of the International Society for Environmental Epidemiology (ISEE). Columbia, SC.

Bibliography

Invited Journal Editorials

Thurston GD and Bates DM, Air Pollution as an Underappreciated Cause of Asthma Symptoms, 2003. JAMA, 290:14, pp. 1915-1916 (2003).

Thurston G.D. (2006). Hospital admissions and fine particulate air pollution. JAMA. Oct 25; 296(16):1966.

Thurston G. (2007). Air pollution, human health, climate change and you. Thorax. 2007 Sep; 62 (9): 748-9.

Thurston GD, Balmes JR; Particulate matter and the environmental protection agency: setting the right standard. Environmental Health Policy Committee of the American Thoracic Society. Am J Respir Cell Mol Biol. 2012 Dec;47(6):727-8. doi: 10.1165/rcmb.2012-0414ED.

Book Chapters

Thurston, G.D. and Leber, M. The relationship between asthma and air pollution. In: *Emergency Asthma* (ed.: B. Brenner), pp. 127-144. Marcel-Dekker, New York, NY (1999).

Thurston, G.D. and Ito, K. Epidemiological studies of ozone exposure effects. In: *Air Pollution and Health* (ed.: S. Holgate and H. Koren). Academic Press. London. pp. 485-510 (1999).

Chen, LC, Thurston, G, and Schlesinger, RB. Acid Aerosols as a Health Hazard. In: *Air Pollution and Health* (ed.: J. Ayres, R. Maynard, and R. Richards). Air Pollution reviews: Vol. 3. Imperial College Press. London. pp. 111-161 (2006).

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Code	Comment Document

Thurston, G.D. and Wallace, L. Air Pollution: Outdoor and Indoor Sources. In: *Environmental and Occupational Medicine*, 4th Edition (Eds.: W. Rom and S. Markowitz). Lippincott, Williams, and Wilkins, Philadelphia (2006).

Thurston, G.D. Air Pollution. In: *Encyclopedia of Public Health* (ed. K. Heggenhougen) Elsevier Press. (2007).

Thurston, G.D and Bell, M. Aerosols, global climate, and the human health co-benefits of climate change mitigation. In *Aerosol Handbook* (2nd edition, in press) (eds.: Lev S. Ruzer and Naomi H. Harley). CRC Press (2012)

National Academy Committee Books Co-Authored

National Research Council (NRC), *Waste Incineration & Public Health.* Committee on Health Effects of Waste Incineration. Board on Environmental Studies and Toxicology. National Academy Press, Washington, DC (2000).

International Reports Co-Authored

Health Canada, *Health and Environmental Impact Assessment Panel Report*, "Joint Industry/Government Study: Sulfur in Gasoline and Diesel Fuels". Ottawa, Canada. (1997).

World Health Organization (WHO), *Exposure assessment in studies on the chronic effects of long-term exposure to air pollution.* Report EUR/03/5039759. Geneva, Switzerland (2003).

Peer Reviewed Journal Articles/Letters

Thurston, G.D. General Discussion: Atmospheric dispersion modeling - A critical review. J. Air Pollut. Control Assoc. 29: 939 (1979).

Thurston, G.D. Discussion of multivariate analysis of particulate sulfate and other air quality variables by principal components - part I. Annual data from Los Angeles and New York. Atmos. Environ. 15: 424-425 (1981).

Thurston, G.D., J.D. Spengler and P.J. Samson. An assessment of the relationship between regional pollution transport and trace elements using wind trajectory analysis. Receptor Models Applied to Contemporary Pollution Problems, Ed. E. Frederick, Air Pollution Control Association, Pittsburgh, PA (1982).

Spengler, J.D. and G.D. Thurston. Mass and elemental composition of fine and coarse particles in six U.S. cities. J. Air Poll. Control Assoc. 33: 1162-1171 (1983).

Currie, L., R. Gerlach, C. Lewis, W.D. Balfour, J. Cooper, S. Dattner, R. DeCesar, G. Gordon, S. Heisler, P. Hopke, J. Shah and G. Thurston. Inter-laboratory comparison of source apportionment procedures: Results for simulated data sets. Atmos. Environ. 18: 1517-1537 (1984).

Thurston, G.D. and J.D. Spengler. A quantitative assessment of source contributions to inhalable particulate matter in metropolitan Boston, Massachusetts. Atmos. Environ. 19: 9-25 (1985).

Thurston, G.D. and N.M. Laird. Letters: Tracing aerosol pollution. Science 227: 1406-1407 (1985).

Thurston, G.D. and J.D. Spengler. A multivariate assessment of meteorological influences on inhalable particle source impacts. J. Clim. and Appl. Met. 24: 1245-1256 (1985).

Ozkaynak, H., J.D. Spengler, A. Garsd and G.D. Thurston. Assessment of population health risks resulting from exposures to airborne particles. Aerosols: Second U.S.-Dutch International Symposium, Lewis Publishing Co., December 1985 (Peer Reviewed).

Ozkaynak, H., A.D. Schatz, G.D. Thurston, R.G. Isaacs and R.B. Husar. Relationships between aerosol extinction coefficients derived from airport visual range observations and alternative measures of airborne particle mass. J. Air Pollut. Control Assoc. 35: 1176-1185 (1985).

Thurston, G.D. and P.J. Lioy. Receptor modeling and aerosol transport. Atmos. Environ. 21: 687-698 (1987).

Ozkaynak, H., and G.D. Thurston. Associations between 1980 U.S. mortality rates and alternative measures of airborne particle concentration. Risk Analysis 7: 449-460 (1987).

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Lioy, P.J., D. Spektor, G. Thurston, N. Bock, F. Speizer, C. Hayes and M. Lippmann. The design considerations for ozone and acid aerosol exposure and health investigation: The Fairview Lake Summer Camp-Photochemical Smog Case Study. Environ. Int'l. 13: 27-83 (1987).

Spektor, D.M., M. Lippmann, P.J. Lioy, G.D. Thurston, K. Citak, D.J. James, N. Bock, F.E. Speizer and C. Hayes. Effects of ambient ozone on respiratory function in active normal children. Am. Rev. Resp. Dis. 137: 313-320 (1988).

Lippmann, M. and G.D. Thurston. Exposure Assessment - Input into risk assessment. Arch. Environ. Health 43: 113-123 (1988).

Spektor, D.M., M. Lippmann, G.D. Thurston, P.J. Lioy, J. Stecko, G. O'Connor, E. Garshick, F.E. Speizer, and C. Hayes. Effects of ambient ozone on respiratory function in healthy adults exercising outdoors. Am. Rev. Resp. Dis. 138: 821-828 (1988).

Ito, K. and G.D. Thurston. Characterization and reconstruction of historical London England acidic aerosol concentrations. Environ. Health Presp. 79: 35-42 (1989).

Thurston, G.D., K. Ito, M. Lippmann, and C. Hayes. Re-examination of London mortality in relation to exposure to acidic aerosols during 1962-1973 winters. Environ. Health Persp. 79: 73-82 (1989).

Waldman, J.M., P.J. Lioy, G.D. Thurston and M. Lippmann. Spatial and temporal patterns in summertime sulfate aerosol acidity and neutralization within a metropolitan area. Atmos. Environ. 24B: 115-126 (1990).

Echalar, E., P. Artaxo and G.D. Thurston. Source apportionment of aerosols in the industrial area of Cubatao, Brazil. In: Aerosols: Science, Industry, Health and Environment (S. Masuda and K. Takahashi, Eds.), pp. 942-945, Pergamon Press (1990).

Spektor, D.M., V.A. Hofmeister, P. Artaxo, J. Brague, F. Echelar, D.P. Nogueria, C. Hayes, G.D. Thurston and M. Lippmann. Effects of heavy industrial pollution on respiratory function in the children of Cubatao, Brazil: A preliminary report. Environ. Health Persp. 94: 51-54 (1991).

Waldman, J.M., S.K.C. Liang, P.J. Lioy, G.D. Thurston, and M. Lippmann. Measurements of sulfate aerosol and its acidity in the SO_2 source region of Chestnut Ridge, PA. Atmos. Environ. 25A: 1327-1333 (1991).

Spektor, D.M., G.D. Thurston, J. Mao, D. He, C. Hayes, and M. Lippmann. Effects of single and multiday ozone exposures on respiratory function in active normal children. Environ. Res. 55: 107-122 (1991).

Thurston, G.D. and H. Ozkaynak. Letters: Air pollution and mortality. Science 225: 382-383 (1992).

Thurston, G.D., J.F. Gorczynski Jr., P. Jaques, J. Currie and D. He. An automated sequential sampling system for particulate acid aerosols: Description, characterization and field sampling results. J. Exposure Anal. Environ. Epidemiol. 2: 415-428 (1992).

Thurston, G.D., K. Ito, P. Kinney and M. Lippmann. A multi-year study of air pollution and respiratory hospital admissions in three New York State metropolitan areas: Results for 1988 and 1989 summers. J. Exposure Anal. and Environ. Epidemiol. 2: 429-450 (1992).

Jaques, P.A., G.D. Thurston, P.L. Kinney, and J.E. Gorczynski, Jr. Precision of an ambient sequential acid aerosol sampling system. Appl. Occup. Environ. Hyg. 8: 313-316 (1993).

Kinney, P.L. and G.D. Thurston. Field evaluation of instrument performance: Statistical considerations. Appl. Occup. Environ. Hyg. 8: 267-271 (1993).

Ito, K., G.D. Thurston, C. Hayes, and M. Lippmann. Associations of London, England daily mortality with particulate matter, sulfur dioxide, and acidic aerosol pollution. Arch. Environ. Health 48: 213-220 (1993).

Thurston, G.D., K. Ito, M. Lippmann and D.V. Bates. Respiratory hospital admissions and summertime haze air pollution in Toronto, Ontario: Consideration of the role of acid aerosols. Environ. Res. 65: 271-290 (1994).

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Thurston, G.D., J.E. Gorczynski, J.H. Currie, D. He, K. Ito, M. Lippmann, J. Waldman and P. Lioy. The nature and origins of acid aerosol pollution measured in Metropolitan Toronto, Ontario. Environ. Res. 65:254-270 (1994).

Kinney, P.L., Ito, K., and Thurston, G.D. A sensitivity analysis of mortality/PM10 associations in Los Angeles. Inhal. Toxicol. 7:59-69 (1995).

Thurston, G.D. and Kinney, P.L. Air pollution epidemiology: Considerations in time-series modeling. Inhal. Toxicol. 7:71-83 (1995).

Ito, K., Kinney, P., Christie, E., and Thurston, G.D. Variations in PM10 concentrations within two metropolitan areas and their implications to health effects analyses. Inhal. Toxicol. 7:735-745 (1995).

Waldman, J. M., Koutrakis, P., Allen, G.A., Thurston, G.D., Burton, R.M., and Wilson, W.E. Human Exposures to Particle Strong Acidity. Inhal. Toxicol. 7:657-670 (1995).

Thurston, G. Measurement methods to determine compliance with ambient air quality standards for suspended particles: Discussant. J. Air & Waste Manage. Assoc. 45:667-668 (1995).

Kinney, P.L., Thurston, G.D., and Raizenne, M. (1996) The effects of ambient ozone on lung function in children: a reanalysis of six summer camp studies. Environ. Health Perspect. 104:170-174.

Thurston, G.D. A critical review of PM10-mortality time-series studies. J. Exposure Anal. and Environ. Epidemiol. 6:3-22 (1996).

Ozkaynak, H., Xue, J., Zhou, H., Spengler, J.D., and Thurston, G.D. Intercommunity Differences in Acid Aerosol (H^+)/Sulfate ($SO4^+$) Ratios. J. Exposure Anal. and Environ. Epidemiol. 6:57-78 (1996).

Ito, K. and Thurston, G.D. Daily PM10/mortality associations: An investigation of at-risk subpopulations. J. Exposure Anal. and Environ. Epidemiol. 6:79-96 (1996).

Lippmann, M. and Thurston, G.D. Sulfate concentrations as an indicator of ambient particulate matter air pollution for health risk evaluations. J. Exposure Anal. and Environ. Epidemiol. 6:123-146 (1996).

Thurston, G. D., Lippmann, M., Scott, M.B., and; Fine, J.M. Summertime haze air pollution and children with asthma. Am. J. Respir. and Crit. Care Med. 155:654-660 (1997).

Thurston, G.D. Mandating the release of health research data: issues and implications. *Tulane Environmental Law Journal.* 11(2):331-354 (1998).

Thurston, G.D. The health benefits of the U.S. EPA clean air standards. *Pace Environmental Law Review.* 16:1 (1998)

Cassino, C., Ito, K., Bader, I., Ciotoli, C., Thurston, G., and Reibman, J. Cigarette smoking and ozone-associated emergency department use for asthma by adults in New York City. *Am. J. Respir. Crit. Care Med..* 159:1773-1779 (1999).

Gwynn, R.C., Burnett, R.T., and Thurston, G.D. A time-series analysis of acidic particulate matter and daily mortality and morbidity in the Buffalo, New York, region. Environ. Health Perspect. 108(2):125-133 (2000).

Cifuentes, L., Borja-Aburto, V., Gouveia, N., Thurston, G., and Davis, D. Assessment of the urban air pollution benefits of global warming mitigation: Santiago, São Paulo, Mexico City, and New York City. Environ. Health Perspect. 109, Supplement 3:419-425 (2001).

Thurston, G.D. and Ito K. Epidemiological studies of acute ozone exposures and mortality. J. Expo. Anal. Environ. Epidemiol. 11(4):286-294 (2001).

Gwynn, R.C. and Thurston, G.D. The burden of air pollution: Impacts in racial minorities. Environ. Health Perspect. 109 Suppl 4:501-506 (2001).

Cifuentes, L., Borja-Aburto, V.H., Gouveia, N., Thurston, G., and Davis, D.L. Climate change. Hidden health benefits of greenhouse gas mitigation. Science 293(5533):1257-1259 (2001).

Code	Issue	Response

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Pope, C.A. III, Burnett, R.T., Thun, M.J., Calle, E.E., Krewski, D., Ito, K., and Thurston, G.D. Lung cancer, cardiopulmonary mortality and long-term exposure to fine particulate air pollution. J. Am. Med. Assoc. (JAMA) 287(9):1132-1141 (2002).

Chen LC, Thurston G. World Trade Center Cough. Lancet. 2002 Dec;360 Suppl:s37-38.

Thurston GD, Chen LC. Risk communication in the aftermath of the World Trade Center disaster. Am J Ind. Med. Dec;42(6):543-4 (2002).

De Leon SF, Thurston GD, Ito K. Contribution of respiratory disease to nonrespiratory mortality associations with air pollution. Am J Respir Crit Care Med. Apr 15;167(8):1117-23 (2003).

Pope CA, Burnett R, Thurston, GD, Thun M, Calle E, Krewski, D, Godleski, J. Cardiovascular Mortality and Long-Term Exposure to Particulate Air Pollution: Epidemiological Evidence of General Pathophysiological Pathways of Disease. Circulation Jan 6;109 (1):71-7 (2004).

Landrigan PJ, Lioy PJ, Thurston G, Berkowitz G, Chen LC, Chillrud SN, Gavett SH, Georgopoulos PG, Geyh AS, Levin S, Perera F, Rappaport SM, Small C; NIEHS World Trade Center Working Group. Health and environmental consequences of the World Trade Center disaster. Environ Health Perspect. May;112(6):731-9 (2004).

Ito K, De Leon S, Thurston GD, Nadas A, Lippmann M. Monitor-to-monitor temporal correlation of air pollution in the contiguous US. J Expo Anal Environ Epidemiol. Jun:16 (2004).

Ito K , Xue N, Thurston G. (2004). Spatial variation of $PM_{2.5}$ chemical species and source-apportioned mass concentrations in New York City. Atmos. Environ. 38: 5269–5282.

Lall R, Kendall M, Ito K, Thurston G. Estimation of historical annual $PM_{2.5}$ exposures for health effects assessment. Atmos. Environ. V38:31, pp. 5217-5226 (2004).

Maciejczyk, PB, Offenberg, JH, Clemente J, Blaustein M, Thurston G., Chen LC. Ambient pollutant concentrations measured by a mobile laboratory in South Bronx, NY. Atmospheric Environment. V38:31, pp. 5295-5304 (2004).

Restrepo C, Zimmerman R, Thurston G, Clemente J, Gorczynski J, Zhong M, Blaustein M, and Chen LC. A comparison of ground-level air quality data with New York State Department of Environmental Conservation monitoring stations data in South Bronx, New York. Atmospheric Environment. V38:31, pp. 5283-5294 (2004).

Trasande L, and Thurston, GD. The role of air pollution in asthma and other pediatric morbidity. J. of Allergy & Clinical Immunol. Apr;115(4):689-99 (2005).

Krewski D, Burnett R, Jerrett M, Pope CA, Rainham D, Calle E, Thurston G, Thun M. Mortality and long-term exposure to ambient air pollution: ongoing analyses based on the American Cancer Society cohort. J Toxicol. Environ Health A. Jul 9-23;68(13-14):1093-109 (2005).

Jerrett M, Burnett RT, Ma R, Pope CA 3rd, Krewski D, Newbold KB, Thurston G, Shi Y, Finkelstein N, Calle EE, Thun MJ. Spatial analysis of air pollution and mortality in Los Angeles. Epidemiology. 2005 Nov;16(6):727-36.

Krewski D, Jerrett M, Burnett RT, Ma R, Hughes E, Shi Y, Turner MC, Pope CA 3rd, Thurston G, Calle EE, Thun MJ, Beckerman B, DeLuca P, Finkelstein N, Ito K, Moore DK, Newbold KB, Ramsay T, Ross Z, Shin H, Tempalski B. Extended follow-up and spatial analysis of the American Cancer Society study linking particulate air pollution and mortality. Res Rep Health Eff Inst. 2009 May;(140):5-114

Thurston GD, Ito K, Mar T, Christensen WF, Eatough DJ, Henry RC, Kim E, Laden F, Lall R, Larson TV, Liu H, Neas L, Pinto J, Stolzel M, Suh H, Hopke PK. Workgroup report: workshop on source apportionment of particulate matter health effects--intercomparison of results and implications. Environ Health Perspect. 2005 Dec;113(12):1768-74.

Ito K, Christensen WF, Eatough DJ, Henry RC, Kim E, Laden F, Lall R, Larson TV, Neas L, Hopke PK, Thurston GD. PM source apportionment and health effects: 2. An investigation of intermethod variability in associations between source-apportioned fine particle mass and daily mortality in Washington, DC. J Expo Sci Environ Epidemiol. 2006 Jul;16(4):300-10.

Code	Issue	Response

Code	Comment Document

Mar TF, Ito K, Koenig JQ, Larson TV, Eatough DJ, Henry RC, Kim E, Laden F, Lall R, Neas L, Stolzel M, Paatero P, Hopke PK, Thurston GD. PM source apportionment and health effects. 3. Investigation of inter-method variations in associations between estimated source contributions of PM(2.5) and daily mortality in Phoenix, AZ. J Expo Sci Environ Epidemiol. 2006. Jul;16(4):311-20.

Hopke PK, Ito K, Mar T, Christensen WF, Eatough DJ, Henry RC, Kim E, Laden F, Lall R, Larson TV, Liu H, Neas L, Pinto J, Stolzel M, Suh H, Paatero P, Thurston GD., PM source apportionment and health effects: 1. Intercomparison of source apportionment results. J Expo Sci Environ Epidemiol. 2006 May;16(3):275-86.

Lall R and Thurston G. (2006). Identifying and quantifying transported vs. local sources of New York City $PM_{2.5}$ fine particulate matter air pollution. Atmospheric Environment, 40: S333–S346.

Ito K, Thurston GD, Silverman RA. Characterization of PM2.5, gaseous pollutants, and meteorological interactions in the context of time-series health effects models. J Expo Sci Environ Epidemiol. 2007 Dec;17 Suppl 2:S45-60.

Kim JY, Burnett RT, Neas L, Thurston, G.D., Schwartz J, Tolbert PE, Brunekreef B, Goldberg MS, Romieu I. Panel discussion review: session two--interpretation of observed associations between multiple ambient air pollutants and health effects in epidemiologic analyses. J Expo Sci Environ Epidemiol. 2007 Dec;17 Suppl 2:S83-9.

Ross Z, Jerrett M, Ito K, Tempalski, Thurston G. A land use regression for predicting fine particulate matter concentrations in the New York City region. 2007. Atmospheric Environment. 41: 2255-2269.

Jerrett M, Newbold KB, Burnett RT, Thurston G., Lall R., Pope C. A. III, Ma R, De Luca P, Thun M., Calle J, Krewski D. Stoch. Environ. Res. Risk Assess. Geographies of uncertainty in the health benefits of air quality improvements. 2007. Volume 21, No. 5: 511-522.

Ito K, Thurston GD, Silverman RA. Characterization of $PM_{2.5}$, gaseous pollutants, and meteorological interactions in the context of time-series health effects models. J Expo Sci Environ Epidemiol. 2007 Dec;17 Suppl 2:S45-60.

Bell ML, Davis DL, Cifuentes LA, Krupnick AJ, Morgenstern RD, Thurston GD. Ancillary human health benefits of improved air quality resulting from climate change mitigation. Environ Health. 2008 Jul 31;7:41.

Thurston GD, Bekkedal MY, Roberts EM, Ito K, Arden Pope C 3rd, Glenn BS, Ozkaynak H, Utell MJ. (2009). Use of health information in air pollution health research: Past successes and emerging needs. J Expo Sci Environ Epidemiol. 2009 Jan;19(1):45-58. Epub 2008 Sep 10.

Jerrett M, Burnett RT, Pope C. A. III, Ito K, Thurston G., Krewski D., Shi Y., Calle J, Thun M., The Contribution of Long-Term Ozone Exposure to Mortality. NEJM. 360;11 March 12, 2009.

Ying Z, Kampfrath T, Thurston G, Farrar B, Lippmann M, Wang A, Sun Q, Chen LC, Rajagopalan S. Ambient particulates alter vascular function through induction of reactive oxygen and nitrogen species. Toxicol Sci. 2009 Sep;111(1):80-8. Epub 2009 Jan 30.

McKean-Cowdin R, Calle EE, Peters JM, Henley J, Hannan L, Thurston GD, Thun MJ, Preston-Martin S. Ambient air pollution and brain cancer mortality. Cancer Causes Control. 2009 Nov;20(9):1645-51. Epub 2009 Aug 15.

Smith KR, Jerrett M, Anderson HR, Burnett RT, Stone V, Derwent R, Atkinson RW, Cohen A, Shonkoff SB, Krewski D, Pope CA 3rd, Thun MJ, Thurston G. Public health benefits of strategies to reduce greenhouse-gas emissions: health implications of short-lived greenhouse pollutants. Lancet. 2009 Dec 19;374(9707):2091-103. Epub 2009 Nov 26.

Chen L; Hwang J; Lall, R; Thurston, G; Lippmann, M. Alteration of cardiac function in ApoE-/- mice by subchronic urban and regional inhalation exposure to concentrated ambient PM 2.5. Inhalation toxicology. 2010 Jun;22(7):580-92.

Code	Issue	Response

Code	Comment Document

Spira-Cohen A, Chen LC, Kendall M, Sheesley R, Thurston GD. (2010). Personal exposures to traffic-related particle pollution among children with asthma in the South Bronx, NY. J Expo Sci Environ Epidemiol. 2010 Jul;20(5):446-56. Epub 2009 Oct 28.

Ito K, Mathes R, Ross Z, NádasA, Thurston G, and Matte T. Fine Particulate Matter Constituents Associated with Cardiovascular Hospitalizations and Mortality in New York City Environmental Health Perspectives (EHP). 2011 Apr; 119(4):467-73. [Epub Dec. 2010 ahead of print]

Lall R, Ito K, Thurston G. Distributed Lag Analyses of Daily Hospital Admissions and Source-Apportioned Fine Particle Air Pollution. Environmental Health Perspectives (EHP). 2011 Apr; 119(4):455-60. [Epub Dec. 2010 ahead of print].

Zhou J, Ito K, Lall R, Lippmann M, Thurston G. Time-series Analysis of Mortality Effects of Fine Particulate Matter Components in Detroit and Seattle. Environ Health Perspect. 2011 Apr;119(4):461-6. (Epub. Dec. 2010 ahead of print).

Spira-Cohen A, Chen LC, Kendall M, Lall R, Thurston GD. Personal Exposures to Traffic-Related Air Pollution and Acute Respiratory Health Among Bronx School Children with Asthma. Environ Health Perspect. 2011 Apr;119(4):559-65 (Epub. Dec. 2010 ahead of print)

Thurston G., Ito K, and Lall R. A Source Apportionment of U.S. Fine Particulate Matter Air Pollution. Atmospheric Environment. 2011Aug. 45(24): 3924-3936.

Brauer M, Amann M, Burnett RT, Cohen A, Dentener F, Ezzati M, Henderson SB, Krzyzanowski M, Martin RV, Van Dingenen R, van Donkelaar A, Thurston GD. (2012). Exposure Assessment for Estimation of the Global Burden of Disease Attributable to Outdoor Air Pollution. Environ Sci Technol. 2012 Jan 6. [Epub ahead of print] PMID: 22148428.

Restrepo CE, Simonoff JS, Thurston GD, Zimmerman R (2012) Asthma Hospital Admissions and Ambient Air Pollutant Concentrations in New York City. Journal of Environmental Protection, Vol. 3 No. 9, 2012, pp. 1102-1116.

Murray CJ, Vos T, Lozano R, et al. (2012) Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. Dec 15; 380(9859):2197-223.

Lim S, Vos T, Flaxman A, et al. (2012) A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. Dec 15;380(9859):2224-60.

Vos T, Flaxman AD, Naghavi M, Lozano R et al. (2012). Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet Dec 15; 380(9859): 2163-96.

Trasande L, Wong K, Roy A; Savitz D, and Thurston, G (2013) Exploring prenatal outdoor air pollution, birth outcomes and neonatal health care utilization in a nationally representative sample". J Expo Sci Environ Epidemiol. 2013 May-Jun;23(3):315-21. doi: 10.1038/jes.2012.124. Epub 2013 Jan 23.

Jerrett M, Burnett RT, Beckerman BS, Turner MC, Krewski D, Thurston G, Martin R, von Donkelaar A, Hughes E, Shi Y, Gapstur SM, Thun MJ, Pope CA 3rd. Spatial Analysis of Air Pollution and Mortality in California. Am J Respir Crit Care Med. 2013 Jun 27. [Epub ahead of print]

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REPORTS

Two

Response to ADOT Draft Environmental Impact Statement (DEIS) 1. Purpose and Need A. Need Based on Socioeconomic Factors by Kevin Kane dated July 24, 2013.

Code	Issue	Response

Code	Comment Document

RESPONSE TO ADOT DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
1. PURPOSE AND NEED
A. NEED BASED ON SOCIOECONOMIC FACTORS

Comments prepared by Kevin Kane[1] on behalf of PARC, et al.
July 24, 2013

Introduction

The Arizona Department of Transportation (ADOT) justifies the purpose and need for the construction of the South Mountain Freeway in Chapter 1 of the DEIS. Most of the conclusions rely on socioeconomic projections for the year 2035 conducted by the Maricopa Association of Governments (MAG) and the Arizona Department of Economic Security (DES).

19 The DEIS justification of the purpose and need for the Loop 202/South Mountain Freeway ("Freeway") is fatally flawed. This report demonstrates how the use of outdated input data, the extension of short-term trends to long-term growth, and the failure to account for uncertainty in future projections all contribute to the DEIS' flawed conclusions. If appropriate data, inputs, and interpretation of model results are used, it becomes evident that there is no purpose or need for the freeway based on socioeconomic factors.

Background: Establishing Need Based on Socioeconomic Factors

20 The DEIS relies on projections of future population, land use, employment, and housing produced by MAG, with additional Input from the DES. MAG projections are detailed in three reports: an original 2007 report[2], the documentation to support the projections in this report[3], and a 2009 update of the same model extending the projections an additional five years to 2035[4].

The MAG land use model allocates households and employment to locations in Maricopa County as of 2035 using a proprietary model called DRAM/EMPAL. Starting with current population, employment, land use, and an estimated growth rate, the model assigns people and jobs to available locations based on the location's attractiveness and the expected travel costs. The output is in the form of maps of projected land use at five-year intervals until 2035. The

[1] Kevin Kane is a PhD student and instructor at Arizona State University's School of Geographical Sciences and Urban Planning. His specialties include geographic analysis of city growth and Phoenix residential development patterns during the recession. A Curriculum Vita listing his qualifications can be found as Exhibit 1.
[2] Maricopa Association of Governments, *Socioeconomic Projections of Population, Housing, and Employment by Municipal Planning Area and Regional Analysis Zone.* Phoenix, 2007. http://www.azmag.gov/Documents/pdf/cms.resource/MAG_Projections-2007-MPA-and-RAZ-April-2007.pdf
[3] Maricopa Association of Governments, *Socioeconomic Projections Documentation.* Phoenix, 2007. http://www.azmag.gov/Documents/IS_2011-01-18_2007-Socioeconomic-Projections-Documentation.pdf

[4] Maricopa Association of Governments, *Extension of MAG 2007 Socioeconomic Projections to 2035 for Population, Housing, and Employment by Municipal Planning Area and Regional Analysis Zone.* Phoenix, 2009. http://www.azmag.gov/Documents/pdf/cms.resource/MAG_Projections-2007-to-2035-Extension.pdf

Code	Issue	Response
19	**Purpose and Need**	The Arizona Department of Transportation and Federal Highway Administration used appropriate data, inputs, and model results in assessing whether a purpose and need exist for the proposed action. Data, inputs, and model results were used throughout the environmental impact statement process. The Draft Environmental Impact Statement—particularly in Chapter 1, *Purpose and Need*, and Chapter 3, *Alternatives*—explains how the process of establishing a purpose and need for the proposed action followed nationally accepted guidance and policy. Examples of how the purpose and need analyses were applied include: · the section, *Context of the Purpose and Need in the EIS Process*, on page 1-1 · the sidebar, *"A proposed action's purpose and need documentation should:"*, on page 1-1 · the sidebar, *"How are MAG data used in the DEIS?"*, on page 1-4 · the sidebar, *"What is the MAG regional demand model?"*, on page 1-5 · the sidebar, *"How will the economic downturn affect growth rates?"*, on page 1-11 · the section, *Need Based on Regional Transportation demand and Existing and Projected Transportation System Capacity Deficiencies*, beginning on page 1-13 · the section, *Conclusions*, on page 1-21 · the section, *Reconfirm the Purpose and Need for the Proposed Action*, on page 3-1 · the section, *Responsiveness of the Proposed Freeway to Purpose and Need Criteria*, beginning on page 3-27 The models, methods, and assumptions used throughout the Draft Environmental Impact Statement account for reasonably foreseeable future conditions and dismiss speculative considerations. As an example, the Maricopa Association of Governments, as the federally designated regional transportation planning agency, is nationally recognized as a leader in air quality modeling and traffic modeling and forecasting. The models used account for the assumptions made in the comment. The Maricopa Association of Governments model and its application are "state of the practice" exceeding National Environmental Policy Act thresholds relative to sound science. The National Environmental Policy Act recognizes that: · data and projections can change throughout the process · it is important for the process to account for those changes as they become available · if a reasonable person could conclude that the updated information would lead to substantially different results, the decision-making attributes of the National Environmental Policy Act could be affected
20	**Purpose and Need**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available.

(Response 20 continues on next page)

Code	Comment Document
20	TransCAD traffic modeling software then uses these maps to estimate travel patterns and traffic volume based on the predicted location of households and businesses in 2035. Socioeconomic modeling is common practice among planning organizations, and it is often statutorily mandated. In fact, the MAG model adds several elements that are not present in earlier DRAM/EMPAL models such as integrating zoning restrictions and municipalities' land use plans to estimate how to allocate households and employment. However, several major flaws can exist in modeling techniques that often result in inaccurate or misleading projections of future travel need: - Models are extremely sensitive to input data - Models rely on extending short-term economic trends over long time periods - Models lack confidence intervals – they report only a single projected value, implying a much greater amount of certainty than is actually available In the case of the MAG model and the proposed Freeway extension, these flaws are so significant that they call the purpose and need for the project as established in the DEIS into question. <u>Use of Outdated Input Data</u> The first page of Chapter 1 of the DEIS states; "At the beginning of the EIS process, the need for a major transportation facility was reexamined to determine whether such a facility is still needed." However, the DEIS fails to re-evaluate the purpose and need as of its effective date of April 2013, instead relying on projections that were released to the public when the Freeway was proposed in 2004-2005. By ignoring the effects of the real estate collapse and global recession, which had profound effects on Phoenix's growth, ADOT fails to effectively analyze purpose and need. The original report[2] relies principally on base year 2005 data to project land use at five year increments until 2030. The updated report[4] extended these projections to 2035, but used the same data sources. The conclusions in the DEIS are based principally on: i. 2005 Special Census for population ii. 2000 Census housing unit count, updated to 2005 using estimated residential completions iii. 2005 employment iv. 2005 existing land use coverage The documentation of MAG's projections also states that, "the model takes into account short-term economic conditions, but not long-range employment trends"[5]. In other words, MAG admits that a shortcoming of the model it uses is the extension of short-range trends to long-range growth. Notwithstanding, MAG not only uses short-range trends to predict long-range growth, it fails to accurately identify short-range trends. 2010 Census data is currently available and should have been included in the DEIS. In Table 1, actual 2010 figures are used to check the accuracy of the projections found in the DEIS: [5] See Ref. 3, pg. 20 - 2 -

Code	Issue	Response
20 (cont.)		The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future. The Maricopa Association of Governments' control total for Maricopa County is consistent with the "ADOA—Medium Series" reported in Table 3 of the comment.

Code	Comment Document

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Table 1

TOTAL POPULATION	2005 Actual Population	2010 Projected Population	2005-2010 Projected Annual Growth Rate	2010 Actual Population	2005-2010 Actual Annual Growth Rate
Maricopa County	3,681,025	4,216,499	2.75%	3,817,117	0.73%
Study Area	1,309,001	1,606,100	4.18%	1,422,105	1.67%
Central West	512,836	615,229	3.71%	562,805	1.88%
South Central	82,434	84,976	0.61%	72,331	-2.58%
Southeast	588,349	681,077	2.97%	617,139	0.96%
Southwest Valley	125,382	224,818	12.39%	169,830	6.26%

As indicated in Table 1, MAG estimates of 2005-2010 annual population growth in the County and the Study Area as reflected in the DEIS are ***more than double*** the actual population growth experienced. Table 2 uses 2010 Census data to compare projected with actual growth in the number of housing units:

Table 2

TOTAL HOUSING UNITS	2005 Actual Units	2010 Projected Units	2005-2010 Projected Annual Growth Rate	2010 Actual Units	2005-2010 Actual Annual Growth Rate
Maricopa County	1,479,767	1,685,134	2.63%	1,639,279	2.07%
Study Area	471,484	589,087	4.55%	478,340	0.29%
Central West	173,619	213,113	4.18%	174,920	0.15%
South Central	33,389	34,134	0.44%	28,909	-2.84%
Southeast	223,968	264,045	3.35%	224,256	0.03%
Southwest Valley	40,508	77,795	13.94%	50,255	4.41%

While the MAG estimates of housing growth in Maricopa County are less overstated than population growth, the Study Area experienced virtually no housing growth over this period. Indeed, independent analysis of Phoenix from 2006-2012 indicates that three Phoenix neighborhoods within the Study Area – Ahwatukee Foothills, Estrella, and Laveen – are in the top five for decrease in residential completions over this period[6]. MAG estimates dramatically overstate growth in the study area and fail to accurately predict short-term growth.

Extension of Short-Term Economic Trends to Long-Range Growth

MAG admits that a shortcoming of the model it uses is the extension of short-range trends to long-range growth. Notwithstanding, MAG not only uses short-range trends to predict long-range growth, it fails to accurately identify short-range trends (as shown in Tables 1 and 2 above). The DEIS includes a lengthy discussion of the historical indicators of growth in Phoenix and a sidebar on page 1-11 that states, "the critical factors underlying these indicators remain unchanged" and further provides that short-term economic conditions are not relevant to long-term planning horizons. This conclusion conveniently omits structural economic changes resulting from the recent real estate collapse and global recession and is internally inconsistent.

[6] See Exhibit 2. Kane, K., et al., *Residential Development Revisited: Zoning, Neighborhood Effects, and the Recession in Phoenix, Arizona.* Urban Geography, Under Review.

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Although not acknowledged in the DEIS, the Arizona Department of Administration (ADOA) produced population estimates in 2012[7]. ADOA bases its projections on fertility, mortality, and net migration. ADOA projects populations by county for each year until 2050. Unlike the MAG model used in the DEIS, ADOA relies on the most recent available population count (2010 U.S. Census). Furthermore, by considering the fact that future fertility, mortality, and net migration in Maricopa County may vary, ADOA provides a range of possible future population counts by considering multiple possible input values. Thus, their population projections are reported as a Medium Series (the baseline estimate), alongside a Low Series and a High Series in order to reflect this variation.

Table 3 provides a comparison of various methods of projecting population in 2035. The DEIS figures (1) are compared with the various ADOA projections (3-5). In addition, we update the MAG/DEIS projections using actual 2010 census data, but using MAG's growth rate (2).

Table 3: Maricopa County Population Projections for 2035

	2035 Maricopa County Population Projections	
	SOURCE	ESTIMATE
(1)	MAG	6,545,000
(2)	MAG + 2010 US Census	5,925,065
(3)	ADOA - Low Series	5,222,906
(4)	ADOA - Medium Series	5,776,252
(5)	ADOA - High Series	6,232,206

**2010 US Census Actual Population: 3,817,117*

Table 3 indicates that there is a substantial range in possible outcomes when attempting to use short-range trends to predict long-range population growth. The original MAG projections (1) are far in excess of the updated figure using the same growth rate (2), indicating that using outdated input data inflates estimates. Furthermore, the original MAG projections are above all three ADOA estimates, indicating that the DEIS uses a more aggressive growth rate than even the highest growth population scenario predicted by the ADOA.

ADOA figures of county-wide population growth represent an improvement given their use of newer data and providing a range of values, though they do not provide data for population in the Freeway Study Area or include projections of housing units or Vehicle Miles Travelled (VMT). Using Geographic Information System (GIS) software, we are able to demonstrate the impact of using outdated input data on population projections for the Freeway Study Area and its component regions. We again update MAG/DEIS projections using 2010 U.S. Census data in combination with their predicted growth rates. This is done for population (Table 4) and housing units (Table 5).

[7] See Exhibit 7. Arizona Department of Administration, Office of Employment and Population Statistics, *Arizona State and County Population Projections 2012-2050: Methodology Report,* Phoenix, 7 December 2012. http://www.workforce.az.gov/population-projections.aspx

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Table 4: MAG Population Projections, Updated with 2010 U.S. Census Data

TOTAL POPULATION	2010 Projected	2010 Actual	2035 Projected	2010-2035 Projected Annual Growth Rate	2035 Projected - Using 2010 Actual
Maricopa County	4,216,499	3,817,117	6,545,000	1.77%	5,925,065
Study Area	*1,606,100*	*1,422,105*	*2,577,760*	1.91%	2,282,452
Central West	615,229	562,805	809,191	1.10%	740,239
South Central	84,976	72,331	88,589	0.17%	75,406
Southeast	681,077	617,139	871,138	0.99%	789,357
Southwest Valley	224,818	169,830	808,842	5.25%	611,008

Table 5: MAG Housing Unit Projections, Updated with 2010 U.S. Census Data

TOTAL HOUSING UNITS	2010 Projected	2010 Actual	2035 Projected	2010-2035 Projected Annual Growth Rate	2035 Projected - Using 2010 Actual
Maricopa County	1,685,134	1,639,279	2,676,294	1.87%	2,603,468
Study Area	589,087	478,340	983,560	2.07%	798,653
Central West	213,113	174,920	292,760	1.28%	240,293
South Central	34,134	28,909	35,669	0.18%	30,209
Southeast	264,045	224,256	344,570	1.07%	292,647
Southwest Valley	77,795	50,255	310,561	5.69%	200,620

Tables 4 and 5 indicate that long range growth estimates in parts of the Study Area are especially sensitive to input data. For example, even if the dramatic 5.69% annual growth rate in Southwest Valley housing units were to continue, the fact that the actual number of housing units in 2010 was far less than the MAG report projected it would be for that year has a very significant impact on 2035 projections (200,620 versus 310,561).

These updated projections of population growth highlight the problems in extending short-range growth rates to long-term trends. The problem is magnified when short-range growth rates are faulty, as is the case with the projections used in the DEIS. If the information relied upon in the DEIS is unable to accurately predict short-range growth, the same methodology should not be relied upon to justify the purpose and need for major transportation infrastructure based on socioeconomic factors. This is especially true given the tendency to significantly overstate growth in the DEIS.

21

Uncertainty of Estimates of Population and Vehicle Miles Travelled (VMT)

The final major shortcoming in combined land use – transportation projection is the failure to integrate uncertainty into projections. Municipal projections of population, housing, employment, and vehicle miles travelled rarely include a confidence interval based on generally accepted statistical practices, which is necessary in order for a policymaker to understand the likelihood of particular future scenarios. While some studies allude to the notion there is a variety of potential future outcomes, such as the low, medium and high estimates in the ADOA population projections, the projections contained in the DEIS are presented as certain outcomes.

- 5 -

Code	Issue	Response
21	**Purpose and Need**	The study used state-of-the-practice, scientific community methods and similarly accepted methods, including the use of a standard input-output economic model and of assumptions based on traffic data and projections. The analysis is not required to project ranges, and the results are reasonably foreseeable based on what data are provided from the U.S. Environmental Protection Agency-approved Maricopa Association of Governments model as well as local plans. Further, methods, assumptions, and data were developed early in the environmental impact statement process and peer-reviewed by the Federal Highway Administration, the Arizona Department of Transportation, and other federal, state, and local agencies. Peer reviewers concluded that the methods, assumptions, and data are appropriate. Potential factors that could influence changes in the analysis and study findings are listed on page 4-1 of the Final Environmental Impact Statement.

Code	Comment Document
21	Basic statistical techniques can provide the policymaker with not only a range of possible values, but also a percentage that expresses the statistical likelihood of each outcome. Furthermore, a common critique of ADOT is that follow-up plans have not been provided for previous highway projects in order to evaluate the accuracy of past projections. A 2006 review of 183 highway projects in major world cities shows a dramatic tendency of agencies to overstate future demand. Half of all projects overstated traffic demand by more than 20%, and one-fourth of all projects overstated traffic demand by more than 40%[8].
22	The uncertainty of traffic projections for toll roads has also been used by credit ratings agencies which finance projects based on expected toll revenue. A Standard & Poor's review of 104 tollway projects finds substantial "optimism bias" – on average, projects over-projected travel demand in the first five years by more than 20%. The same study analyzed the traffic forecasting used in a confidential sample of these projects, finding that projections of traffic volumes 30 years into the future by different consultants varied by 204% based on modeling techniques and assumptions used[9].
21	One study empirically modeled the uncertainty stemming from the use of an earlier version of the DRAM/EMPAL land use-transportation model, the same basic model used by MAG. While the outcome of this study is unique to Austin, Texas, researchers ran the model hundreds of times to create simulated confidence intervals and found that, for projections 20 years into the future, errors set around a 70% confidence interval were: - 38% for peak-period VMT - 50% for residential density - 37% for employment density The projected VMT in Austin, Texas generated by DRAM/EMPAL was 6 million/day, though researchers could only be 70% certain that actual VMT would be between 3.7 million and 8.4 million[10]. While the Austin, Texas results are unique to that city, Table 5 compares the manner in which these results were reported to the DEIS 2035 estimates for Maricopa County. Because it is not possible to calculate a confidence interval using available data, the missing values below indicate what such a report would look like. Statistically, it would be possible to say that there is a certain percent (15%, in this example) chance of 2035 VMT being above the upper bound or below the lower bound. Meanwhile, wide range in projections of the Austin, Texas study illustrates that there is a fairly strong probability that future VMT is far greater or far lower than anticipated, including the very real possibility of a decrease in VMT.

[8] See Exhibit 3. Flyvbjerg, B., M.K.S. Holm, and S.L. Buhl, *How (in)accurate are demand forecasts in public works projects?* Journal of the American Planning Association, 2005. **71**(2): p. 131.
[9] See Exhibit 4. Bain, R., *Error and optimism bias in toll road traffic forecasts.* Transportation, 2009. **36**(5): p. 469-482.
[10] See Exhibit 5. Krishnamurthy, S. and K.M. Kockelman, *Propogation of Uncertainty in Transportation-Land Use Models: An Investigation of DRAM-EMPAL and UTPP Predictions in Austin, Texas.* Transporation Research Record, 2003. **1831**: p. 219-229.

Code	Issue	Response
22	**Alternatives**	The Draft Environmental Impact Statement does not consider toll roads as an alternative warranting detailed study in the Draft Environmental Impact Statement and as such, a comparison of performance between toll roads and the proposed action is inappropriate. The study used state-of-the-practice, scientific community methods and similarly accepted methods, including the use of a standard input-output economic model and of assumptions based on traffic data and projections. The analysis is not required to project ranges, and the results are reasonably foreseeable based on what data are provided from the U.S. Environmental Protection Agency-approved Maricopa Association of Governments model as well as local plans. Further, methods, assumptions, and data were developed early in the environmental impact statement process and peer-reviewed by the Federal Highway Administration, the Arizona Department of Transportation, and other federal, state, and local agencies. Peer reviewers concluded that the methods, assumptions, and data are appropriate. Potential factors that could influence changes in the analysis and study findings are listed on page 4-1 of the Final Environmental Impact Statement.

Code	Comment Document

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Table 6

Projected VMT	% Chance Below Lower Bound	Projected Lower Bound	Projected Value	Projected Upper Bound	% Chance Above Upper Bound
Austin, Texas*	15%	3,700,000	6,000,000	8,400,000	15%
Maricopa County**	15%	???	185,000,000	???	15%
Freeway Study Area**	15%	???	42,000,000	???	15%

Source: * Krishnamurthy and Kockelman 2003, **DEIS

By providing only a single value, the DEIS projections are misleading in suggesting that the only possible outcome is a substantial increase in VMT. By failing to provide a confidence interval, the DEIS projections provide only minimal guidance to policymakers about the likelihood of possible future outcomes.

Additionally, DEIS statements indicating that the "factors underlying these indicators" remain unchanged, particularly in the case of VMT, are inaccurate. Recent studies have indicated long-term trends away from driving as a primary means of commuting, citing telecommuting, online shopping, increased fuel prices, and most importantly a generational shift away from vehicle ownership. These changes are not likely to be reflected in MAG modeling, especially trends that have emerged in the last several years since the model was last updated. This would include any number of changes due to the global recession which would almost certainly tend to decrease VMT. An independent report uses US DOT data to show that, despite continual projected increases by planning agencies, VMT per capita has actually decreased by 1.0% per year since 2004[11].

These strong national and regional trends would indicate that, assuming arguendo, an increase in population, VMT is more likely to decrease than increase. Decreased VMT per capita combined with the DEIS' overstated population growth projections means that there is a very high likelihood that future VMT will be well below the projected figures found in the DEIS.

Conclusion

23

In effect, the modeling relied on by the DEIS to justify purpose and need based on socioeconomic factors extends aggressive, pre-recession growth rates decades into the future while ignoring recent data that reflects deep-seated regional and national structural changes that have become apparent in the last several years. MAG's modeling, which is relied upon in the DEIS to establish the purpose and need for the Freeway expansion fails to accurately identify short-range growth and uses outdated data to estimate long-range growth. It reports its projections in a manner that indicates that they are certain to happen, which is not supported by the data and modeling techniques used. Using accurate data to objectively evaluate purpose and need based on socioeconomic factors supports the no build option.

[11] See Exhibit 6. Dutzik, T. and P. Baxandall, *A New Direction: Our Changing Relationship with Driving and the Implications for America's Future*, 2013, U.S. PIRG Education Fund Frontier Group.

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Code	Issue	Response
23	**Purpose and Need**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future.

Code	Comment Document

EXHIBIT 1

24

KEVIN KANE
Curriculum Vitae

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Thomson Reuters (Chicago), Senior Consultant 2009 – 2011
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PUBLICATIONS – IN PRESS

York, Abigail, Joseph Tuccillo, Christopher Boone, Bob Bolin, Lauren Gentile, Briar Schoon, and **Kevin Kane.** In Press. Zoning and Land Use: A Tale of Incompatibility and Environmental Injustice in Early Phoenix. *Journal of Urban Affairs.*

PUBLICATIONS – UNDER REVIEW

Kane, Kevin, Abigail M. York, Joseph Tuccillo, Lauren Gentile, and Yun Ouyang. Residential Development Revisited: Zoning, Local Effects, and the Recession in Phoenix, Arizona.

Ó hUallacháin, B. and **Kevin Kane.** Do Inventors in Less Inventive Regions Substitute Networks for Thin Agglomerative Economies of Scale?

Kane, Kevin, Abigail M. York, Joseph Tuccillo, Lauren Gentile, and Yun Ouyang. A Spatio-Temporal View of Historical Growth in Downtown Phoenix, Arizona.

CONFERENCE PRESENTATIONS

Kane, Kevin and Rachel Weber. Street Lights or Subsidies? Municipal Investment and Property Tax Appreciation in Chicago's Tax Increment Financing Districts. *Meeting of the Association of American Geographers*, Los Angeles, California. April 9-13, 2013.

Tuccillo, Joseph, **Kevin Kane**, Yun Ouyang, and Abigail York. Urban Land-Use Institutions and Parcel-Scale Change in Phoenix, Arizona, 1915-2002. *Long-Term Ecological Research All Scientists' Meeting*. Estes Park, Colorado, September 9-13, 2012. (poster awarded honorable mention at CAP-LTER annual meeting, January 2013)

Ó hUallacháin, B. and **Kevin Kane**. Interregional Dynamics of Emerging Technologies in the United States. *Meeting of the Association of American Geographers*, New York City, New York. February 23-28, 2012.

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SCHOLARSHIPS AND AWARDS

Central Arizona-Phoenix Long-Term Ecological Research (CAP-LTER) Graduate Research Funding Grant	Spring 2013
CAP-LTER Poster Symposium – Honorable Mention	Spring 2013
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Boy Scouts of America, Eagle Scout	1998-2005

THESIS

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Association of American Geographers	2011 – Present

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EXHIBIT 2

RESIDENTIAL DEVELOPMENT REVISITED: ZONING, LOCAL EFFECTS, AND THE RECESSION IN PHOENIX, ARIZONA[1]

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Abstract: Where people choose to live and the type of city their decisions create has formed the basis of decades of scholarly endeavor. While the typical notion of a tradeoff between access and space remains important, sprawl, gentrification, polycentricity, land use institutions (zoning), and the composition of the immediately surrounding area (local effects) can all impact residential choice. We propose a logistic regression model to investigate determinants of single-family residential development at the parcel-level in Phoenix, Arizona during the 2002-2006 real estate boom and the 2006-2012 global recession. Results show a preference for cheaper land and agricultural conversion farther from urban subcenters during the boom, while zoning, though relatively inconsistent with actual land use, is an indicator of future development. Development trajectories change dramatically during the bust, disproportionately impacting agricultural conversions and previously fast-growing areas while highlighting the depth of impact that the financial environment has on land use change. [Key words: residential location, land use policy, urban sprawl, recession]

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Code	Issue	Response
25		Abstract reviewed.

Code	Comment Document

26

How (In)accurate Are Demand Forecasts in Public Works Projects?: The Case of Transportation
Flyvbjerg, Bent;Skamris Holm, Mette K;Buhl, SÅ ?ren L
American Planning Association. Journal of the American Planning Association; Spring 2005; 71, 2;
ABI/INFORM Complete
pg. 131

EXHIBIT 3

How (In)accurate Are Demand Forecasts in Public Works Projects?

The Case of Transportation

Bent Flyvbjerg, Mette K. Skamris Holm, and Søren L. Buhl

This article presents results from the first statistically significant study of traffic forecasts in transportation infrastructure projects. The sample used is the largest of its kind, covering 210 projects in 14 nations worth U.S.$59 billion. The study shows with very high statistical significance that forecasters generally do a poor job of estimating the demand for transportation infrastructure projects. For 9 out of 10 rail projects, passenger forecasts are overestimated; the average overestimation is 106%. For half of all road projects, the difference between actual and forecasted traffic is more than ±20%. The result is substantial financial risks, which are typically ignored or downplayed by planners and decision makers to the detriment of social and economic welfare. Our data also show that forecasts have not become more accurate over the 30-year period studied, despite claims to the contrary by forecasters. The causes of inaccuracy in forecasts are different for rail and road projects, with political causes playing a larger role for rail than for road. The cure is transparency, accountability, and new forecasting methods. The challenge is to change the governance structures for forecasting and project development. Our article shows how planners may help achieve this.

Bent Flyvbjerg is a professor of planning at Aalborg University, Denmark. He is founder and director of the university's research program on large-scale infrastructure planning. His latest books are *Megaprojects and Risk* (Cambridge University Press, 2003, with Nils Bruzelius and Werner Rothengatter), *Making Social Science Matter* (Cambridge University Press, 2001), and *Rationality and Power* (University of Chicago Press, 1998). **Mette K. Skamris Holm** is a former assistant professor of planning at Aalborg University. She now works as a planner with Aalborg Municipality. **Søren L. Buhl** is an associate professor of mathematics at Aalborg University. He is associate statistician with the university's research program on large-scale infrastructure planning.

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Despite the enormous sums of money being spent on transportation infrastructure, surprisingly little systematic knowledge exists about the costs, benefits, and risks involved. The literature lacks statistically valid answers to the central and self-evident question of whether transportation infrastructure projects perform as forecasted. When a project underperforms, this is often explained away as an isolated instance of unfortunate circumstance; it is typically not seen as the particular expression of a general pattern of underperformance in transportation infrastructure projects. Because knowledge is wanting in this area of research, until now it has been impossible to validly refute or confirm whether underperformance is the exception or the rule.

In three previous articles (Flyvbjerg, Holm, et al., 2002, 2003, 2004), we answered the question of project performance as regards costs and cost-related risks. We found that projects do not perform as forecasted in terms of costs: almost 9 out of 10 projects fall victim to significant cost overrun. We also investigated the causes and cures of such inaccurate cost projections (see Flyvbjerg, Bruzelius, et al., 2003). In this article we focus on the benefit side of investments and answer the question of whether projects perform as forecasted in terms of demand and revenue risks. We compare forecasted demand with actual demand for a large number of projects. Knowledge about cost risk, benefit risk, and compound risk is crucial to making informed decisions about projects. This is not to say that costs and benefits are or should be the only basis for deciding whether to build. Clearly, forms of rationality other than economic rationality are at work in most infrastructure projects and are balanced in the broader frame of public decision making. But the costs and benefits of infrastructure projects often run in the hundreds of millions of dollars, with risks correspondingly high. Without knowledge of such risks, decisions are likely to be flawed.

As pointed out by Pickrell (1990) and Richmond (1998), estimates of the financial viability of projects are heavily dependent on the accuracy of traffic demand forecasts. Such forecasts are also the basis for socioeconomic and environmental appraisal of transportation infrastructure projects. According to the experiences gained with the accuracy of demand forecasting in the transportation sector, covering traffic volumes, spatial traffic distribution, and distribution between transportation modes, there is evidence that demand forecasting—like cost forecasting, and despite all scientific progress in modeling—is a major source of

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26		Article excerpt reviewed.

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EXHIBIT 4

Transportation (2009) 36:469–482
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27

Error and optimism bias in toll road traffic forecasts

Robert Bain

Published online: 28 February 2009
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Abstract Traffic forecasts are employed in the toll road sector, inter alia, by private sector investors to gauge the bankability of candidate investment projects. Although much is written in the literature about the theory and practice of traffic forecasting, surprisingly little attention has been paid to the predictive accuracy of traffic forecasting models. This paper addresses that shortcoming by reporting the results from the largest study of toll road forecasting performance ever conducted. The author had access to commercial-in-confidence documentation released to project financiers and, over a 4-year period, compiled a database of predicted and actual traffic usage for over 100 international, privately financed toll road projects. The findings suggest that toll road traffic forecasts are characterised by large errors and considerable optimism bias. As a result, financial engineers need to ensure that transaction structuring remains flexible and retains liquidity such that material departures from traffic expectations can be accommodated.

Keywords Toll road · Traffic forecast · Optimism bias · Forecasting error

Introduction

The global trend for investor-financed toll road concessions brings traffic forecasts—and their predictive accuracy—into sharp relief. All too often, aggressive financial structuring leaves little room for traffic usage to depart from expectations before projects experience distress and debt repayment obligations become threatened. Thus the accuracy of traffic forecasts is of considerable interest to practitioners in the toll road sector yet, until recently, very little was published in the literature about the predictive performance of traffic and revenue forecasting models. That literature is reviewed here.

The review starts by examining an early, small-scale study of toll road traffic forecasting accuracy from the USA. Building on and extending this analysis, the majority of the paper is devoted to recent toll road traffic forecasting research conducted by the

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27		Article excerpt reviewed.

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EXHIBIT 5

Propagation of Uncertainty in Transportation-Land Use Models: An Investigation of DRAM-EMPAL and UTPP Predictions in Austin, Texas

by

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The following paper is a pre-print and the final publication can be found in *Transportation Research Record* No. 1831: 219-229, December 2003.
Presented at the 82nd Annual Meeting of the Transportation Research Board, January 2003

ABSTRACT

This work examines the propagation of uncertainty in outputs of a standard integrated model of transportation and land use. Austin-calibrated DRAM-EMPAL predictions of residence and work locations are used as inputs to a UTPP-type four-step travel demand model (TDM), and the resulting travel times are fed forward into the future period's land use models. Covariance in inputs (including model parameters and demographic variables) was accommodated through multivariate Monte Carlo sampling of 200 scenarios. Variances in land use and travel predictions were then analyzed, over time, and as a function of input values. Results indicate that output variations were most sensitive to the exponent of the link performance function, the split of trips between peak and off-peak and several trip generation & attraction rates. 20 years in the future, final uncertainty levels (as measured by coefficients of variation) due solely to input and parameter estimation errors are on the order of 38% for total regional peak-period VMT, 45% for peak-period flows, and 50% and 37% for residential and employment densities, respectively. This means that central point estimates of key model outputs are very likely (more than 30%) to fall 38% to 50% below or above the mean value. In the Austin example, 15% of the 200 region's simulated peak-period VMT estimates fell below 3.7 million miles (per day) and 15%

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exceeded 8.4 million miles. Such substantial variation is due solely to standard model parameter and input uncertainties. Other uncertainty about the future and human behavior also exists and will add further variation.

Keywords
Uncertainty propagation, integrated transportation-land use model, travel demand model

2

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29	EXHIBIT 6

A New Direction

Our Changing Relationship with Driving and the Implications for America's Future

U.S. PIRG Education Fund
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Spring 2013

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29		Article reviewed.

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Executive Summary

The Driving Boom—a six decade-long period of steady increases in per-capita driving in the United States—is over.

Americans drive fewer total miles today than we did eight years ago, and fewer per person than we did at the end of Bill Clinton's first term. The unique combination of conditions that fueled the Driving Boom—from cheap gas prices to the rapid expansion of the workforce during the Baby Boom generation—no longer exists. Meanwhile, a new generation—the Millennials—is demanding a new American Dream less dependent on driving.

Transportation policy in the United States, however, remains stuck in the past. Official forecasts of future vehicle travel continue to assume steady increases in driving, despite the experience of the past decade. Those forecasts are used to justify spending vast sums on new and expanded highways, even as existing roads and bridges are neglected. Elements of a more balanced transportation system—from transit systems to bike lanes—lack crucial investment as powerful interests battle to maintain their piece of a shrinking transportation funding pie.

The time has come for America to hit the "reset" button on transportation policy—replacing the policy infrastructure of the Driving Boom years with a more efficient, flexible and nimble system that is better able to meet the transportation needs of the 21st century.

The Driving Boom is over:

- Americans drove more miles nearly every year between the end of World War II and 2004. (See Figure ES-1, next page.) By the end of this period of rapid increases in per-capita driving—which we call the "Driving Boom"—the average American was driving 85 percent more miles each year than in 1970.
- Americans drive no more miles in total today than we did in 2004 and no more per person than we did in 1996.
- On the other hand, Americans took nearly 10 percent more trips via public transportation in 2011 than we did in 2005. The nation also saw increases in commuting by bike and on foot.

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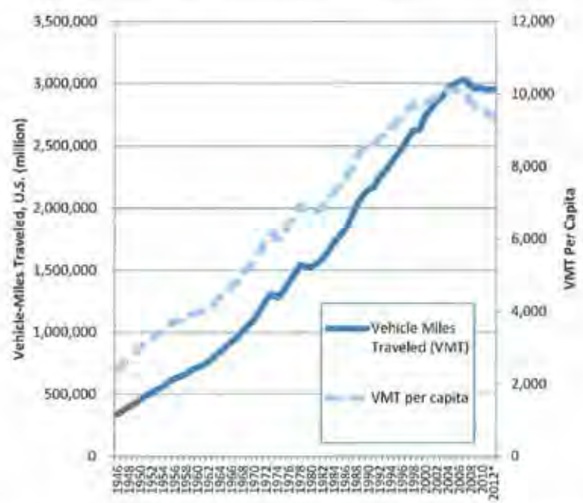
Figure ES-1. Total and Per-Capita Vehicle-Miles Traveled, U.S.



* 2012 data from U.S. Department of Transportation's (U.S. DOT) *Traffic Volume Trends* series of reports; data from previous years from U.S. DOT's *Highway Statistics* series of reports.

- A return to the steady growth in per-capita driving that characterized the Driving Boom years is unlikely given the aging of the Baby Boom generation, the projected continuation of high gas prices, anticipated reductions in the percentage of Americans in the labor force, and the peaking of demand for vehicles and driver's licenses and the amount of time Americans are willing to spend in travel.

The Millennial generation has led the recent change in transportation trends—driving significantly less than previous generations of young Americans. Millennials are already the largest generation in the United States and their choices will play a crucial role in determining future transportation infrastructure needs.

- The Millennials (people born between 1983 and 2000) are now the largest generation in the United States. By 2030, Millennials will be far and away the largest group in the peak driving age 35-to-54 year old demographic, and will continue as such through 2040.

2 A New Direction

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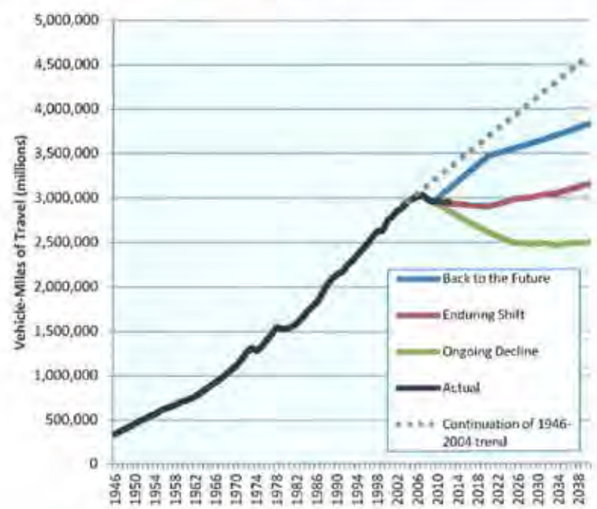
Figure ES-2. Aggregate Vehicle-Miles Traveled in the United States under Several Scenarios of Future Travel Growth, 1946-2040



- Young people aged 16 to 34 drove 23 percent fewer miles on average in 2009 than they did in 2001—a greater decline in driving than any other age group. The severe economic recession was likely responsible for some of the decline, but not all.
- Millennials are more likely to want to live in urban and walkable neighborhoods and are more open to non-driving forms of transportation than older Americans. They are also the first generation to fully embrace mobile Internet-connected technologies, which are rapidly spawning new transportation options and shifting the way young Americans relate to one another, creating new avenues for living connected, vibrant lives that are less reliant on driving.
- If the Millennial-led decline in per-capita driving continues for another dozen years, even at half the annual rate of the 2001-2009 period (illustrated by the *Ongoing Decline* scenario in Figure ES-2 above), total vehicle travel in the United States could remain well below its 2007 peak through at least 2040—despite a 21 percent increase in population. If

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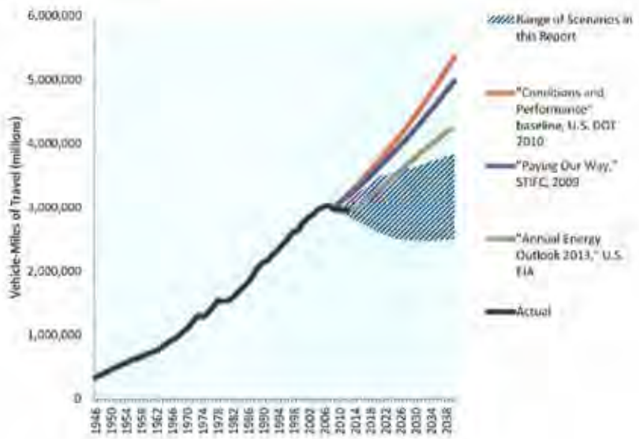
Millennials retain their current propensity to drive less as they age and future generations follow (*Enduring Shift*), driving could increase by only 7 percent by 2040. If, unexpectedly, Millennials were to revert to the driving patterns of previous generations (*Back to the Future*), total driving could grow by as much as 24 percent by 2040.

- All three of these scenarios yield far less driving than if the Driving Boom had continued past 2004. Driving declines more dramatic than any of these scenarios would result if future per-capita driving were to fall at a rate near that of recent years or if annual per-capita reductions continue through 2040.
- Regardless of which scenario proves true, the amount of driving in the United States in 2040 is likely to be lower than is assumed in recent government forecasts. This raises the question of whether changing trends in driving are being adequately factored into public policy. (See Figure ES-3.)

The recent reduction in driving has already delivered important benefits for

Figure ES-3. Recent Official Forecasts of Vehicle Travel Compared to Range of Scenarios, 1946-2040



U.S. DOT = U.S. Department of Transportation
STIFC = Surface Transportation Infrastructure Financing Commission
U.S. EIA = U.S. Energy Information Administration

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the nation, while raising new challenges. Future driving trends will have major implications for transportation policy and other aspects of American life.

- **Traffic congestion has fallen.** According to data from the Texas Transportation Institute, Americans spent 421 million fewer hours stuck in traffic in 2011 than they did in 2005. Further reductions in driving could lead to additional easing of congestion without massive investments in new highway capacity, as long as roads are maintained in a state of good repair.

- **America is less dependent on oil.** In 2011, gasoline consumption for transportation hit a 10-year low. Further reductions in driving consistent with the *Ongoing Decline* scenario—coupled with expected vehicle fuel economy improvements—could result in the nation using half as much gasoline or other fuels in our cars and trucks by 2040 as we use today.

- **Our roads are getting less use … but the gas tax is bringing in less income.** Reduced vehicle travel (particularly in large trucks) reduces the wear and tear on our nation's roads, reducing maintenance needs. Reduced driving, however, also reduces the amount of revenue brought in by the already-strained gasoline tax.

The recent reduction in driving and embrace of less auto-dependent ways of living by Millennials and others creates a golden opportunity for America to adopt transportation policies that use resources more efficiently, preserve our existing infrastructure, and provide support for Americans seeking alternatives to car travel.

A new vision for transportation policy should:

- **Plan for uncertainty.** With future driving patterns uncertain, federal, state and local transportation officials should evaluate the costs and benefits of all transportation projects based on several scenarios of future demand for driving. Decision-makers should also prioritize those projects that are most likely to deliver benefits under a range of future circumstances.

- **Support the Millennials and other Americans in their desire to drive less.** Federal, state and local policies should help create the conditions under which Americans can fulfill their desire to drive less. Increasing investments in public transportation, bicycling and pedestrian infrastructure and intercity rail—especially when coupled with regulatory changes to enable the development of walkable neighborhoods—can help provide more Americans with a broader range of transportation options.

- **Revisit plans for new or expanded highways.** Many highway projects currently awaiting funding were initially conceived of decades ago and proposed based on traffic projections made before the recent decline in driving. Local, state and federal governments should revisit the need for these "legacy projects" and ensure that proposals for new or expanded highways are still a priority in light of recent travel trends.

- **Refocus the federal role.** The federal government should adopt a more strategic role in transportation policy, focusing resources on key priorities (such as repair and maintenance of existing infrastructure and the expansion of transportation options) and evaluating projects competitively on the basis of their benefits to society.

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- **Use transportation revenue where it makes the most sense.** Transportation spending decisions should be based on overall priorities and a rigorous evaluation of project costs and benefits—not on the source of the revenue.
- **Do our homework.** Federal and state governments should invest in research to evaluate the accuracy and usefulness of transportation models and better understand changing transportation trends in the post-Driving Boom era.

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30	EXHIBIT 7 ARIZONA DEPARTMENT OF ADMINISTRATION Office of Employment and Population Statistics Arizona State and County Population Projections, 2012-2050: Methodology Report December 7, 2012

Code	Issue	Response
30		Report reviewed.

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1. BACKGROUND

Arizona State and County Population Projections (2012 edition) are prepared in accordance with Sections 1, 4 and 5 of Executive Order 2011-04 signed by Governor Janice Brewer:

> Section 1: The Arizona Department of Administration (ADOA) shall be the agency designated to produce the official population estimates and projections for the State of Arizona.
>
> Section 4: ADOA shall produce the official population projections for each year for a minimum of the next 25-year period. The projections shall be dated as of July 1 and shall include projections for the State, its counties, its incorporated jurisdictions, and the unincorporated balance of each county.
>
> Section 5: ADOA shall release the State and county projections as soon as possible following the release of detailed decennial census data by the U.S. Department of Commerce, Bureau of the Census, but no later than December 31 in years ending in 2. These projections shall be updated twice at three year intervals, prior to the release of the next decennial census data and no later than December 31 in the years ending in 5 and 8.

Executive Order 2011-04 also directs the use of these projections:

> Section 10: Population estimates and projections produced by ADOA in accordance with this Executive Order shall be used by all State agencies for all purposes, including those required by federal law, which necessitates the development of population estimates or population projections.

2. METHODOLOGY

The Arizona Population Projections Model is a Cohort-Component model. This model is used to project population for 10 race/ethnic groups in 16 geographical areas (Arizona state and its 15 counties) over a projection period of 40 years. The 10 race/ethnic groups are the combinations of five race groups by Hispanic origin. The five race groups are: White, Black, Native American, Asian (including Native Hawaiian and Pacific Islander), and Other (including two or more races). Each of these races is delineated into Hispanic origin and non-Hispanic origin to make a total of 10 race/ethnic groups.

A component methodology accounts for each aspect of demographic change (fertility, mortality, and migration). These components, each projected separately, are combined to produce population projections by age, sex, race, and ethnic group.

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REPORTS

Three

Comments by Don't Waste Arizona, Inc. President,
Stephen Brittle

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The following comments on the DEIS for the South Mountain Freeway were prepared for DWAZ, PARC, et al. . . .

31 **General Comments:**

The 4f analysis is done wrong, and uses old and outdated information and data.

32 There is no analysis of having alternative to the freeway in the form of a road connecting Laveen to the I-10 west for the purposes of giving Laveen area residents a better access to the I-10. This would actually serve Laveen area residents' needs better because it would eliminate most of the traffic from trucks.

Too many of the details are left to the "design phase" when they should be examined at this stage of the process.

The intersection with I-10 west near 59rh Avenue fails in many ways. What about the severe traffic congestion that already occurs there during rush hour, as well as pollution impacts? Where is the current data showing traffic patterns?

Why haven't there been any new concurrences since 2008?

Have there been any new agreements since 2005-2007?

The following are comments related to impacts to air pollution and air quality:

Truck Traffic from Mexico and High-Sulfur Diesel; Truck Bypass Negated

The modeling of air pollution impacts in the DEIS do not include the additional air pollution from truck traffic, and also from truck traffic originating in Mexico that would be using high sulfur diesel fuel that has been banned in the US. The DEIS briefly mentions the issue, but it claims it has no way to know what impact the change in the bypass route would be. That is patently absurd and unacceptable. The number of trucks coming over the border from Mexico is on record, and even if these trucks have hazardous materials in their cargoes is on record. HDR and ADOT simply have to get the

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31	**Section 4(f) and Section 6(f)**	The Arizona Department of Transportation and Federal Highway Administration followed all requirements of Section 4(f) of the Department of Transportation Act that are found in 49 United States Code § 303. The methodology employed follows 23 Code of Federal Regulations § 774 and standard industry practice. Under the National Environmental Policy Act, it is common for new data to avail itself and to therefore update the environmental impact statement as new data does become available. Reviewers have noted that newer trails in the South Mountains (Bursera and Pyramid Trails) were not discussed in the Draft Environmental Impact Statement. This information has been considered, investigated, and the effects of the proposed freeway on these facilities has been addressed (see Final Environmental Impact Statement, page 5-9). This new information has not changed the findings of the Section 4(f) analysis in the Draft Environmental Impact Statement. A thorough feasible and prudent avoidance analysis of the South Mountains was conducted as presented in Chapter 5 of the Final Environmental Impact Statement and concluded avoidance to the direct use of the resource was not feasible and prudent. In support of this response, consider the following review from the U.S. Department of the Interior on the Draft Environmental Impact Statement comment: "Following our review of the Section 4(f) Evaluation, we concur that there is no feasible or prudent alternative to the Preferred Alternative selected in the document, and that all measures have been taken to minimize harm to these resources." The complete letter can be found in Appendix 7, Volume III, on page B4 of the Final Environmental Impact Statement. The Section 4(f) analysis for the proposed action was properly performed.
32	**Purpose and Need**	The establishment of the purpose and need for the proposed action must follow 40 Code of Federal Regulations 1502.13. The comment reflects a concern about need related to west valley travel. Chapter 1, *Purpose and Need*, describes a regional transportation problem warranting a transportation solution. The alternatives considered and evaluated in Chapter 3, *Alternatives*, consider a comprehensive set of alternatives and take into account the need as presented in Chapter 1. During the modal screening process (see text beginning on page 3-3 of the Final Environmental Impact Statement), expansion of the arterial street system was considered. The reasons this alternative was eliminated are presented in Table 3-2 on page 3-5 of the Final Environmental Impact Statement. According to 23 Code of Federal Regulations § 771.111(f), "the action evaluated in the environmental impact statement must connect logical termini and be of sufficient length to address environmental matters on a broad scope ..." The proposed action should satisfy the project need and should be considered in the context of the local area's socioeconomics and topography, the future travel demand, and other infrastructure improvements in the area. A partial freeway from Interstate 10 (Papago Freeway) to Laveen Village is not feasible because it would not meet the proposed freeway's identified purpose and need.

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33	**Design**	Federal Highway Administration Order 6640.1A *FHWA Policy on Permissible Project Related Activities During the National Environmental Protection Agency Process* clarifies the Federal Highway Administration's policy regarding the permissible project-related activities that may be advanced prior to the conclusion of the National Environmental Policy Act process. Preliminary design may occur to define the general project location and design concepts. It includes, but is not limited to, preliminary engineering and other activities and analyses, such as environmental assessments, topographic surveys, metes and bounds surveys, geotechnical investigations, hydrologic analysis, hydraulic analysis, utility engineering, traffic studies, financial plans, revenue estimates, hazardous materials assessments, general estimates of the types and quantities of materials, and other work needed to establish parameters for the final design. Prior to completion of the National Environmental Policy Act review process, any such preliminary engineering and other activities and analyses must not materially affect the objective consideration of alternatives in the National Environmental Policy Act review process. The current level of engineering is used to determine the limits of environmental and construction impacts that would be attributable to the proposed freeway. Location and the profile of the freeway would be evaluated to minimize potential changes to the freeway as the design level would progress. The current level of engineering is an accepted industry standard for determining impacts. (See Final Environmental Impact Statement sidebar on page 3-40 for more discussion.)
34	**Traffic**	An assessment of existing traffic operational characteristics and future traffic operational characteristics without the proposed freeway is presented in the Final Environmental Impact Statement, beginning on page 1-13. This includes current and future traffic volumes and durations of level of service E or F conditions (congestion) along Interstate 10 between State Route 101L and Interstate 17. An assessment of future traffic conditions with and without the proposed freeway is presented in the Final Environmental Impact Statement, beginning on page 3-27. Observations from Figures 3-15 and 3-16 indicate that conditions would be similar or slightly better with the proposed freeway in place. The traffic conditions presented in these sections are consistent with the environmental impact analysis for elements such as air quality and noise, and the results of those analyses can be found in their respective sections of Chapter 4 of the Final Environmental Impact Statement. The air and noise analyses were updated for the Final Environmental Impact Statement (see sections beginning on pages 4-68 and 4-88, respectively). It is important to note that no substantial differences between the analyses for the Draft and Final Environmental Impact Statements resulted from the update.
35	**Cultural Resources**	National Historic Preservation Act Section 106 consultation is summarized in Table 4-46 beginning on page 4-136 of the Draft Environmental Impact Statement. There have been a number of concurrences since 2008.
36		The comment is not specific enough in its reference to "agreements" to allow an accurate response.

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Code	Issue	Response
37	**Air Quality**	Arizona highways, as are most highways across the United States, are open to all kinds of traffic, so long as the cargo being carried is in accordance with U.S. Department of Transportation regulations for the specific type of cargo. The South Mountain Freeway, if implemented, is expected to operate under the same rules as other similar facilities in the state; truck traffic would be expected to be permissible (see text box on page 4-157 of the Final Environmental Impact Statement). Trucks crossing from Mexico to Arizona are restricted to the commercial zones within 25 miles of the border. The Federal Motor Carrier Safety Administration is administering a United States-Mexico cross-border, long-haul trucking pilot program. The program tests and demonstrates the ability of Mexico-based motor carriers to operate safely in the United States beyond the municipalities and commercial zones along the United States-Mexico border (see <fmcsa.dot.gov/intl-programs/trucking/trucking-program.aspx>). Petróleos Mexicanos (better known as Pemex), the Mexican state-owned petroleum company, has guaranteed 15 parts per million in its sulfur diesel fuel in the border region (see <http://transportpolicy.net/index.php?title=Mexico:_Fuels:_Diesel_and_Gasoline>). As explained on page 4-77 of the Final Environmental Impact Statement, the emissions analysis conducted for the project shows that future mobile source air toxics emissions will be lower than current levels. This analysis included projected truck traffic.

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data and analyze it. This should be examined as a cumulative impact, an indirect impact, and a direct impact.

There is a reason why the idea of a truck bypass around the urban core of Maricopa County came up in the first place, all those years ago. It is because there have been chronic issues about air quality in the Phoenix metro area, so bad and for so long that public policy makers suggested as one of the strategies to reduce particulate matter from truck exhaust in urban Maricopa County was to designate a bypass for truck traffic around the urban area.

This bypass is also now the designated route of the Canamex Highway. It is Interstate 8 (south of Casa Grande) to State Highway 85, to Interstate 10, west of the Phoenix metro area. This was formally adopted by MAG (Maricopa Association of Governments on April 25, 2001. In the resolution of decision, the wording about air quality and for particulate matter under ten microns in diameter (PM-10) reveals the intent of the decision, , "BE IT RESOLVED that the Maricopa Association of Governments recommends the future designation of the CANAMEX Corridor within the Maricopa region to include I-8 between I-10 and SR 85, SR 85 between I-8 and I-10, and the US 93 / US 60 Wickenburg Bypass, with the connection between the SR 85 / I-10 junction and the Wickenburg Bypass to be designated following additional study but constrained to a location **outside of the air quality nonattainment area for particulate matter under ten microns in diameter (PM-10) as specified in the "Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area" (February 2000)**
[See http://www.azmag.gov/Documents/pdf/cms.resource/FinalCANAMEXResolution_670.pdf]

38 The decisions about the truck bypass route came as part of a series of actions by MAG and the Arizona legislature to bring Maricopa County into compliance with the PM standards of the National Ambient Air Quality Standards (NAAQS) under the Clean Air Act and to stave off sanctions for noncompliance.

39 **Attainment Status Designation: Serious Nonattainment**

Maricopa County was reclassified as a serious PM_{10} nonattainment area on June 10, 1996. On July 9, 1999, the Maricopa Association of Governments (MAG) submitted to EPA the MAG 1999 Serious Area Particulate Plan for PM_{10} (Executive Summary), addressing both the 24-hour and annual standards.

A revised state implementation plan (SIP) was submitted in February 2000. (A state implementation plan is a plan that shows how the state will implement the Clean Air Act and meet the requirements of the National Ambient Air Quality Standards (NAAQS), i.e. comply with the standards for levels of air pollution allowed in the air) The Plan, based on new most stringent measures, included an extension request for attainment no later than December 31, 2006. On January 10, 2002, EPA announced approval of Arizona's

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Code	Issue	Response
38	**Trucks**	It is agreed that the truck bypass for the Phoenix metropolitan area would not include the proposed freeway. As with all other freeways in the Maricopa Association of Governments region, trucks would use the proposed freeway for the through-transport of freight, for transport to and from distribution centers, and for transport to support local commerce (see page 3-64 of the Final Environmental Impact Statement). The trucking industry depends on the efficient and fast movement of freight and on travel-time savings. Therefore, it is expected that "true" through-truck traffic (not having to stop in the metropolitan area) would continue to use the faster, designated, and posted bypass system of Interstate 8 and State Route 85. The comment offers no source or evidence. In April 2001, the Maricopa Association of Governments Regional Council formally adopted the route depicted in the map on page 3-64 as the CANAMEX Corridor within Maricopa County. As noted on page 3-64 of the Final Environmental Impact Statement, in the Maricopa County area the CANAMEX Corridor is to follow Interstate 10 from Tucson to Interstate 8 near Casa Grande, Interstate 8 west to State Route 85 near Gila Bend, State Route 85 north to Interstate 10 northwest of Buckeye, Interstate 10 west to Wickenburg Road, Wickenburg Road to Vulture Mine Road west of Wickenburg, and then connect with the planned U.S. Route 93/U.S. Route 60 Wickenburg Bypass.
39	**Air Quality**	In May 2012, the Arizona Department of Environmental Quality submitted a revised Maricopa Association of Governments 2012 Five Percent Plan for the region. On July 20, 2012, the U.S. Environmental Protection Agency made an official finding that the Maricopa Association of Governments 2012 Five Percent Plan was administratively complete. This decision ended the sanctions clocks associated with Arizona's decision to withdraw the Maricopa Association of Governments 2007 Five Percent Plan. On February 6, 2014, the U.S. Environmental Protection Agency published a notice in the *Federal Register* proposing to approve the Maricopa Association of Governments *2012 Five Percent Plan for Attainment of the PM-10 Standard* for the Maricopa County Nonattainment Area. In the same notice, the U.S. Environmental Protection Agency stated that it would concur with exceptional event (as a result of haboobs and dust storms) documentation prepared by the Arizona Department of Environmental Quality, which would give the region the 3 years of clean data needed for attainment of the particulate matter (PM_{10}) 24-hour standard. Finally on May 30, 2014, the U.S. Environmental Protection Agency approved the 2012 Five Percent Plan and found the area in attainment of the 24-hour particulate matter (PM_{10}) standard based on monitoring data for the years 2010 to 2012 (see page 4-72 of the Final Environmental Impact Statement for more information).

Code	Comment Document
39	plan to attain the standards for PM_{10} in the metropolitan Phoenix area by 2006. EPA's approval granted a 5-year extension of the attainment date for both the 24-hour and annual PM_{10} standards to December. 31, 2006. Both decisions were published in the Federal Register on July 25, 2002 (67 FR 48718). On July 2, 2002, EPA found that more work was needed to achieve attainment of the 24-hour standard in the area of the Salt River monitoring site (43rd Avenue/Broadway). This resulted in the Revised PM10 State Implementation Plan for the Salt River Area in September 2005. [http://www.azdeq.gov/environ/air/plan/download/sr-sip.pdf] Despite the most stringent measures and best available control measures adopted and implemented earlier, the nonattainment area failed to attain the NAAQS by the extended deadline of December 31, 2006. This failure triggered a special requirement under Section 189(d) of the Clean Air Act that SIP revisions provide for annual reductions of PM_{10} or PM_{10} precursors of not less than 5 percent of the most recent emissions inventory, until the NAAQS is attained, be submitted to EPA by December 31, 2007. This SIP revision was prepared by the Maricopa Association of Governments and submitted to EPA by the deadline. The primary sources of particulate pollution in the area are construction activities, **paved road dust**, unpaved roads and parking lots, agricultural activities, windblown dust from disturbed vacant lots, construction sites, and agricultural fields, fires and open burning, dust from off-road recreational vehicles, leaf blowers, and **exhaust from cars**. (Emphasis added.) [http://www.maricopa.gov/aq/divisions/planning_analysis/state_implementation_plan.aspx]
40	If the South Mountain Freeway is built, the bypass route, which has few amenities, would be a longer route and it is not a full freeway for the entire distance, while the South Mountain Freeway and Truck Bypass would be a modern highway. There is no law that would force trucks to use the longer original bypass route, so it is entirely likely most or even all these trucks would now come through Phoenix, negating the whole bypass strategy that had been agreed upon 12 years ago, and negating that public policy decision. By completing the South Mountain Freeway, this would all be negated, but the reversal of this public policy decision and the effects it might have on air pollution are never mentioned in the DEIS. Further, trucks originating in Mexico will be fueled with diesel that doesn't meet the CARB diesel standards adopted by Arizona over a decade ago. In Mexico, there is no regulation about the sulfur in diesel fuel. In Arizona, the law was changed to allow only diesel fuel to be sold that has had 98% of the sulfur removed. This was another part of the strategy to bring Maricopa County into compliance with the particulate matter standards required by the Clean Air Act (CAA).There was extensive modeling of the effect of adopting the CARB diesel standards and a discussion of this at the Arizona legislature, where it passed, so the data is in government hands. The CARB diesel standards for Arizona were adopted by EPA by rule in August 2008, which makes them part of the SIP.

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Code	Issue	Response
40	**Trucks**	The use of the proposed action by truck traffic is disclosed in the Draft Environmental Impact Statement (see page 3-64). Creating a truck bypass is not a goal of the proposed action and not established as part of the purpose and need as disclosed in full in Chapter 1, *Purpose and Need*, of the Draft Environmental Impact Statement. The proposed freeway is part of a transportation system developed to improve mobility in the region by increasing capacity and allowing traffic—including truck traffic—to access a segment of the "loop" system (see pages 1-21, 1-22, 3-1, and 3-3 of the Final Environmental Impact Statement) in the Phoenix metropolitan area. The proposed South Mountain Freeway would be a commuter corridor, helping to move local traffic. As with all other freeways in the region, trucks would use it for the through-transport of freight, for transport to and from distribution centers, and for transport to support local commerce. Nevertheless, the primary vehicle using the proposed freeway would be automobiles. The Maricopa Association of Governments regional travel demand model projects that trucks will represent approximately 10 percent of the total traffic on the proposed action, similar to what is currently experienced on other regional freeways such as Interstate 10, State Route 101L, and U.S. Route 60. Further, it is not expected that the entire 21 percent of through-truck traffic (by tonnage) using Interstate 10 would divert from Interstate 10 to use the proposed freeway (see Final Environmental Impact Statement page 3-64). Trucking destinations in the Phoenix metropolitan area would still prompt trucks to enter congested areas. Drivers choosing to travel on the proposed freeway versus Interstate 10 would not receive substantial travel-time benefits. Therefore, it is expected that "true" through-truck traffic (not having to stop in the metropolitan area) would continue to use the faster, designated, and posted bypass system of Interstate 8 and State Route 85. Trucks crossing from Mexico to Arizona are restricted to the commercial zones within 25 miles of the border. The Federal Motor Carrier Safety Administration is administering a United States-Mexico cross-border, long-haul trucking pilot program. The program tests and demonstrates the ability of Mexico-based motor carriers to operate safely in the United States beyond the municipalities and commercial zones along the United States-Mexico border (see <fmcsa.dot.gov/intl-programs/trucking/trucking-program.aspx>). Petróleos Mexicanos (better known as Pemex), the Mexican state-owned petroleum company, has guaranteed 15 parts per million in its sulfur diesel fuel in the border region (see <http://transportpolicy.net/index.php?title=Mexico:_Fuels:_Diesel_and_Gasoline>). As explained on page 4-77 of the Final Environmental Impact Statement, the emissions analysis conducted for the project shows that future mobile source air toxics emissions will be lower than current levels. This analysis included projected truck traffic.

Code	Comment Document

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"August 4, 2008: Final rule regarding BACM and MSM demonstrations.

Final rule to again approve the best available control measures (BACM) and most stringent measures (MSM) demonstrations in the Phoenix Area's PM-10 plan in response to a 9th Circuit Court of Appeals remand to re-evaluate the feasibility of implementing California Air Resources Board (CARB) diesel fuel as a BACM. *The correct docket number (as stated at the top of the document) is EPA-R09-OAR-2006-0571."*

http://www.epa.gov/region9/air/phoenixpm/

Also, we know exactly the number of trucks arriving from Mexico and their destinations in the US, so this is data that is available for the DEIS.

Once this additional pollution is honestly quantified and factored in, there would be a huge net increase in air pollution from the South Mountain Freeway and Truck Bypass, and associated increases in asthma, heart disease, premature death, and other adverse health impacts. This would lead to the No Build option being chosen as the only option.

The DEIS does mention, in Chapter 4, part 1, page 68:
"Heavy-duty Diesel Emissions Standards
In December 2000, EPA issued its final rule in a two-part strategy to reduce diesel emissions from heavy-duty trucks and buses. The standards pertain to diesel engines found in such vehicles (weighing over 8,500 pounds), beginning in model year 2004. Additional standards and procedures were implemented in 2007.

EPA required diesel fuel refiners to produce diesel fuels (for highway vehicle use) that have a sulfur content of no more than 15ppm, effective October 2006, a 97percent reduction from the previous 500ppm level."

So ADOT and HDR have to aware of the issue regarding high sulfur diesel, but the impacts of truck traffic from Mexico using high sulfur diesel fuel and the additional pollution is not addressed.

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Air Toxics Already a Crisis but Not Mentioned

In the DEIS, Chapter 4 part 1 page 64, it is stated,
"Local Emissions of Priority MSATs (mobile sources of air toxics)
It is possible to estimate the relative contributions (by weight of emissions) of the different local sources of priority M SATs using EPA-compiled information. In June 2009, EPA released the results of its National-Scale Air Toxics Assessment for 2002."

In the DEIS, Chapter 4 part 1 page 68-69, it is stated,
"Mobile Source Air Toxics

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41		Quotes from Draft Environmental Impact Statement

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41	Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments of 1990, whereby Congress mandated that EPA regulate 188 air toxics, also known as HAPs. EPA has assessed this expansive list in its latest rule on the Control of Hazardous Air Pollutants from Mobile Sources(Federal Register 72(37): 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in its Integrated Risk Information System <www.epa.gov/iris/>. In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national- and regional-scale cancer risk drivers from its 1999 National Air Toxics Assessment <www.epa.gov/ttn/atw/nata1999/>. These are acrolein; benzene; 1,3-butadiene; DPM plus diesel exhaust organic gases; formaldehyde; naphthalene; and POM. While F H WA considers these the priority MSATs, the list is subject to change and may be adjusted in consideration of future EPA rules." "Information Availability Constraints in Analyzing Project-Specific MSATs Impacts This section includes a basic analysis of the likely M SATs emissions impacts of the proposed action and the No -Action Alternative. Available technical tools do not, however, enable the prediction of project-specific health impacts of the emissions changes associated with the action alternatives. Because of these limitations, the following discussion is included in accordance with Council on Environmental Quality (CEQ) regulations [40 C.F.R .§ 1502.22(b)] regarding incomplete or unavailable information. 40 C.F.R. § 1502.22(b) addresses situations where analysis of an impact in a NEPA document is restricted by missing or incomplete information, and requires the NEPA document to 1) state that there is missing or incomplete information, 2) discuss the relevance of this information, 3) summarize what is known about the impact in question, and 4) in the face of what is known and not known, present the federal agency's evaluation of the likely impact. In F H WA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts attributable to changes in MSAT emissions associated with a proposed set of freeway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action." **But there is already very complete and specific data related to all of this that was excluded and is not properly reviewed or analyzed, and it is much more recent.**
42	In 2005, there was an extensive air monitoring of certain toxic chemicals (air toxics) conducted by EPA and ADEQ in a joint effort named the Joint Air Toxics Assessment Program (JATAP). This was conducted at specific sites in Maricopa County that modeling showed would likely be hot spots for air toxics, including a site on the Gila River Indian Community (GRIC), that would be adjacent to the South Mountain Freeway and Truck Bypass. [These JATAP study results are posted at:

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42	**Air Quality**	The Joint Air Toxics Assessment Project compares monitored values to the Environmental Protection Agency's one-in-a-million risk threshold, but this numerical benchmark is not a "standard" in the sense that it represents a pass/fail threshold (like the National Ambient Air Quality Standards). This issue is discussed in Appendix F of the Air Quality Technical Report, where examples are provided where the U.S. Environmental Protection Agency itself has promulgated emissions control regulations that result in residual risk of more than one in a million (i.e., the Environmental Protection Agency considered it "acceptable" to adopt regulations that did not reduce risk to a level below one in a million). Summary information about the findings of the Joint Air Toxics Assessment Project study is provided as background information in the Draft and Final Environmental Impact Statements, but the study itself is not relevant to the type of analysis done pursuant to the Federal Highway Administration's mobile source air toxics guidance, which is an emissions analysis. Monitored ambient concentrations of mobile source air toxics (the focus of the Joint Air Toxics Assessment Project) do not inform this type of analysis. While monitoring data can be useful for defining current conditions in the affected environment (to the extent that the monitoring data are current), they don't tell us anything about future conditions, or the impacts of the project itself, which is why an emissions analysis was performed. The mobile source air toxic analysis presented beginning on page 4-77 of the Final Environmental Impact Statement is an estimated inventory of mobile source air toxic emissions for the entire Study Area for 2025 and 2035. This approach was used because the inventory estimate accounts for changes in traffic and emissions on all roadways affected by a proposed project, and would, therefore, be a more reliable predictor of changes in exposure to mobile source air toxics.

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42	http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/bd0cae65f8ca89368825790d0056f0e4/$FILE/Final%20Rpt_Phoenix%20Air%20Toxics_JATAP%202005.pdf.] The monitoring sites included a site near St. Johns on the Gila River Indian Community (GRIC), and some of the other monitoring sites were in west Phoenix and South Phoenix. The JATAP monitoring results were reported in 2006, during a time the data for the DEIS was being gathered. The JATAP monitoring results found levels of certain toxic chemicals associated with vehicular emissions were above the standard of a one in a million chance of cancer in a lifetime of exposure in the west Phoenix, south Phoenix, and GRIC sites. The JATAP monitoring at the St. Johns monitoring site on the GRIC found certain air toxics attributed to "mobile sources," or vehicular traffic burning hydrocarbons. These findings of the air toxics were many times the "accepted" cancer risk standard set by USEPA. The St. Johns monitoring site's annual mean concentrations of mobile source air toxics (MSATs): • benzene at 4.7 times the accepted cancer risk standard; • 1,3 butadiene at 3.9 times the accepted cancer risk standard The JATAP study also found other air toxics associated with transportation exhaust. Acetaldehyde, formaldehyde, ethylbenzene, m,p-Xylene, o-Xylene, and toluene were detected at high levels at the St. Johns monitoring site.
43	Residents of the GRIC living around and adjacent to the monitoring site are currently being subjected to all of these carcinogens, not just one. And if a freeway were to be built near this monitoring site on the GRIC, there would be more air toxics in addition to the ones detected at levels that far exceed the USEPA risk standard. At the West Phoenix monitoring site, which is the same 43rd Avenue and Broadway site that has had many exceedances of the particulate matter standards, even higher levels of air toxics were found. This site is about a mile or so downwind from the proposed route of the South Mountain Freeway, and air toxics levels would be impacted by the freeway. The West Phoenix monitoring site's annual mean concentrations of mobile source air toxics (MSATs): • benzene at 18.7 times the accepted cancer risk standard; • 1,3 butadiene at 21.5 times the accepted cancer risk standard
42	The JATAP study also found other air toxics associated with transportation exhaust. Formaldehyde, ethylbenzene, m,p-Xylene, o-Xylene, and toluene were detected at high levels at the West Phoenix monitoring site.

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43	**Air Quality**	The emission modeling developed for the proposed action showed that for the mobile source air toxics study area, constructing the freeway would have a marginal effect on total mobile source air toxics emissions in 2025 and 2035 (less than a 1 percent difference in total annual emissions between the Preferred Alternative and No-Action Alternative) (see discussion beginning on page 4-72 of the Final Environmental Impact Statement). With the Preferred Alternative in 2035, modeled mobile source air toxics emissions would decrease by 57 percent to more than 90 percent, depending on the pollutant, despite a 47 percent increase in vehicle miles traveled in the Study Area compared with 2012 conditions. The Preferred Alternative would also reduce in-vehicle mobile source air toxics exposure as opposed to the No-Action Alternative. The U.S. Environmental Protection Agency has found that in-vehicle benzene concentrations were between 2.5 and 40 times higher than nearby ambient concentrations, based on a review of studies discussed in the Regulatory Impact Analysis for the U.S. Environmental Protection Agency's 2007 mobile source air toxics rule-making (Final Regulatory Impact Analysis, Environmental Protection Agency 420-R-07-002, 3-17 [February 2007]). Construction of the South Mountain Freeway would result in a reduction in benzene exposure to drivers and passengers for two reasons: decreased travel times (motorists would spend less time in traffic to reach their destinations) and lower emissions rates (attributable to speed improvements). Reducing on-road exposure would provide a health benefit for motorists using the freeway under consideration. Congestion relief resulting from the proposed freeway would provide localized air quality emissions reductions on area freeways and arterial streets and at interchanges, benefiting users of area highways and those living near congested roads.

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43	One of the JATAP's findings presented to the EPA National Air Monitoring Conference in November 2006 was, "**Annual average concentrations of formaldehyde, acetaldehyde, benzene and 1,3 butadiene were on the high end of the range reported in EPA funded assessments of other US cities**." This finding relates to any future proposed freeway in the JATAP study area, which includes in entirety the route of the proposed South Mountain Freeway and Truck Bypass. In the December 2006 ANALYSIS OF AIR TOXICS COLLECTED AS PART OF THE JOINT AIR TOXICS ASSESSMENT PROJECT FINAL REPORT, Page 3-6, it states this with more precision: **"How Do Air Toxics Concentrations Compare with Typical National Levels? Phoenix area urban concentrations of1,3-butadiene, acetaldehyde, formaldehyde, chloroform, benzene, and tetrachloroethene were typically on the high end of the national urban scale (i.e., above the 75th percentile). Other air toxics concentrations were typically within the interquartile range of national concentrations (25th to 75th percentile)."**
44	**So the air toxics are already worse than many other areas of the United States, and the proposed freeway would add even more.** Obviously, adding more vehicular traffic emissions by building a freeway where there had not been one would add to this toxic burden. And because this is an ethnic minority community, Native Americans, there are civil rights and environmental justice issues involved, also. ADOT and the Maricopa Association of Governments (MAG) were not stakeholders or involved in the JATAP, so these agencies had no control over the science or the direction of the JATAP, and certainly had no authority to stop the project from finding data that would not support building the South Mountain Freeway and Truck Bypass. But the JATAP results are barely mentioned in the DEIS, then discounted and misrepresented. Instead there is a strange and unsubstantiated missive about the uncertainty of the risk from these air toxics standards, and associated modeling methodologies, which is simply not true. ADOT is quite suspect in these regards. The cancer risk standards have been promulgated and published by EPA after extensive research and study, and they are well-known and peer-reviewed.
45	In EPA's own words: "The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing comprehensive evaluation of air toxics in the U.S. EPA developed the NATA as a state-of-the-science screening tool for State/Local/Tribal Agencies to prioritize pollutants, emission sources and locations of interest for further study in order to gain a better understanding of risks. NATA assessments do not incorporate refined information about emission sources, but rather, use general information about sources to develop estimates of risks which are more likely to overestimate impacts than underestimate them. NATA provides estimates of the risk of cancer and other serious health effects from breathing (inhaling) air toxics in order to inform both national and more localized efforts to identify and prioritize air toxics, emission source types and locations which are of greatest potential concern in terms of contributing to population risk. This in turn helps air pollution experts focus limited analytical resources on areas and or populations

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44	**Air Quality**	The Draft and Final Environmental Impact Statements present information and analysis about the proposed action and the enhanced conditions when compared against the No-Action Alternative and would not cause substantial adverse effects. The results of the analysis are summarized in the prologue to the Final Environmental Impact Statement (page xiii) and are more fully described beginning on page 4-68 of the Final Environmental Impact Statement. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones. The Draft Environmental Impact Statement provided the results of modeling for each of the seven priority mobile source air toxics, in both the Eastern and Western Subareas, and compared relative mobile source air toxics emissions that would result from three different potential alternatives (W59, W71, W101) as compared with the No-Action Alternative. It also included modeling of mobile source air toxics emissions in the overall mobile source air toxics study area assuming the W59 Alternative (see pages 4-70 to 4-74 of the Draft Environmental Impact Statement) along with implementation of recent U.S. Environmental Protection Agency mobile source air toxics rules. During the period when the project has been under review, the U.S. Environmental Protection Agency has issued two rules on controlling mobile source air toxics emissions from motor vehicles (66 *Federal Register* 17229 [March 29, 2001] and 72 *Federal Register* 8427 [February 26, 2007]). In those rules, the U.S. Environmental Protection Agency examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline program, its national low emission vehicle standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. As a result, the U.S. Environmental Protection Agency adopted controls on gasoline and passenger vehicles that significantly reduce emissions of benzene and other mobile source air toxics such as 1,3-butadiene; formaldehyde; acetaldehyde; acrolein; and naphthalene; as well as significant reductions in emissions of particulate matter from passenger vehicles. On March 3, 2014, the U.S. Environmental Protection Agency also promulgated new "Tier 3" vehicle and fuel regulations, which will produce additional reductions of mobile source air toxics pollutants. Since these reductions have not yet been incorporated into the U.S. Environmental Protection Agency's emissions model, they are not accounted for in the South Mountain Freeway analysis. The emission modeling developed for the proposed action showed that for the mobile source air toxics study area, there would be little difference in total annual emissions of mobile source air toxics emissions between the Preferred and No-Action Alternatives (less than a 1 percent difference) in 2025 and 2035. With the Preferred Alternative in 2035, modeled mobile source air toxics emissions would decrease by 57 percent to more than 90 percent, depending on the pollutant, despite a 47 percent increase in vehicle miles traveled in the Study Area compared with 2012 conditions (see discussion beginning on page 4-77 of the Final Environmental Impact Statement).

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45	where the potential for health risks are highest. Assessments include estimates of cancer and non-cancer health effects based on chronic exposure from outdoor sources, including assessments of non-cancer health effects for Diesel Particulate Matter (PM). Assessments provide a snapshot of the outdoor air quality and the risks to human health that would result if air toxic emissions levels remained unchanged." [http://www.epa.gov/nata/] As for the JATAP itself, the modeling conducted before the monitoring indicated certain issues that might be clarified: "Objectives for Monitoring NATA results indicate that, overall, VOCs and carbonyls are the biggest risk drivers – Particulate metals significant in some areas •Additional monitoring needed to compare with model results – Annual average concentrations of key HAPs – Spatial gradients – **Potential hot spots (near freeway environments)** (Emphasis added.) – Diurnal variability – Source identification through fingerprinting – Which HAPs contribute most to the risk?" In the DEIS, Chapter 4 part 1, page 75, it states, "Mobile Source Air Toxic Hot Spots Given concerns about the possibility of MSAT exposure in the near-road environment, The HEI dedicated a number of research efforts at trying to find an MSAT "hotspot." In 2011, three studies were published that tested this hypothesis. In general, the authors confirm that while highways are a source of air toxics, they were unable to find that highways were the only source of these pollutants. They determined that near road exposures were often no different or no higher than background or ambient levels of exposure and, hence, no true hot spots were identified. Additional information may be found at <pubs.healtheffects.org/getfile.php?u=659> page 137, <pubs.healtheffects.org/getfile.php?u=656> page 143, and <pubs.healtheffects.org/getfile.php?u=617> page 87, where monitored on-road emissions were higher than emission levels monitored at near-road residences, but **the issue of hot spots was not ultimately discussed**." (Emphasis added.). Yes, the JATAP, its purpose, its results, its recommendations, all would be a reason to not build the freeway, to determine No Build as the only acceptable alternative. So the JATAP is barely mentioned and misrepresented, and the EPA's Air Toxics program is downplayed and obfuscated, and an inconclusive study that admittedly doesn't discuss the issue of hot spots gets the focus. In NEPA, if a project causes a negative, a problem, ways to eliminate or mitigate the damage have to examined and assessed. In this case, not building a freeway near a site that has already been identified as being at a higher risk due to the same sorts of toxic air pollution found by freeways would be the only logical conclusion. **So no wonder ADOT and HDR excluded the JATAP results and included a propaganda missive against the EPA's Air Toxics Program.** 8

Code	Issue	Response
44 (cont.)		For mobile source air toxics, the project would have a negligible effect on emissions in the mobile source air toxics study area. The Preferred Alternative would also reduce in-vehicle mobile source air toxics exposure as opposed to the No-Action Alternative. The U.S. Environmental Protection Agency has found that in-vehicle benzene concentrations were between 2.5 and 40 times higher than nearby ambient concentrations, based on a review of studies discussed in the Regulatory Impact Analysis for the U.S. Environmental Protection Agency's 2007 mobile source air toxics rule-making (Final Regulatory Impact Analysis, Environmental Protection Agency 420-R-07-002, 3-17 [February 2007]). Construction of the South Mountain Freeway would result in a reduction in benzene exposure to drivers and passengers for two reasons: decreased travel times (motorists would spend less time in traffic to reach their destinations) and lower emissions rates (attributable to speed improvements). Reducing on-road exposure would provide a health benefit for motorists using the freeway under consideration. Congestion relief resulting from the proposed freeway would provide localized air quality emissions reductions on area freeways and arterial streets and at interchanges, benefiting users of area highways and those living near congested roads.
45	**Health Risk Assessment**	**The Role of Health Risk Assessment in a National Environmental Policy Act Context** The Federal Highway Administration's National Environmental Policy Act documents are developed under two guiding regulations: the Council on Environmental Quality's National Environmental Policy Act regulations applicable to all federal agencies (40 Code of Federal Regulations Parts 1500–1508) and the Federal Highway Administration's implementing regulations governing Federal Highway Administration National Environmental Policy Act documents (23 Code of Federal Regulations Part 771). In its mobile source air toxics guidance, the Federal Highway Administration discusses 40 Code of Federal Regulations Part 1502.22 and acknowledges that while much work has been done to assess the overall health risk of mobile source air toxics, analytical tools and techniques for assessing project-specific health outcomes as a result of lifetime exposures to mobile source air toxics remain limited. These limitations impede the ability to evaluate the potential health risks attributable to exposure to mobile source air toxics as part of the decision-making process in the National Environmental Policy Act context. However, as with any analysis that the Federal Highway Administration conducts for National Environmental Policy Act purposes, the Federal Highway Administration's approach for mobile source air toxic analysis in National Environmental Policy Act documents is informed not just by 40 Code of Federal Regulations Part 1502.22, but by all applicable Council on Environmental Quality requirements. The appropriateness of air toxics health risk assessment as an analysis method for National Environmental Policy Act documents is discussed below, in the context of Council on Environmental Quality requirements for these documents. In addition to the 40 Code of Federal Regulations Part 1502.22 provisions regarding uncertainty and limitations discussed in the Federal Highway Administration's MSAT Interim Guidance Appendix C, three other provisions of the Council on Environmental Quality regulations are particularly relevant to the topic of health risk assessment:

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45 (cont.)		*40 Code of Federal Regulations § 1500.1(b): NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.* *40 Code of Federal Regulations § 1502.1: An environmental impact statement is more than a disclosure document. It shall be used by Federal officials in conjunction with other relevant material to plan actions and make decisions.* *40 Code of Federal Regulations § 1502.2: (a) Environmental impact statements shall be analytic rather than encyclopedic. (b) Impacts shall be discussed in proportion to their significance.(c) Environmental impact statements shall be kept concise and shall be no longer than absolutely necessary to comply with NEPA and with these regulations.* Section 1500.1(b) states that information for decision making must be of high quality and based on accurate scientific analysis. Air toxics health risk assessments can involve large uncertainties. The mobile source air toxic health risk assessment uncertainty builds on itself—each step of the analysis involves uncertainties, including modeling traffic and then modeling emissions, and using this estimated output to model dispersion/concentrations, which provide information for estimating or assuming exposures to those concentrations, and finally predicting health outcomes. Major uncertainties are associated with traffic and emissions projections over a 70-year period, and dispersion models are typically held to a "factor of 2" performance standard. Health impacts of mobile source air toxics in the U.S. Environmental Protection Agency Integrated Risk Information System are based on a 70-year lifetime exposure, which introduces significant uncertainty (e.g., on average, people in the United States change residence approximately once every 8 years and change jobs once every 3). Finally, as noted above, the U.S. Environmental Protection Agency's Integrated Risk Information System provides toxicity (risk) values for various pollutants and routes of exposure; in a health risk assessment, the Federal Highway Administration would compare calculated concentrations of mobile source air toxic pollutants to the Integrated Risk Information System values to estimate health risk. In the Integrated Risk Information System, the U.S. Environmental Protection Agency states the toxicity values are believed to be accurate to within an order of magnitude (a factor of 10). The total cumulative uncertainty involved in highway project health risk assessment is much larger than the change in emissions attributable to projects (typically a few percentage points). In this context, the information would not necessarily have a strong nexus to the requirements for high-quality information and accurate scientific analysis. Section 1500.1(b) also directs agencies to focus their National Environmental Policy Act analysis and documentation on issues that are truly significant to the action in question. In the context of mobile source air toxics, the Federal Highway Administration must consider whether changes in mobile source air toxic emissions attributable to a project have the potential for significant health risk. Using cancer risk as an example, the U.S. Environmental Protection Agency estimates that the overall risk of cancer in the United States is approximately 330,000 in a million, and that air toxics (from all sources) are responsible for a risk of approximately 50 in a million. In its most recent mobile source air toxics rule-making, the U.S. Environmental Protection Agency estimated mobile source air toxic cancer risk,

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45 (cont.)		after implementation of emissions controls, at approximately 5 in a million (or 0.0015 percent of overall cancer risk from any cause). For the Preferred Alternative, the mobile source air toxic emissions analysis for the Study Area found little difference in total annual emissions of mobile source air toxic emissions between the Preferred and No Action Alternatives (less than a 1 percent difference) in 2025 and 2035. With the Preferred Alternative in 2035, modeled mobile source air toxic emissions would decrease by more than 80 percent, depending on the pollutant, despite a 47 percent increase in vehicle miles traveled in the Study Area compared with 2012 conditions (see the discussion beginning on page 4-77 of the Final Environmental Impact Statement). In summary, available information from the U.S. Environmental Protection Agency indicates that mobile source air toxics are a small component of overall cancer risk, and the analysis for the Final Environmental Impact Statement indicates both that the Preferred Alternative would result in a small change in the emissions contributing to this risk and that emissions will decline by a large amount regardless of alternative. As discussed above and in the air quality technical report, results from the health risk assessment would be influenced more by the uncertainty introduced into the process through assumptions and speculations rather than by genuine insight into the actual health impacts directly attributable to mobile source air toxic exposure associated with a project. Therefore, outcomes of such a health risk assessment do not provide useful information for decision makers, as required by Section 1502.1. The Federal Highway Administration emissions analysis meets the requirement to produce information that is useful for both disclosure and decision making because it allows the public and decision makers to see which alternative has less mobile source air toxic emissions, with much less uncertainty than a health risk assessment. Given the uncertainty of a mobile source air toxic health risk assessment, the Federal Highway Administration instead addresses the potential impacts of mobile source air toxics through an emissions assessment in its National Environmental Policy Act documents. For smaller projects with a lower likelihood of a meaningful impact, this discussion is qualitative. For larger projects, emissions analysis is conducted. The Federal Highway Administration approach is consistent with the Council on Environmental Quality's direction in Section 1502.2(b) to discuss impacts in proportion to their significance. The results of an emissions analysis can be summarized concisely in a National Environmental Policy Act document and provide useful information for decision makers (e.g., an alternative that has lower emissions is likely to be "better" from a mobile source air toxics health risk standpoint than one that has higher emissions).

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45 (cont.)		While the U.S. Environmental Protection Agency and the Federal Highway Administration both agree on the usefulness of addressing mobile source air toxics in National Environmental Policy Act documents for highway projects, the agencies disagree about the value of health risk assessment as a method for doing so. Another consideration with respect to health impacts is that the Preferred Alternative would also reduce in-vehicle mobile source air toxics exposure as opposed to the No Action Alternative. The U.S. Environmental Protection Agency has found that in-vehicle benzene concentrations were between 2.5 and 40 times higher than nearby ambient concentrations, based on a review of studies discussed in the Regulatory Impact Analysis for the U.S. Environmental Protection Agency's 2007 mobile source air toxics rule-making (Final Regulatory Impact Analysis, Environmental Protection Agency 420-R-07-002, 3-17 [February 2007]). Construction of the Preferred Alternative would result in a reduction in benzene exposure to drivers and passengers for two reasons: decreased travel times (motorists would spend less time in traffic to reach their destinations) and lower emissions rates (attributable to speed improvements). Reducing on-road exposure would provide a health benefit for motorists using the roadway network. Congestion relief resulting from the proposed freeway would provide localized air quality emissions reductions on area freeways and arterial streets and at interchanges, benefiting users of area highways and those living near congested roads. The Federal Highway Administration determined that a supplemental environmental impact statement is not required at this time because there were no changes to the proposed action that will result in significant environmental impacts not evaluated in the Draft Environmental Impact Statement nor is there new information relevant to environmental concerns and bearings on the proposed action or its impacts that will result in significant environmental impacts not evaluated in the Draft Environmental Impact Statement.

Code	Comment Document
45	The impacts of the South Mountain Freeway on MSAT levels in the affected areas near the freeway should be examined as a cumulative impact, an indirect impact, and a direct impact Further investigation reveals that when the JATAP results were announced, the presentation, *Joint Air Toxics Assessment Project (JATAP) for the Project (JATAP) for the Maricopa/Pinal Urban Area, Maricopa/Pinal Urban Area, Arizona* *Presented by: Mike Sundblom, Arizona Department of Environmental Quality* *Christella Armijo, Salt River Pima Maricopa Indian Community* *Hilary Hafner, Sonoma Technology, Inc.* *To: EPA National Air Monitoring Conference* *Date: November 8, 2006* found on-line at: http://www.epa.gov/ttnamti1/files/2006conference/sundblomarmijo.pdf revealed other issues relating to this proposed freeway and truck bypass. At http://yosemite.epa.gov/oar/communityassessment.nsf/05426cd645cac06b85256ddb00510ac3!OpenForm&ParentUNID=8CB9AE50D0156C4B852576A5002C4867, the following is posted: **Maricopa County, Arizona, Joint Air Toxics Assessment Project (JATAP)** **As a result of this project, will further data be collected, monitoring be conducted, or additional problem identification studies undertaken? Will refinements be made to modeling or exposure and/or toxicity assumptions?**
46	**If the project is complete, what recommendations were made to reduce risk and/or emissions or otherwise mitigate the impacts of the problems identified as a result of this project?** *Examples of recommendations include: encouraging control of HAP from mobile sources, educating a community about the impacts of indoor air pollution, encouraging appropriate action to reduce diesel truck exhaust, and encouraging community involvement with State and EPA resources to reduce HAP emissions.* **If the project is complete, were reduction activity emissions or risk reductions calculated?** **Are reduction factors being developed?** **What are the expected reductions achieved by the individual activities?** **Will the results of this project contribute to regulatory development, enforcement actions, or voluntary actions?** 9

Code	Issue	Response
46	**Air Quality**	The Joint Air Toxics Assessment Project was funded by the U.S. Environmental Protection Agency; it would be the U.S. Environmental Protection Agency's decision whether to collect further data or studies related to the Joint Air Toxics Assessment Project. See: Phoenix, Arizona Air Toxics Assessment-Final Comprehensive Report (September 30, 2011)

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46	**Additional Comments:**
	Are future projects/efforts planned or refined as a result of this project?
	Together, these projects are building toward a much needed air toxics risk assessment for the Phoenix urban area. At this early stage, the project is oriented toward technical assessment work; as the work progresses, EPA should use the opportunity of providing grant funding to ensure that our priorities, including community involvement and early reduction programs, are addressed.
	Are there any major uncertainties or cautions regarding the project process or findings?
	Are there any lessons learned that would benefit other projects?
45	Focusing on: " *Examples of recommendations include: encouraging control of HAP from mobile sources, educating a community about the impacts of indoor air pollution, encouraging appropriate action to reduce diesel truck exhaust, and encouraging community involvement with State and EPA resources to reduce HAP emissions."* Controlling HAP from mobile sources and encouraging appropriate action to reduce diesel truck exhaust relate directly to the proposed South Mountain Freeway and Truck Bypass, as the only way to successfully accomplish that would be to not build the freeway. **It appears that ADOT, through its contractor, HDR, deliberately misrepresented the JATAP monitoring results and its recommendations from the DEIS precisely because it strongly supports the No Build conclusion for the Record of Decision of the NEPA process for the proposed freeway. There can be no other logical conclusion.** (This also explains the aforementioned lack of data and analysis of the impacts of the emissions from the high diesel fuel truck traffic from Mexico that would be driving along the South Mountain Freeway and Truck Bypass.)
47	***There are also Environmental Justice concerns raised by this. Chapter 4, page 9, the DEIS feigns concerns about environmental justice and notes that one of the "fundamental environmental justice principles [that] apply to the transportation project development process" is "to avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations." [http://azdot.gov/SouthMountainFreeway/PDF/south-mountain-loop-202-docs/EIS/chapter4/chapter4part1.pdf]***
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47	**Environmental Justice and Title VI and Air Quality**	Summary information about the findings of the Joint Air Toxics Assessment Project study is provided as background information in the Draft and Final Environmental Impact Statements, but the study itself is not relevant to the type of analysis done pursuant to the Federal Highway Administration's mobile source air toxics guidance, which is an emissions analysis. Monitored ambient concentrations of mobile source air toxics (the focus of the Joint Air Toxics Assessment Project) do not inform this type of analysis. While monitoring data can be useful for defining current conditions in the affected environment (to the extent that the monitoring data are current), they don't tell us anything about future conditions, or the impacts of the project itself, which is why an emissions analysis was performed. The mobile source air toxic analysis presented beginning on page 4-77 of the Final Environmental Impact Statement is an estimated inventory of mobile source air toxic emissions for the entire Study Area for 2025 and 2035. This approach was used because the inventory estimate accounts for changes in traffic and emissions on all roadways affected by a proposed project, and would, therefore, be a more reliable predictor of changes in exposure to mobile source air toxics. The air quality assessment for the proposed freeway analyzed impacts from carbon monoxide and particulate matter (PM_{10}) and followed U.S. Environmental Protection Agency guidelines. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones. For mobile source air toxics, the analysis showed that for the Study Area, constructing the freeway would have a marginal effect on annual emissions in 2025 and 2035 (less than a 1 percent difference in total annual emissions between the Preferred Alternative and No-Action Alternative).With the Preferred Alternative in 2035, modeled mobile source air toxics emissions would decrease by 57 percent to more than 90 percent, depending on the pollutant, despite a 47 percent increase in vehicle miles traveled in the Study Area compared with 2012 conditions. The air quality analyses were updated for the Final Environmental Impact Statement, including a quantitative particulate matter (PM_{10}) analysis, and are more fully described beginning on page 4-68 of the Final Environmental Impact Statement. Congestion relief resulting from the proposed freeway would provide localized air quality emissions reductions on area freeways and arterial streets and at interchanges, benefiting users of area highways and those living near congested roads. The section entitled *Title VI and Environmental Justice*, beginning on page 4-29 in the Draft Environmental Impact Statement, presents acceptable methods, data, and assumptions to assess the potential for disproportionately high and adverse effects from the proposed action on environmental justice populations and disparate impacts to populations protected under Title VI. Based upon the content of the section, no such effects would result from the action alternatives. In light of comments received on the Draft Environmental Impact Statement, the above-referenced conclusions were confirmed in the preparation of the Final Environmental Impact Statement. To provide further clarity, the discussions of environmental justice and Title VI were separated and additional text explaining the relationship of environmental justice and Title VI to various environmental elements was added throughout Chapter 4, *Affected Environment*, *Environmental Consequences, and Mitigation*, as exemplified by the inserted text on page 4-29 of the Final Environmental Impact Statement.

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47	***Thus, the failure to properly analyze and/or address the air toxics information from the JATAP study is a deliberate violation of the very Environmental Justice issues that ADOT and FHWA claim to be observing.*** The conclusion is that ADOT and HDR would sacrifice human health and safety to accomplish their goal of building the South Mountain Freeway and Truck Bypass, and would rather see people on the GRIC suffer and die from cancer than simply conduct an honest and objective NEPA process. Again, that appears to be a premeditated violation of the civil rights of the GRIC residents near the St. Johns JATAP monitoring site.
48	**Other Air Toxics Point Sources Impacted by the South Mountain Freeway** On top of the MSATs, there are also local point sources of these air toxics. In particular, the petroleum tank farm complex at 51st Avenue and Van Buren to about 57th Avenue and Van Buren receives transmix from California through a pipeline. There, the transmix is "refined" into diesel fuel and gasoline at this Phoenix location, and these fuels are also loaded into tanker trucks from large storage tanks sited there. The new South Mountain Freeway would be an immediately adjacent truck bypass route towards Casa Grande and the new train complex near Red Rock/Picacho Peak. The DEIS never mentions this, but the extra air pollution from this potential truck traffic from the petroleum tank farm complex in Phoenix using the South Mountain Freeway heading south should be investigated, examined, and quantified, as well the extra air pollution caused by the new truck traffic and the "refining" of more transmix and off-gassing of air toxics from loading and unloading of trucks that would also occur. This would also increase the releases of air toxics into the air into the study area and impact background levels of these air toxics. It is already established that the area has air toxics hot spots. The impacts of the South Mountain Freeway on MSAT levels in the affected areas near the freeway should be examined as a cumulative impact, an indirect impact, and a direct impact with this in mind also.
49	**More Air Quality Issues: The Straw That Broke the Camel's Back** The portion of Maricopa County that is characterized as the Phoenix metro area has had problems for decades meeting the air quality standards for particulate matter (PM) and other criteria pollutants. (Ozone levels are too high in the East Valley and Fountain Hills, for example.) There have been several exceedances of the standards for PM set by EPA under the authorities given the agency by the Clean Air Act (CAA). The problem has been so bad over the years that every possible delay and postponement allowed under the CAA to come up with a plan to meet regulatory levels of particulate matter have now been exhausted. So, currently, EPA is examining sanctions that include blocking a billion dollars in highway funds.
50	Any exceedances of the particulate matter standards of the NAAQS could bring sanctions under the enforcement provisions of the Clean Air Act, including the loss of a billion dollars in highway funds.. This could cost a billion dollars to start with, starting even before the freeway is completed, caused by the construction of the freeway: blasting,

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48	**Air Quality**	As explained on pages 4-69 and 4-77 of the Draft and Final Environmental Impact Statements, respectively, the emissions analysis conducted for the project shows that future mobile source air toxics emissions will be lower than current levels. This analysis included projected truck traffic.
49	**Air Quality**	Information on the attainment status of Maricopa County with the National Ambient Air Quality Standards begins on pages 4-59 and 4-68 of the Draft and Final Environmental Impact Statements, respectively. In May 2012, the Arizona Department of Environmental Quality submitted a revised Maricopa Association of Governments 2012 Five Percent Plan for the region. On July 20, 2012, the U.S. Environmental Protection Agency made an official finding that the Maricopa Association of Governments 2012 Five Percent Plan was administratively complete. This decision ended the sanctions clocks associated with Arizona's decision to withdraw the Maricopa Association of Governments 2007 Five Percent Plan. On February 6, 2014, the U.S. Environmental Protection Agency published a notice in the *Federal Register* proposing to approve the Maricopa Association of Governments *2012 Five Percent Plan for Attainment of the PM-10 Standard* for the Maricopa County Nonattainment Area. In the same notice, the U.S. Environmental Protection Agency stated that it would concur with exceptional event (as a result of haboobs and dust storms) documentation prepared by the Arizona Department of Environmental Quality, which would give the region the 3 years of clean data needed for attainment of the particulate matter (PM_{10}) 24-hour standard. Finally on May 30, 2014, the U.S. Environmental Protection Agency approved the 2012 Five Percent Plan and found the area in attainment of the 24-hour particulate matter (PM_{10}) standard based on monitoring data for the years 2010 to 2012 (see page 4-72 of the Final Environmental Impact Statement for more information). According to the air quality analyses conducted for the proposed freeway, no violations of either the carbon monoxide or particulate matter (PM_{10}) standards were identified, even at worst-case locations along the project corridor. Thus, the carbon monoxide and particulate analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones. Therefore, no loss of federal funds would occur.
50	**Air Quality**	40 Code of Federal Regulations § 93.111(c) was followed to conduct a qualitative analysis for particulate matter (PM_{10}) for the proposed action. This analysis complied with National Environmental Policy Act requirements for the development of the Draft Environmental Impact Statement. In December 2010, the U.S. Environmental Protection Agency established transportation conformity guidance for performing quantitative particulate matter ($PM_{2.5}$ and PM_{10}) hot-spot analyses for transportation projects and established a 2-year grace period. U.S. Environmental Protection Agency conformity guidance continues to allow qualitative particulate matter (PM_{10}) hot-spot conformity analyses for analyses that were started before or during the grace period and if the final environmental document for the project is issued no more than 3 years after issuance of the draft environmental document. A particulate matter (PM_{10}) qualitative analysis was performed for this project because the initial air

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50	excavating, moving massive amounts of dirt, etc. Enough of the dust could disperse and drift along the Salt River bed for the mile or so to the 43rd Avenue and Broadway air monitor, which is the monitoring site where the vast majority of the particulate matter exceedances have been recorded. That could trigger an exceedance of the particulate matter standards, which could cost literally, the billion dollars in highway funds. This should be examined as a cumulative impact, an indirect impact, and a direct impact. And the sand and gravel industry (including cement and asphalt operations) in Maricopa County is poised to take sand and gravel from the Salt River bed in the path of the freeway and use it for the freeway's construction. This would be an economic bonanza for the sand and gravel industry, as the distance from excavation to its construction use would be very insignificant. The production of all the asphalt and cement for the freeway would contribute enormous amounts of PM. Several of these sand, gravel, cement, and asphalt plants are located in the same vicinity of the monitor at 43rd Avenue and Broadway. The cumulative effect could certainly trigger PM exceedances at the monitor at 43rd Avenue and Broadway. The DEIS never mentions this, but it should be analyzed and modeled. This should further be examined as a cumulative impact, an indirect impact, and a direct impact. And after the freeway is built, there would likely still be ongoing exceedances. Almost every one of these PM exceedances have been detected at the air quality monitor at 43rd Avenue and Broadway Road, and others have occurred along the Salt River bed in previous years. There were even higher levels recorded at the air monitor at 22nd Avenue and Lower Buckeye Road, but this was moved to 43rd Avenue and Broadway years ago. It was moved from the 22nd Avenue and Lower Buckeye Road because there was going to be significant amounts of dust and PM put into the air when the Rio Salado Habitat Restoration was being built, so much so that more exceedances would have occurred at the 22nd Avenue and Lower Buckeye Road monitor. Also, there was a sand and gravel operation at 19th Avenue and the Salt River bed that had excess emissions of PM that triggered a penalty for it from EPA, so the monitor location was moved to protect the polluter. These exceedances resulted in EPA requiring a special Salt River SIP for the Salt River bed to address the excess PM. In preparing the Salt River SIP, there was extensive air monitoring and modeling. Those models do not include any freeway emissions, but as noted on pages 9 and 10, Roads & Trackout as accounted for in this Salt River SIP do not include any new air pollution from the South Mountain Freeway and Truck Bypass. Roads & Trackout also could be as much as 63.7% of the PM in the air on a calm day. The addition of particulate matter pollution from this freeway would be considerable, that should be modeled at a minimum, and quantified, and the entire calculations for the Salt River SIP would have to be redone including this new data to determine if the models show exceedances of the PM standard could occur. That would support the No-Build Option. http://www.epa.gov/region9/air/phoenixpm/pdf/SaltRiver-tech-support.pdf 12

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50 (cont.)		quality technical analysis report for the proposed action was produced in October 2005. The Arizona Department of Transportation and Federal Highway Administration have updated the qualitative analysis to a quantitative analysis for the Final Environmental Impact Statement to ensure that a state-of-the-art analysis is completed for the proposed project. The results of the analysis are summarized in the prologue to the Final Environmental Impact Statement (page xiii) and are more fully described beginning on page 4-68 of the Final Environmental Impact Statement. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones. Sand and gravel mining in the area is regulated by the Maricopa County Air Quality Department. The transportation conformity rule in 40 Code of Federal Regulations § 93.123(c)(5) states that hot-spot analyses are not required to consider construction-related activities that cause temporary increases in emissions. Temporary increases are defined as those that occur only during the construction phase and last 5 years or less at any individual site. Although the duration of the overall construction period of the entire 22- to 24-mile proposed action would be 5 to 6 years, according to page 3-60 of the Final Environmental Impact Statement, any particular portion of the Study Area would not see construction lasting for 5 to 6 years. Construction would be phased based on the factors appearing on page 3-59 of the Final Environmental Impact Statement. Any particular area of the project would not be expected to see construction activities beyond an approximate 2-year period; therefore, the construction effects described above would be temporary and would not require additional analysis. Secondary impacts to air quality are addressed in Table 4-54 on page 4-172 of the Final Environmental Impact Statement. Cumulative impacts to air quality are on page 4-179 of the Final Environmental Impact Statement.

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50	The placement of a freeway about a mile to a mile and a half **upwind** from a monitor that has had all these high levels seems foolish and short sighted. And of course, the impacts and risks of this are not even mentioned in the DEIS. This should be examined as a cumulative impact, an indirect impact, and a direct impact. The DEIS does not examine the dust that would be kicked up during the construction phase, when thousands of tons of dirt would be moved around upwind of the monitor. The proposed path of the South Mountain Freeway would take it over the Salt River bed. To construct the bridges would involve extensive earthmoving. Also, blasting South Mountain would also release enormous amounts of dust (PM), and the natural wind currents and prevailing wind patterns would push this PM toward the air monitor at 43rd Avenue and Broadway.
51	The South Mountain Freeway could therefore be **the most expensive freeway ever built.** Not only the construction costs, and the $20 million already spent on the bogus DEIS, but then there would be the loss of the billion dollars in highway funds. This is a gift that keeps on giving, or taking, as there would be subsequent billions lost through the years due to perennial PM exceedances.
52	**Increases in Particulate Matter Levels Correlate to Increased Mortality** In ***Fine Particulate Air Pollution and Mortality in 20 U.S. Cities, 1987–1994***, Jonathan M. Samet, M.D., Francesca Dominici, Ph.D., Frank C. Curriero, Ph.D., Ivan Coursac, M.S., and Scott L. Zeger, Ph.D., published in the New England Journal of Medicine in December 2000, [http://www.nejm.org/doi/full/10.1056/NEJM200012143432401] a direct correlation to increases in particulate matter in ambient air and death was determined. Phoenix and 19 other cities were studied, all with the same types of results. After taking into account potential confounding by other pollutants, the study found consistent evidence that the level of PM_{10} is associated with the rate of death from all causes and from cardiovascular and respiratory illnesses. The estimated increase in the relative rate of death from all causes was 0.51 percent (95 percent posterior interval, 0.07 to 0.93 percent) for each increase in the PM_{10} level of 10 µg per cubic meter. The estimated increase in the relative rate of death from cardiovascular and respiratory causes was 0.68 percent (95 percent posterior interval, 0.20 to 1.16 percent) for each increase in the PM_{10} level of 10 µg per cubic meter. Yet the DEIS never mentions this well-known data. The increases in particulate matter pollution that will be caused by the South Mountain Freeway should be modeled and included in the environmental impact analysis.
53	**Traffic Congestion Issues at West I-10 Junction Adds to PM Issues** The junction of the South Mountain Freeway on its west end with Interstate 10 may have been an idea conceived many years ago, but the traffic congestion that exists at the area between 59th and 51st Avenues on that freeway during morning and evening rush hours is already more than extreme. It is like a parking lot. Yet there is no mention in the DEIS

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51	**Air Quality**	According to the air quality analyses conducted for the proposed freeway, no violations of either the carbon monoxide or particulate matter (PM_{10}) standards were identified, even at worst-case locations along the project corridor. Thus, the carbon monoxide and particulate analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones. Therefore, no loss of federal funds would occur.
52	**Air Quality**	The Arizona Department of Transportation conducted a quantitative particulate matter (PM_{10}) hot-spot analysis that is discussed on page 4-76 of the Final Environmental Impact Statement. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones.
53	**Traffic**	Construction of the proposed freeway would include widening along Interstate 10 to facilitate entrance and egress of vehicles between the two freeways. Additional information related to the Interstate 10 modifications can be found in Figure 3-26 on page 3-49 and Figure 3-29 on page 3-53 of the Final Environmental Impact Statement. The design of the connection to Interstate 10 and the widening along Interstate 10 were developed in accordance with the Federal Highway Administration's Interstate System Access Informational Guide and have received an initial determination of operational and engineering acceptability from the Federal Highway Administration. Detailed microsimulation models were developed for each of the action alternatives as well as for the No-Action Alternative. The results of the analysis concluded that the action alternatives would not have adverse impacts on the traffic operational characteristics along Interstate 10 and would provide as good or better performance as the No-Action Alternative. An assessment of future traffic conditions with and without the proposed freeway is presented in the Final Environmental Impact Statement beginning on page 3-27. The traffic conditions presented in these sections are consistent with the environmental impacts analysis for elements such as air quality and noise, and the results of those analyses can be found in the respective sections of Chapter 4 of the Final Environmental Impact Statement. The air and noise analyses were updated for the Final Environmental Impact Statement (see sections beginning on pages 4-68 and 4-88, respectively). It is important to note that no substantial differences between the analyses for the Draft and Final Environmental Impact Statements resulted from the update. Secondary impacts to air quality are addressed in Table 4-54 on page 4-172 of the Final Environmental Impact Statement. Cumulative impacts to air quality are on page 4-179 of the Final Environmental Impact Statement.

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	of the cumulative impacts and effects of traffic congestion at that proposed junction, the effects on traffic flow in the vicinity of the interchange of the SMF and I-10 west. Without modeling that information, it cannot be determined if the freeway will cause more congestion or relieve it, but that step cannot wait until the design phase for that analysis because this step might/will show that the effects on traffic flow in the vicinity of the interchange of the SMF and I-10 west would be negative and traffic congestion worsened. This should be examined as a cumulative impact, an indirect impact, and a direct impact.
54	**The overarching and consistent problem with the DEIS is that it utilizes such old and out-dated data from 2004-2007 for its analyses and conclusions that it is not viable or reliable. More recent data about traffic patterns, growth patterns, economic development patterns, etc. must be utilized to get correct projections to establish the need, if there even is one, for the freeway. There was an economic crisis in 2007 that caused major changes in the growth and economy of the Phoenix metropolitan area, and there has been some recovery, but many factors have changed substantially enough that the most up to date information has to be gathered and analyzed for the EIS.**
55	A long line of vehicles sitting with engines idling while waiting to get on Interstate 10 at the junction with the SMF would also likely impact the air monitor at 43rd Avenue and Broadway. That could cost a billion dollars in sanctions more than once. What ADOT is doing is playing Russian Roulette with the highway money, with every day a potentially loaded with an air quality violation at the hot spot monitor at 43rd Avenue and Broadway. This should be examined as a cumulative impact, an indirect impact, and a direct impact.
56	There is much talk about the problems at the Broadway Curve, which is near the confluence of Highway 60, the 143, and Interstate 10. Let us be reminded that the Maricopa Association of Governments (MAG) and ADOT caused this problem through their shortsightedness and design problems. The planning of these agencies caused these traffic congestion nightmares. So now these same agencies, failed agencies, want to do this South Mountain Freeway. Will we be talking about the new junction in west Phoenix in the same way as the Broadway Curve? 100 trucks per hour and auto traffic trying to merge onto I-10 west during rush hour?
57	ADOT already completely ignored the recommendations of the original SMCAT, the group ADOT formed to skirt the proper NEPA scoping, in choosing the proposed alignment. The SMCAT, after months of study, had recommended that the SMF connect to the 101 on the west. So ADOT ignored even the recommendations of its own group and planned the SMF to connect with the I-10 at the currently proposed alignment.
	This leaves a large question: If ADOT did that at that time long ago, what is to stop it from completely ignoring the current SMCAT should SMCAT vote for a "NO BUILD" option?

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54	**Traffic**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future.
55	**Air Quality**	The Arizona Department of Transportation conducted a quantitative particulate matter (PM_{10}) hot-spot analysis that is discussed on page 4-76 of the Final Environmental Impact Statement. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones. Secondary impacts to air quality are addressed in Table 4-54 on page 4-172 of the Final Environmental Impact Statement. Cumulative impacts to air quality are on page 4-179 of the Final Environmental Impact Statement.
56	**Traffic**	Construction of the proposed freeway would include widening along Interstate 10 to facilitate entrance and egress of vehicles between the two freeways. Additional information related to the Interstate 10 modifications can be found in Figure 3-26 on page 3-49 and Figure 3-29 on page 3-53 of the Final Environmental Impact Statement. The design of the connection to Interstate 10 and the widening along Interstate 10 were developed in accordance with the Federal Highway Administration's Interstate System Access Informational Guide and have received an initial determination of operational and engineering acceptability from the Federal Highway Administration.
57	**Public Involvement**	The Arizona Department of Transportation conducted agency and public scoping process and has included agency and public input in the project development process. See Chapter 6 of the Final Environmental Impact Statement; agency scoping is presented beginning on page 6-2 and public involvement on page 6-6. The South Mountain Citizens Advisory Team and its engagement in the process was a part of the overall outreach program. The South Mountain Citizens Advisory Team's own bylaws are clear in its advisory and partial role in the outreach process. While the South Mountain Citizens Advisory Team recommended the W101 Alternative, all stakeholders' input was accounted for—including regional leaders, municipalities, members of the public, and members of the South Mountain Citizens Advisory Team—before identifying the W59 Alternative as the Preferred Alternative (see Final Environmental Impact Statement pages 3-65 and 3-68). The Final Environmental Impact Statement has detailed discussion regarding the relative merits and problems with the four action alternatives evaluated in the Western Section.

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58	**The following are comments related to impacts to hazardous materials:** **DEIS Ignores Risks from Hazardous Materials Transportation Incidents Due to the South Mountain Freeway and Truck Bypass; WQARF Site** The DEIS, starting on page 152, states, "AFFECTED ENVIRONMENT A hazardous materials evaluation for the construction and operation of the proposed freeway was conducted to determine whether: ➢ contaminated soils would be present near potential hazardous materials sites ➢ underground storage tanks would need removal or relocation because of freeway construction ➢ wells and dry wells would be present, providing unintended conduits for preexisting or accidental releases from the construction process to groundwater supplies ➢ during construction activities, workers could encounter soil contaminated with hazardous materials that had not previously been identified" It doesn't mention **at all** the transportation of hazardous materials on the new freeway and their associated risks, or the fact that the area where the freeway would connect with I-10 West crosses a site that was identified in the 1980s as contaminated and added to the list of the state of Arizona's Water Quality Assurance Revolving Fund (WQARF), which is the state's equivalent of a Superfund Site. The site has known groundwater contamination and soil contamination. **Risks from Hazardous Materials Transportation Incidents Due to the South Mountain Freeway and Truck Bypass** But the introduction of hazardous materials and their associated risks into Ahwatukee Foothills by the proposed South Mountain Freeway and Truck Bypass and its truck traffic would be significant. There are no industries using and emitting toxic chemicals in Ahwatukee Foothills that have reporting requirements under either the Toxics Release Inventory of the Emergency Planning and Community Right to Know Act (EPCRA) or the reporting of fixed facility hazardous materials (chemical) inventories required under the emergency planning provisions of EPCA. The latter, Tier Two chemical inventory reports, are annually required, and are reported to the fire department of jurisdiction (Phoenix Fire Department), the local emergency planning committee (Maricopa County LEPC), and the state emergency response commission (AZSERC). (The requirement for retail gas stations to file Tier Two reports was removed many years ago as long as these stations are in compliance with their reporting under the regulations for underground storage tanks.) 15

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58	**Hazardous Materials**	Arizona highways, as are most highways across the United States, are open to all kinds of traffic, so long as the cargo being carried is in accordance with U.S. Department of Transportation regulations for the specific type of cargo. The Arizona Department of Transportation has a few locations in the state with hazardous cargo restrictions, but these restrictions are based on emergency response issues or roadway design limitations specific to that location. For example, the Interstate 10 Deck Park Tunnel has certain hazardous cargo transport restrictions because of the limited ability for emergency responders to address a hazardous materials incident in the tunnel. The South Mountain Freeway, if implemented, is expected to operate under the same rules as other similar facilities in the state; transport of hazardous cargo would be expected to be permissible (see text box on page 4-157 of the Final Environmental Impact Statement). The Arizona Department of Public Safety (which includes the State Highway Patrol) has primary responsibility for enforcing traffic laws. The Department of Public Safety also has primacy when calling in support for traffic accidents, including hazardous materials accidents (see text box on page 4-157 of the Final Environmental Impact Statement). The Arizona Department of Transportation maintains a list of contractors who provide emergency response services, as well as local municipalities whose fire and police departments operate in cooperation with the Department of Public Safety on incidents within their jurisdiction. Requirements for shippers are maintained by the Arizona Department of Transportation's Enforcement Compliance Division. The project team is aware of the Hazardous Materials Commodity Flow Studies that the Arizona State Emergency Response Commission maintains. These studies are used by emergency response planners (such as the Arizona State Emergency Response Commission statewide and the Maricopa County Local Emergency Planning Commission for Maricopa County) as one of the elements considered when developing Emergency Response Plans. If the plan is amended, it is made available to the Arizona Department of Transportation. In the event of an incident with a hazardous materials issue on a state or federal highway, the emergency responders contact the Arizona Department of Transportation's Traffic Operations Center to report the incident. The Traffic Operations Center then contacts the Arizona Department of Transportation's Safety and Risk Management group, who responds to the accident scene and assesses needs in concert with the Incident Commander from the responding agency with jurisdiction. If requested, the Arizona Department of Transportation can assist cleanup activities by engaging specialty subcontractors with whom the Arizona Department of Environmental Quality has contracts for such support. The Arizona Department of Transportation's Safety and Risk Management group's charge is primarily public health protection, with cleanup support being secondary.

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58	The Maricopa County LEPC and the AZSERC are the two emergency planning agencies tasked with developing and updating a comprehensive emergency response plan for Maricopa County and the state of Arizona, respectively. The plan, by statute, requires: "Each emergency plan shall include (but is not limited to) each of the following: (1) Identification of facilities subject to the requirements of this subchapter that are within the emergency planning district, **identification of routes likely to be used for the transportation of substances on the list of extremely hazardous substances referred to in section 11002(a) of this title, and identification of additional facilities contributing or subjected to additional risk due to their proximity to facilities subject to the requirements of this subchapter, such as hospitals or natural gas facilities**. (2) **Methods and procedures to be followed by facility owners and operators and local emergency and medical personnel to respond to any release of such substances.** (3) Designation of a community emergency coordinator and facility emergency coordinators, who shall make determinations necessary to implement the plan. (4) **Procedures providing reliable, effective, and timely notification by the facility emergency coordinators and the community emergency coordinator to persons designated in the emergency plan, and to the public, that a release has occurred** (consistent with the emergency notification requirements of section 11004 of this title). (5) **Methods for determining the occurrence of a release, and the area or population likely to be affected by such release.** (6) A description of emergency equipment and facilities in the community and at each facility in the community subject to the requirements of this subchapter, and an identification of the persons responsible for such equipment and facilities. (7) **Evacuation plans, including provisions for a precautionary evacuation and alternative traffic routes.** (8) **Training programs, including schedules for training of local emergency response and medical personnel**. (9) Methods and schedules for exercising the emergency plan. Due to the unique nature of Ahwatukee Foothills, which is a residential area, and not zoned for heavy industrial uses, few hazardous materials transportation issues and risks exist there because none of these chemicals, other than gasoline and diesel, are being transported into the area, other than incidentally adjacent on Interstate 10, which is east of the area. A catastrophic release of hazardous chemicals along the I-10 corridor would have only an indirect effect on Ahwatukee Foothills. 16

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58 (cont.)		The West Van Buren Water Quality Assurance Revolving Fund site was identified and considered during development of the Draft Environmental Impact Statement (see page 4-165 of the Final Environmental Impact Statement, and the Draft Initial Site Assessment prepared for the proposed project). These sites are primarily groundwater-impact sites, and groundwater is found at a depth of over 60 feet below the footprint of the Preferred Alternative. Given the separation distance between the adversely affected medium (groundwater) and the construction zone (near-surface in these locations), the project team determined that these sites would not pose a risk to construction or to the general public once the facility were completed. This assessment has been clarified in the Final Environmental Impact Statement on page 4-165. The efforts to address security concerns at the petroleum tank farm are discussed on page 3-24 of the Draft Environmental Impact Statement. These included numerous meetings with the Arizona Department of Homeland Security and others and included discussions of barriers to screen the facility from the traveling public and prevent attacks or crashes involving the facility. As noted in the Draft Environmental Impact Statement, these precautions were not necessary after the alignment was shifted from the W55 to the W59 Alternative. The road network in the Maricopa Association of Governments travel demand model includes the Interstate 8 and State Route 85 corridor. So, while the roads are not in the Study Area for the proposed action, traffic and trip distributions along the corridor are included in the traffic analysis for the proposed action. Any traffic that would shift from the Interstate 8 and State Route 85 corridor to the proposed action would be included in the vehicle mix considered in the analysis. A truck driver traveling from Tucson to Los Angeles and choosing to use Interstate 10 and the proposed freeway would travel 15 miles less than one choosing to use the designated truck bypass along Interstate 8 and State Route 85. Choosing to travel on the proposed action versus Interstate 8 and State Route 85 would not translate to any substantial travel-time benefits because the trip would require entering the Phoenix metropolitan area and be subject to potential delays and congestion. Therefore, it is expected that "true" through-truck traffic (not having to stop in the metropolitan area) would continue to use the faster, designated, and posted bypass system of Interstate 8 and State Route 85. The 2008 hazardous material report referenced in the comment was prepared to assist the Arizona Department of Transportation in refining its policies and process for determining hazardous materials routing in the state. It was a preliminary document and intended to form a basis of understanding about how other states' planning processes address this issue. The report was not intended to provide specific recommendations for hazardous materials routing, but rather to provide the Arizona Department of Transportation with information to consider in making possible adjustments to its planning process. The recommendations of the report have been taken under advisement by the Arizona Department of Transportation.

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58	To determine the additional risks of hazardous materials transportation, the Maricopa County LEPC and the AZSERC would also need and utilize hazardous materials commodity flow studies to determine the types and amounts of hazardous materials **being transported** through or within the county and/or state to meet their respective planning requirements. Of course, the AZSERC does exactly that periodically, and the data and emergency planning is updated. But that data and the relevant analysis is absent in the DEIS. The planning for response to an incident involving the release into the environment of a hazardous material involves using Aereal Locations of Hazardous Atmospheres (ALOHA), RMP*Comp, and Computer Aided Management of Emergency Operations (CAMEO). All are USEPA approved and provided emergency planning screening tools. RMP*Comp is used to predict the effects of a release that would exceed the ALOHA model limit of six miles. The worst case scenario release for chlorine was the only hazardous material being transported on the highways that, in the event of a catastrophic release, would exceed the six-mile ALOHA modeling limit, so RMP*Comp is used to assess the radius of impact for the worst-case chlorine release. ALOHA, RMP*Comp, and CAMEO are all distributed by the USEPA and are software programs provided and periodically updated by USEPA to determine the distance from a release point there would be a danger to human health and safety. ALOHA can also calculate the levels of a released chemical that could infiltrate nearby buildings, the levels of those chemicals that will likely be in these buildings, and the time it would take for the released chemical(s) to reach their maximum concentration. As stated in the reports of the various hazardous materials commodity flow studies conducted in Arizona, ALOHA modeling already indicates, "a catastrophic release of gasoline from a tanker truck could cause areas up to 1.0 mile away to be affected at LOC 3 (a concentration where the general population could experience severe health effects and death) and areas as far as 3.1 miles away to be affected at LOC 1 (enough to cause discomfort in the general population). Credible and catastrophic releases of sulfuric acid would create an evacuation radius of 0.5 miles from the highway and railroad." (LOC means level of concern; LOCs range from 3 down to 1.) The petroleum tank farm complex at 51st Avenue and Van Buren to about 57th Avenue and Van Buren receives transmix from California through a pipeline. There, the transmix is "refined" into diesel fuel and gasoline at this Phoenix location. The new South Mountain Freeway would be an immediately adjacent truck bypass route towards Casa Grande and the new train complex near Red Rock/Picacho Peak. The DEIS never mentions this, but the extra potential truck traffic from the petroleum tank farm complex in Phoenix using the South Mountain Freeway heading south should be investigated, examined, and quantified, and the additional risks of a hazardous materials transportation incident involving diesel or gasoline should be also investigated, examined, and quantified. This should be examined as a cumulative impact, an indirect impact, and a direct impact. 17			

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58	Ahwatukee Foothills already has some emergency planning needs due to the transportation of gasoline into and within the area. There should already be planning for an incident involving gasoline within a mile of current arterial traffic, including Pecos Road. Schools within a mile of Pecos should have an evacuation plan. The proposed South Mountain Freeway and Truck Bypass would only add **exponentially** to emergency planning needs and risks as more truck traffic of this chemical and others that are potentially more dangerous in the event of a catastrophic release would be transported immediately adjacent to schools, parks, shopping areas, and other vulnerable facilities in Ahwatukee Foothills. **The freeway would be the sole source of these new risks from a hazardous materials incident, thus this would be a very significant impact directly caused by the freeway, and a full analysis of the risks and effects must be examined in the NEPA process.** The data and calculations of risk and distance from certain chemicals carried on the highways are documented in the July 9, 2009, report, *The Hazardous Materials Commodity Flow Study Report I-19 Corridor from I-10 to Mexico Border, Arterial Highways and Railways, Pima and Santa Cruz Counties, Arizona*; the October 30, 2006 report, *Hazardous Materials Commodity Flow Study Report I-8 and I-10 Corridors, Arterial Highways and Railways, Yuma, Maricopa, Pinal, Pima and Cochise Counties, Arizona*; and the December 5, 2008 *Hazardous Material Commodity Flow Study I-10 Corridor from SR 85 to California* prepared for the AZSERC. Previous commodity flow study reports would show the same sorts of information. One piece of data that is missing is the Hazardous Materials Commodity Flow Study Report for the I-8 to SR 85 to I-10 route that was selected as a truck bypass around 2006. (Part of the idea of this particular truck bypass was to route truck traffic away from the Phoenix metro area as a measure to reduce particulate matter air pollution.) This also is part of the CANAMEX highway system that has been approved via treaties with Mexico and Canada, and this truck bypass has now been officially designated as the route of the CANAMEX. "SR 85 is the official truck bypass route around metropolitan Phoenix and has also been designated as part of the official CANAMEX corridor through the North American Free Trade Agreement (NAFTA). In addition to the importance of this route to the trucking industry, this corridor also provides access from the western portion of metropolitan Phoenix to the cities of Yuma and San Diego." [http://www.azdot.gov/highways/valley_freeways/SR85/Access.asp] "SR 85 and B-8 form a corridor that provides a major north-south connection between Interstate 10 west of the metropolitan area of Phoenix and I-8. The project limits of this access management study stretch approximately 36 miles and include the entire length of SR 85 from Gila Bend to I-10 and a portion of B-8 that connects SR 85 with I-8 on the east side of the town of Gila Bend. The route traverses through lands owned by the Bureau of Land Management, trust lands that are administered by the Arizona State Land Department, Arizona Game and Fish land (Robbins Butte State Wildlife Area), Maricopa

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58	to withhold this data, analysis, and discussion, which normally are indeed utilized in DEISs and the NEPA process. Frankly, that HDR obviously knew all of this, and therefore likely so did ADOT, in light of the SPR 64 report to ADOT, the omission and exclusion of this data from the DEIS may be a criminal act of negligence and/or fraud, akin to not warning people that they are entering an area where above ground nuclear testing could happen at any minute. From the beginning of the NEPA process regarding the South Mountain Freeway and Truck Bypass, Ahwatukee Foothills residents and others have consistently and vociferously raised concerns about the added risks to their community from the transportation of hazardous materials on the new South Mountain Freeway and Truck Bypass, and in doing so they have consistently voiced concerns regarding the additional problems with hazardous materials response in the affected area, as well as evacuation and shelter in place issues. Frankly, there is also a risk from the consequences of a hazardous materials transportation incident to the communities on the north side of the pass at South Mountain, and Laveen would be at a particularly heightened risk also. Therefore, the same types of impacts that threaten Ahwatukee Foothills would apply to these other communities, but at least these others have alternate escape routes that the community of Ahwatukee Foothills does not have.
59	As of 2010, the 35.8 square-mile community of Ahwatukee Foothills has a population of 77,249. So if there is a catastrophic release from a 17-ton chlorine tanker along the Pecos Road alignment, almost all of these 77,249 would be at risk of death or severe injury. In Laveen, there are 35,502 residents who would be at a similar risk. There would also be risks to the residents of the Gila River Indian Community along the Pecos alignment. All of these above mentioned communities would be forever at risk of a very terrible, certain, and quick death from a chlorine release if this freeway gets built. All of these communities would have to be forever on hair trigger alert. They, as communities, would need periodic training and drills to protect them, as well as infrastructure in the form of siren systems and other alert systems, telephone ring down systems, and much more.
60	We know that over a hundred trucks per hour would be the number at the beginning of the freeway's opening, just from localized traffic information, but when the I-8 to SR 85 to I-10 truck bypass is negated, there will be much more truck traffic. That number can be quantified, and that is something the DEIS should have done with the millions of dollars already wasted on it. But HDR and ADOT skirt that by claiming in the DEIS that that information is not known and the impacts are unclear. That is patently absurd; that is precisely the sort of data that is quite available, and must be examined, studied, and analyzed.
61	Ahwatukee Foothills has its own unique layout and design, sometimes characterized as a large cul-de-sac, and in the event of a hazardous materials incident requiring shelter in place, or especially involving evacuation, there would be particular problems and risks. Due to the proximity of schools, parks, and other public facilities, as well as densely populated residential areas within areas of risk in the event of an incident involving the release into the environment of hazardous materials, there would have to be extensive

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59	**Hazardous Materials**	The situation described in the comment, would be an indirect effect of the construction of a new freeway such as the proposed action. According to 40 Code of Federal Regulations 1508.8, indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Reasonably foreseeable actions are those that are likely to occur or probable, rather than those that are merely possible.
60	**Traffic**	The road network in the Maricopa Association of Governments travel demand model includes the Interstate 8 and State Route 85 corridor. So, while the roads are not in the Study Area for the proposed action, traffic and trip distributions along the corridor are included in the traffic analysis for the proposed action. Any traffic that would shift from the Interstate 8 and State Route 85 corridor to the proposed action would be included in the vehicle mix considered in the analysis. A truck driver traveling from Tucson to Los Angeles and choosing to use Interstate 10 and the proposed freeway would travel 15 miles less than one choosing to use the designated truck bypass along Interstate 8 and State Route 85. Choosing to travel on the proposed action versus Interstate 8 and State Route 85 would not translate to any substantial travel time benefits. Therefore, it is expected that "true" through-truck traffic (not having to stop in the metropolitan area) would continue to use the faster, designated, and posted bypass system of Interstate 8 and State Route 85.
61	**Hazardous Materials**	Arizona highways, as are most highways across the United States, are open to all kinds of traffic, so long as the cargo being carried is in accordance with U.S. Department of Transportation regulations for the specific type of cargo. The Arizona Department of Transportation has a few locations in the state with hazardous cargo restrictions, but these restrictions are based on emergency response issues or roadway design limitations specific to that location. For example, the Interstate 10 Deck Park Tunnel has certain hazardous cargo transport restrictions because of the limited ability for emergency responders to address a hazardous materials incident in the tunnel. The South Mountain Freeway, if implemented, is expected to operate under the same rules as other similar facilities in the state; transport of hazardous cargo would be expected to be permissible (see text box on page 4-157 of the Final Environmental Impact Statement). The Arizona Department of Public Safety (which includes the State Highway Patrol) has primary responsibility for enforcing traffic laws. The Department of Public Safety also has primacy when calling in support for traffic accidents, including hazardous materials accidents (see text box on page 4-157 of the Final Environmental Impact Statement). The Arizona Department of Transportation maintains a list of contractors who provide emergency response services, as well as local municipalities whose fire and police departments operate in cooperation with the Department of Public Safety on incidents within their jurisdiction. Requirements for shippers are maintained by the Arizona Department of Transportation's Enforcement Compliance Division.

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	planning and drills for shelter in place and evacuation, an assessment of the types and amounts of hazardous materials traffic and the chemicals involved, and much more. Siren systems and appropriate training and drills would have to be instituted to mitigate the additional risks.
62	In addition to this, the fact that the proposed freeway would eliminate the exits from the community at 32nd Street and Pecos would only exacerbate an already difficult position that this community would be in if there were an evacuation or the need for a response to a catastrophic hazardous materials incident. Regular traffic is already voluminous at that intersection: • Pecos (west approach) - Total 22,313 veh/day (2012 count) including 11,727 westbound and 10,586 eastbound volumes. • Pecos (east approach) - Total 28,178 veh/day (2012 count) including 14,331 westbound and 13,847 eastbound volumes • 32nd Street (north approach) - Total 7,807 veh/day (2011 count) including 3,761 northbound and 4,406 southbound volumes. With that access to Pecos Road being removed by the freeway, all of that traffic would have to find another way out and further clog and congest other exit routes. Yet there is no mention or analysis of these issues in the DEIS.
63	What the DEIS fails to mention and analyze about the risks from a catastrophic release of hazardous chemicals due to a transportation incident MUST be fully reviewed and analyzed in the EIS. In the matter of evacuation of Ahwatukee Foothills, the GRIC community near the freeway, and Laveen, a detailed traffic flow analysis and evacuation plan utilizing street maps of Ahwatukee Foothills must be prepared to determine if it is feasible at all, especially in the case of Ahwatukee Foothills. **If the analysis shows that the community of Ahwatukee cannot be evacuated within 5-10 minutes, then the No Build option is the only logical and humane result.** The caveat of evacuation within 5-10 minutes is due to the very real threat to the community due to a catastrophic release of chlorine gas from a 17-ton tanker truck during a transportation incident.
	The October 30, 2006 report, *Hazardous Materials Commodity Flow Study Report I-8 and I-10 Corridors, Arterial Highways and Railways, Yuma, Maricopa, Pinal, Pima and Cochise Counties, Arizona*, also mentions the risk from a release of **chlorine gas** and the risks of a catastrophic release during a transportation incident. As stated, RMP*Comp is an USEPA approved emergency planning screening tool used when ALOHA predicts the effects of a release would exceed the ALOHA model limit of six miles. The worst case scenario release for chlorine was the only material to exceed the six-mile ALOHA limit.
	Since Ahwatukee Foothills is not six miles wide from Pecos Road to South Mountain, it is easy to conclude that, in the event of a catastrophic release of chlorine from a 17-ton tanker of chlorine gas, **all of Ahwatukee Foothills** would have to either evacuate or shelter in place. Further, an ALOHA modeling indicates that buildings within two miles of the point where the chlorine release occurred would have high enough levels of chlorine gas infiltrate into them to become lethal, which means that shelter in place strategies would not work. The only option would be evacuation, but as chlorine gas
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61 (cont.)		In the event of an incident with a hazardous materials issue on a state or federal highway, the emergency responders contact the Arizona Department of Transportation's Traffic Operations Center to report the incident. The Traffic Operations Center then contacts the Arizona Department of Transportation's Safety and Risk Management group, who responds to the accident scene and assesses needs in concert with the Incident Commander from the responding agency with jurisdiction. If requested, the Arizona Department of Transportation can assist cleanup activities by engaging specialty subcontractors with whom the Arizona Department of Environmental Quality has contracts for such support. The Arizona Department of Transportation's Safety and Risk Management group's charge is primarily public health protection, with cleanup support being secondary
62	**Traffic**	The determination to not include an interchange at 32nd Street was made in coordination with the City of Phoenix (see Figure 3-8 on page 3-15 of the Draft Environmental Impact Statement). The interchange was eliminated based on undesirable residential displacements and cost. In 2006, the City of Phoenix conducted a traffic circulation study to evaluate the impacts of the proposed freeway on the local street system, including the shift of access to Foothills Reserve and Calabrea from Pecos Road to Chandler Boulevard. The City study found no adverse effects on the local street system from the freeway (see Appendix 3-1 in the Final Environmental Impact Statement). In the event of an incident with a hazardous materials issue on a state or federal highway, the emergency responders contact the Arizona Department of Transportation's Traffic Operations Center to report the incident. The Traffic Operations Center then contacts the Arizona Department of Transportation's Safety and Risk Management group, who responds to the accident scene and assesses needs in concert with the Incident Commander from the responding agency with jurisdiction. If requested, the Arizona Department of Transportation can assist cleanup activities by engaging specialty subcontractors with whom the Arizona Department of Environmental Quality has contracts for such support. The Arizona Department of Transportation's Safety and Risk Management group's charge is primarily public health protection, with cleanup support being secondary.
63	**Hazardous Materials**	There are no requirements in 23 Code of Federal Regulations 771 Environmental Impact and Related Procedures or in the Federal Highway Administration Technical Advisory T 6640.8A Guidance for Preparing and Processing Environmental and Section 4(f) Documents to address releases of hazardous chemicals due to a transportation incident in National Environmental Policy Act documents for transportation projects like the proposed action. As discussed above, reasonably foreseeable actions are those that are likely to occur or probable, rather than those that are merely possible. If the proposed action is the Selected Alternative in a record of decision, planning for emergency situations would be initiated. If the plan is amended, it is made available to the Arizona Department of Transportation.

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63	flows rapidly at ground level because it is heavier than air, it is unlikely that people would survive long enough to evacuate. Depending on the size of the hole or the rupture of the tanker of chlorine, the tanker could completely empty in a minute or so. And these chlorine truck tankers are quite vulnerable to bullets and other physical trauma. For an objective examination of issues related to a catastrophic release from a chlorine tanker truck, see *Mathematical Modeling and Decision Analysis for Terrorism Defense: Assessing Chlorine Truck Attack Consequence and Countermeasure Cost Effectiveness,* Anthony Michael Barrett. It notes: "Adapting our modeling system to ruptures emptying a tank via flashing two-phase flow through an orifice [80], forming horizontal jets, indicates that such releases could result in approximately the same number of fatalities as an instantaneous release, if such a release takes 10 minutes or less. " page 42 "People in vehicles may be as well off staying where they are, turning off the air-supply fan and sealing the vents, as heading into a nearby building. It may also be dangerous for them to try to drive away, since they may unintentionally drive into higher-concentration areas." "Without fast and effective defense response, release of 17 tons of chlorine from a tank truck in a generic urban area with 2.5 m/s wind and Pasquill stability class F, could result in approximately 4000 (half within ~10 minutes) to 30,000 fatalities (half within ~20 minutes), depending on dose-response model." " Rapid release of the entire cargo of 17 tons of chlorine from one tank truck could result in the formation of a toxic cloud stretching over tens of city blocks within a few minutes. Predicted fatalities are strongly sensitive to wind speed, atmospheric stability class, amount of chlorine released, and dose-response model parameters. Without defensive response, under highest-fatality weather conditions, using the Withers and Lees dose-response model, we estimate approximately 8000 fatal exposures, with 50% occurring within 15 minutes. With other dose-response models, under the same weather conditions, no-defense-response fatality estimates range from approximately 4000 to approximately 30,000 fatalities. Total fatalities under median-fatality weather conditions are approximately 10-20% of total fatalities under highest-fatality weather conditions, depending on dose-response model." "If chlorine is released outdoors, exposure risk is much higher for people outdoors than indoors. We assumed that people in the area were 7% outdoors and 93% indoors, but the fraction of estimated fatalities that are people outdoors in the no-response case, under highest-fatality weather conditions, ranges from 60-90%. Most fatalities indoors are people on the first few floors, so it greatly can reduce hazard for those indoors if air intakes are at roof level instead of on each floor. Changes in mass of chlorine released result in roughly proportional increases in outdoor fatalities, though disproportionately high increases in indoor fatalities, probably because larger-mass releases lead to larger

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61	and longer-lasting clouds. Changes in some parameters, such as indoor and outdoor population densities, would produce proportional changes in fatality estimates in the no-defense-response case. If implemented quickly and widely enough, rapid public responses such as sheltering-in-place and evacuation could significantly reduce fatalities from a chlorine attack. However, practical response times may be significantly longer, with the result that the reduction in mortality would be small. Under highest-fatality weather conditions, with the Withers and Lees dose-response model, to achieve a 50% reduction in fatalities for people outdoors at the time of attack by taking shelter in nearby buildings, people would need to move indoors approximately ten minutes after a chlorine release. However, estimated delays from chlorine exposure effectively add four to seven minutes to ingress time, increasing fatalities by ~1000. To achieve a 50% reduction in fatalities for people indoors at the time of the attack, building air intakes would need to be shut approximately two to six minutes after the attack depending on building air exchange rates before and after shutdown, though later 45 shutdowns can increase fatalities by trapping poison inside. To achieve a 50% reduction in estimated outdoor fatalities, evacuation crosswind at 50 m/min would need to begin after approximately 12 minutes if chlorine exposure does not cause movement delays. Achieving a 50% reduction in estimated outdoor fatalities with only a security perimeter would require a distance between the chlorine release and people outdoors of approximately 1200 m. For mitigation measure cases, trends in sensitivities to weather conditions and dose-response model are generally similar to those for no-defense-response cases. Fatality estimates for the models and scenario we consider in this chapter are much higher than the numbers of fatalities in the 2006-2007 chlorine attacks in Iraq. When our estimates are adjusted to correspond to the conditions in those attacks, as estimated from publicly available information, we obtain fatality predictions roughly similar to, but often higher than, the numbers actually seen in Iraq. We expect that our models and assumptions are biased towards overestimating fatalities. We suggest readers use caution in applying our results, and place less importance on specific values of our model predictions than on trends in those prediction (pages 44-46) [http://research.create.usc.edu/cgi/viewcontent.cgi?article=1010&context=nonpublished_reports] Chlorine gas in even small concentrations is harmful. A person encountering chlorine gas will have a hard time seeing as the chlorine reacts with the moisture in the eye to create hydrochloric acid. The eyes will tear up and make seeing very difficult. At high enough levels, severe scarring and blindness will result. The same formation of hydrochloric acid will occur in the throat and lungs. People won't be able to take a deep breath or breathe without choking, as mucous membranes in the respiratory system will be quite irritated and will start to weep. Lungs will blister, and the ability to pass oxygen to the blood through the lung membranes will be compromised 23

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63	immediately. Walking, much less running, will be very difficult. A half blinded, gasping person who cannot take a deep breath is not going to be a match for a cloud of chlorine, and any evacuation, or rescue on any scale, after the arrival of the chlorine gas will be virtually impossible. Handicapped and elderly people, as well as children, would be at a particular disadvantage. People outside would have no place to go to for sheltering in place. Shelter in place strategies, i.e. having people shelter in a building, stop ventilation systems, and block up and seal all air flow, will have to be successful before the chlorine gas arrives. Otherwise, those sheltering will bottle themselves up with a harmful gas. ALOHA modeling indicates that certainly all buildings within a mile of the chlorine release from a 17-ton tanker truck would have such high levels of chlorine gas infiltrate into them that most people there would die, or be very severely injured. Some models put that circle of assured death at closer to two miles away. There are schools and residential areas on the north side of the Pecos Road alignment within a mile of the proposed South Mountain Freeway and Truck Bypass, and many more within two miles of the freeway alignment. There would be thousands of people at an extreme risk.
64	The prevailing winds push across GRIC land toward the north, toward South Mountain, and also to the west through the 51st Avenue pass. Chlorine fumes from an incident on the Pecos Road alignment will certainly be most likely to blow the cloud into all of Ahwatukee Foothills, then on to the GRIC at 51st Avenue, then into Laveen.
63	ALOHA modeling has a six mile limit to its calculation, but in this case, that limit is more than Ahwatukee Foothills is wide, north to south. All 77,000+ people there would be at a severe risk with no way out.
64	There is a pass at 51st Avenue where the proposed truck bypass/freeway is planned. The prevailing winds do push through this from the south, mostly, and there is a westerly breeze that eventually pushes the air from Ahwatukee Foothills to and through that pass. After the chlorine cloud takes out Ahwatukee Foothills, it will drift through the pass, killing and harming any people on the GRIC in its path who have not evacuated or sheltered already. Then it would seep towards Laveen, where it would also wreak havoc. Laveen residents have many options to evacuate, roads east and west, but there is still lack of easy travel there. The time before the chlorine cloud got there might give Laveen area residents and visitors more time, and the dissipation of the chlorine by the time it reached that distance from the source, several miles, could better enable shelter in place strategies.
63	However, if the chlorine incident happened at the 51st Avenue pass and/or Laveen, the one to two mile kill zone and six+ miles of harm would apply there with just a few minutes to take appropriate action to evacuate or shelter in place. All these communities would be forever just minutes from annihilation. All these communities would need extensive education and drills, special planning, and additional resources, such as telephone ring down systems, siren and flashing light warning systems, and other notification strategies.

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64	**Air Quality**	According to the Arizona Department of Transportation, 2013, *Air Quality Assessment South Mountain Freeway 202L Draft Report*, review of wind data from the Gila River Indian Community monitoring site at St. Johns suggests that during the morning hours and associated with mountain-drainage air flows and stable atmospheric conditions, wind flows are from the southeast and follow the Gila River channel to the north. Locations to the east of St. Johns experience flow from the east to the lower elevations along the Gila River. During the warmer hours' improved mixing, flows typically follow the river channel and come from the north and northwest. Likewise, during a 1-month-long meteorological monitoring period (November 20, 2006 through December 21, 2006) at Pecos Road and 40th Street and a second 1-month-long monitoring period at Pecos Road and 24th and 40th streets (April 19, 2007 through May 21, 2007), winds during the morning hours typically were from the northeast. During the warmer hours, and with improved mixing, winds typically were from the west.

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63	There is the additional problem of handling the people outdoors at parks, bicycling, hiking, shopping, and other activities if such an incident occurred. Strategies would have to be determined well in advance. Law enforcement personnel and emergency responders would need to be trained, drilled, equipped properly, and otherwise prepared for this scenario. If the 17-ton tanker of chlorine empties in minutes, there won't be much the emergency responders can do to stop the leak, but patch kits are available for that purpose. A rupture or hole may be too large to patch, and that size of opening would vent all the chlorine anyway by the time any responders arrived. With such limited freeway access and egress, that becomes a response hindrance also.
65	One responder strategy would be to try to "knock down" the cloud of chlorine with water. To prepare for that, the freeway would have to have a hydrant system with enormous amounts of water and water pressure, as no fire truck would have enough water to last very long. All that water and chlorine would make plenty of hydrochloric acid. The hydrochloric acid would eat away and decay the responding vehicles and equipment, the concrete on the freeway, its culverts, degrade the asphalt pavement, and ruin any metal cables and metal where the acid solution washed to. The freeway would have to be designed so that such an incident would not also destroy it.
63	There would also be residual effects. The January 2005 chlorine disaster in Graniteville, South Carolina illustrates some of these. Following the chlorine disaster, Avondale Mills (textile company) officials had spent more than $140 million on cleaning, repairs and damage mitigation from the textile mills machinery that was corroded so severely by the chlorine gas that it had to be replaced, only to find that new equipment brought to the plant quickly corroded because chlorine was still present and reacting with other agents.
	That the corrosive effects of the chlorine from such a large release would last so long needs to be taken into account into assessing the costs associated with such an incident. The chlorine reacted with moisture to form hydrochloric acid, but even after time, one would expect that this would diminish. In assessing the damages from a large-scale chlorine release, emergency responders and emergency planning agencies should look for this lasting effect. The corrosive effects could harm pavement, concrete, industrial infrastructure, and even residential structures and the electrical wiring. A much more detailed decontamination, including pH samplings, should be undertaken in the recovery phase of operations to prevent such devastation.
	Chlorine gas also has other effects on the infrastructure and electronics. The dryness of the Phoenix area might somewhat mitigate the tendency of airborne chlorine gas to form hydrochloric acid with moisture, but the chlorine and the moisture in the air form weak acids that can affect cell phones, car ignitions, and a host of other devices. Arizona has a moist season, monsoon in the summer, and it has normal rainfall events, and if there is sufficient moisture in the air, hydrochloric acid will form. Dry acid deposition from a chlorine disaster would also be a lingering source of problems.

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65	**Hazardous Materials**	According to the Arizona Department of Transportation's 2012 Roadway Design Guide, "Within the highway design philosophy and the Arizona Department of Transportation project team approach to project development, the roadway designer has the responsibility to contribute the most desirable design parameters consistent with safety, service, environment, and cost effectiveness and to apply these parameters with sound engineering judgment." In general, to limit costs but still protect public safety, roads are not designed for the worst possible incident, but they are designed to accommodate most foreseeable incidents with moderate damage. This is similar to the National Environmental Policy Act's direction that an environmental impact statement must discuss reasonably foreseeable actions. These are actions that are likely to occur or probable, rather than those that are merely possible.

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66	NEPA requires examination of cultural, social, and economic impacts, and the new hazardous materials traffic and risks caused by the South Mountain Freeway and Truck Bypass would certainly affect all of these topic areas.
67	Despite all of this, there is nothing in the DEIS that even mentions the hazardous materials transportation and risks issue! This raises many issues, from the $20+ million spent on this deficient study, to the scoping for the DEIS that was designed to restrict citizen input rather than allowing and encouraging it, to the blatant ignoring of actual, well documented statements of these concerns about the risks from hazardous materials transportation incidents by citizens participating in this particular NEPA process.
	But it is evident that ADOT knew that there would be hazardous materials being transported on this proposed highway. A tunnel through South Mountain was rejected as an option by ADOT because that would prevent placarded traffic (traffic with hazardous materials) from traveling on the freeway. [Chapter five, page 20. "The inclusion of a tunnel could result in hazardous materials restrictions along the entire proposed action. Therefore, hazardous cargo carriers would have to continue to use existing routes."]
	DEIS Ignores WQARF Site
	Hazardous Materials has been mostly limited in the DEIS to a discussion of hazardous materials that might be encountered in the soils during construction. Yet, despite this alleged concern, the fact that the proposed path of the freeway crosses contaminated property near Interstate 10 near 55th Avenue is neither mentioned nor examined, much less the financial liability the taxpayers might be assuming by purchasing the contaminated property. That would certainly be an enormous economic impact. Since the 1980s, there has been well-documented groundwater contamination in the area around 51st avenue and Van Buren to 59th Avenue and Van Buren, enough so that it was added to the list of the state of Arizona's Water Quality Assurance Revolving Fund (WQARF), which is the state's equivalent of a Superfund Site.
	From: http://www.azdeq.gov/environ/waste/sps/download/phoenix/wvb.pdf
	"Site History: 1987: The November 13 Decision Record created the Van Buren Tank Farm WQARF area. The amended decision record dated December 11 changed the name to the West Van Buren Area."
	"The West Van Buren WQARF (site) is located in the western portion of Phoenix, Arizona. The site is bounded approximately by Interstate 10 to the north, 7th Avenue to the east, Buckeye Road to the south and 75th Avenue to the west. In addition, a finger shaped plume exists between 7th Avenue and 27th Avenue between Buckeye Road and Lower Buckeye Road." (http://www.azdeq.gov/environ/waste/sps/download/phoenix/wvb.pdf)
	"Contaminants:
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66	**Hazardous Materials**	According to 46 *Federal Register* 18026 (March 23, 1981), the environmental impact statement must discuss reasonably foreseeable actions. These are actions that are likely to occur or probable, rather than those that are merely possible. Arizona highways, as are most highways across the United States, are open to all kinds of traffic, so long as the cargo being carried is in accordance with U.S. Department of Transportation regulations for the specific type of cargo. The Arizona Department of Transportation has a few locations in the state with hazardous cargo restrictions, but these restrictions are based on emergency response issues or roadway design limitations specific to that location. For example, the Interstate 10 Deck Park Tunnel has certain hazardous cargo transport restrictions because of the limited ability for emergency responders to address a hazardous materials incident in the tunnel. The South Mountain Freeway, if implemented, is expected to operate under the same rules as other similar facilities in the state; transport of hazardous cargo would be expected to be permissible (see text box on page 4-157 of the Final Environmental Impact Statement).
67	**Hazardous Materials**	If the proposed action is the Selected Alternative in the record of decision, planning for emergency situations would be initiated. If the plan is amended, it is made available to the Arizona Department of Transportation. Hazardous materials transport is described on page 4-157 of the Final Environmental Impact Statement. Arizona highways, as are most highways across the United States, are open to all kinds of traffic, so long as the cargo being carried is in accordance with U.S. Department of Transportation regulations for the specific type of cargo. The Arizona Department of Transportation has a few locations in the state with hazardous cargo restrictions, but these restrictions are based on emergency response issues or roadway design limitations specific to that location. For example, the Interstate 10 Deck Park Tunnel has certain hazardous cargo transport restrictions because of the limited ability for emergency responders to address a hazardous materials incident in the tunnel. The South Mountain Freeway, if implemented, is expected to operate under the same rules as other similar facilities in the state; transport of hazardous cargo would be expected to be permissible (see text box on page 4-157 of the Final Environmental Impact Statement).
	Public Involvement	The effort represents the Arizona Department of Transportation's most extensive public involvement program undertaken in the Phoenix area leading up to publication of the Draft Environmental Impact Statement in April 2013. Examples, such as holding over 200 presentations were made to neighborhood groups, homeowners' associations, chambers of commerce, village planning committees, trade associations, and other interested parties, can be found in text beginning on page 6-6 of the Final Environmental Impact Statement. The purposes of the outreach were in accordance with requirements established under the National Environmental Policy Act and include: obtain public input to assist in developing a well planned, researched, and defensible environmental impact statement for the proposed action; provide ongoing information on the study and obtain input from the primary stakeholders and broader public; identify key issues and concerns of the public and ensure that these are appropriately considered during the process; develop and implement a process that maintains open and continuing communications among the public, Arizona Department of Transportation, Federal Highway Administration, and the project team; and use multiple communication tools to effectively engage all population segments, thereby ensuring equal access to the environmental impact statement process.

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	NEPA requires examination of cultural, social, and economic impacts, and the new hazardous materials traffic and risks caused by the South Mountain Freeway and Truck Bypass would certainly affect all of these topic areas. Despite all of this, there is nothing in the DEIS that even mentions the hazardous materials transportation and risks issue! This raises many issues, from the $20+ million spent on this deficient study, to the scoping for the DEIS that was designed to restrict citizen input rather than allowing and encouraging it, to the blatant ignoring of actual, well documented statements of these concerns about the risks from hazardous materials transportation incidents by citizens participating in this particular NEPA process.
68	But it is evident that ADOT knew that there would be hazardous materials being transported on this proposed highway. A tunnel through South Mountain was rejected as an option by ADOT because that would prevent placarded traffic (traffic with hazardous materials) from traveling on the freeway. [Chapter five, page 20. "The inclusion of a tunnel could result in hazardous materials restrictions along the entire proposed action. Therefore, hazardous cargo carriers would have to continue to use existing routes."]
69	**DEIS Ignores WQARF Site** Hazardous Materials has been mostly limited in the DEIS to a discussion of hazardous materials that might be encountered in the soils during construction. Yet, despite this alleged concern, the fact that the proposed path of the freeway crosses contaminated property near Interstate 10 near 55th Avenue is neither mentioned nor examined, much less the financial liability the taxpayers might be assuming by purchasing the contaminated property. That would certainly be an enormous economic impact. Since the 1980s, there has been well-documented groundwater contamination in the area around 51st avenue and Van Buren to 59th Avenue and Van Buren, enough so that it was added to the list of the state of Arizona's Water Quality Assurance Revolving Fund (WQARF), which is the state's equivalent of a Superfund Site. From: http://www.azdeq.gov/environ/waste/sps/download/phoenix/wvb.pdf "Site History: 1987: The November 13 Decision Record created the Van Buren Tank Farm WQARF area. The amended decision record dated December 11 changed the name to the West Van Buren Area." "The West Van Buren WQARF (site) is located in the western portion of Phoenix, Arizona. The site is bounded approximately by Interstate 10 to the north, 7th Avenue to the east, Buckeye Road to the south and 75th Avenue to the west. In addition, a finger shaped plume exists between 7th Avenue and 27th Avenue between Buckeye Road and Lower Buckeye Road." (http://www.azdeq.gov/environ/waste/sps/download/phoenix/wvb.pdf) "Contaminants:

26

Code	Issue	Response
68	**Hazardous Materials**	As disclosed on page 4-157 of the Final Environmental Impact Statement, the Arizona Department of Transportation has a few locations in the state with hazardous cargo restrictions, but these restrictions are based on emergency response issues or roadway design limitations specific to that location. For example, the Interstate 10 Deck Park Tunnel has certain hazardous cargo transport restrictions because of the limited ability for emergency responders to address a hazardous materials incident in the tunnel. The comment infers the only reason for elimination of tunnels as a reasonable option was due to the potential to restrict hazardous materials transport. On the referenced page of the Draft Environmental Impact Statement, there are seven other reasons associated with design, operational, maintenance, costs and impacts cited for the elimination of the tunnels as a reasonable option. Arizona highways, as are most highways across the United States, are open to all kinds of traffic, so long as the cargo being carried is in accordance with U.S. Department of Transportation regulations for the specific type of cargo. The South Mountain Freeway, if implemented, is expected to operate under the same rules as other similar facilities in the state; transport of hazardous cargo would be expected to be permissible.
69	**Hazardous Materials**	Analysis of hazardous materials followed state-of-the-practice methods as reviewed by the U.S. Environmental Protection Agency and as used in a multitude of environmental studies for transportation projects across the country. Methods and results are presented on page 4-152 of the Draft Environmental Impact Statement. In summary, during the environmental impact statement process, properties potentially having hazardous waste on site are identified. These sites are considered during the corridor selection process and are ranked according to the likelihood of further assessment or potential cleanup activities being needed. The risk ranking method is used to inform the design team about which properties would likely need further assessment during the property acquisition phase of the project if an action alternative were to become the Selected Alternative. No sites were identified as "high risk." Some sites were identified as "high priority." High-priority sites are those with high potential for releasing hazardous materials to the soil or groundwater, or those that have a recorded release issue. Examples of high-priority sites include current service stations, bulk fueling terminals, sites listed in the environmental database, or a known release that has not been remediated. (See page 4-152 of the Draft Environmental Impact Statement.) The corridor analysis revealed sites that would need further assessment during the property acquisition phase of the project, if an action alternative were to become the Selected Alternative. The Arizona Department of Transportation employs a phased approach to site assessment that allows time for cleanup of any sites found to have hazardous waste issues. The project team concluded from the level of analysis conducted during the environmental impact statement process that the types of sites likely to be acquired contain common hazardous waste issues like underground storage tanks, asbestos and lead paint in buildings, and other commonly found issues (see page 4-153 of the Draft Environmental Impact Statement). The Arizona Department of Transportation maintains a process for addressing these issues in accordance with all applicable environmental laws and regulations.

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69	The current contaminants of concern in groundwater include tetrachloroethene (PCE),trichloroethene (TCE), 1,1-dichloroethane (1,1-DCA), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethene(1,1-DCE) and chromium. Contaminants of concern at the site may change as new data become available." By purchasing this contaminated land for the freeway, the state of Arizona would assume the liability for the clean up of these contaminants, along with the liability for adverse health impacts suffered by workers in the area. This would be an enormous economic impact. This is a type of corporate welfare, as it would remove the liability costs from the various polluters and current property owners that have ground and groundwater pollution issues and transfer it to the people of Arizona. This would be a huge economic impact. This should be examined as a cumulative impact, an indirect impact, a direct impact, and an economic impact.
70	There are other issues and other data not included in the DEIS that relate to truck traffic and hazardous materials. What would be the effect on traffic flow and congestion in the event of a hazardous materials incident of any type or volume?
	The following are comments related to impacts to environmental justice:
	The DEIS section titled TITLE VI AND ENVIRONMENTAL JUSTICE [Section 4(f) Evaluation Chapter 4 Affected Environment, Environmental Consequences, and Mitigation 4-29] starts with:
	"The U.S. Environmental Protection Agency (EPA) and FHWA define environmental justice as "fair treatment for people of all races, cultures, and incomes, regarding the development of environmental laws, regulations, and policies." Environmental justice principles and procedures are followed to improve all levels of transportation decision making. Title VI prohibits discrimination on the basis of race, color, or national origin. The 1994 Executive Order12898 on environmental justice addresses minority and low-income populations. The rights of women, the elderly, and the disabled are protected under related statutes. This Presidential Executive Order and other related statutes fall under the umbrella of Title VI. The U.S. Department of Transportation Order 5610.2(a) requires that environmental justice principles be considered in all the Department's programs, policies, and activities. Three fundamental environmental justice principles apply to the transportation project development process: ➢ to avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations ➢ to ensure the full and fair participation by all potentially affected communities in the transportation decision-making process ➢ to prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations."
71	Then the section goes on to identify some of the low-income and minority communities that would be affected, but it ignores all of the adverse, disproportionate impacts on them.

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69 (cont.)		The construction contractor would be required to comply with a host of regulations that protect the environment from undue impacts, including those from hazardous materials. Examples are the support yards or staging areas that are temporarily used for construction equipment. To control any releases of hazardous waste, fueling and maintenance areas for trucks would be required to have spill protection measures and stormwater management plans in place (see pages 4-111, 4-112, 4-153, and 4-154 of the Draft Environmental Impact Statement). The West Van Buren Water Quality Assurance Revolving Fund site was identified and considered during development of the Draft Environmental Impact Statement (see page 4-165 of the Final Environmental Impact Statement, and the Draft Initial Site Assessment prepared for the proposed project). These sites are primarily groundwater-impact sites, and groundwater is found at a depth of over 60 feet below the footprint of the Preferred Alternative. Given the separation distance between the adversely affected medium (groundwater) and the construction zone (near-surface in these locations), the project team determined that these sites would not pose a risk to construction or to the general public once the facility were completed. This assessment has been clarified in the Final Environmental Impact Statement on page 4-165.
70	**Hazardous Materials**	The Arizona Department of Public Safety (which includes the State Highway Patrol) has primary responsibility for enforcing traffic laws. The Department of Public Safety also has primacy when calling in support for traffic accidents, including hazardous materials accidents (see text box on page 4-157 of the Final Environmental Impact Statement). The Department of Public Safety would determine, based on the incident, whether a partial or full closure of the facility would be required in the event of a hazardous materials spill. The Arizona Department of Transportation maintains a list of contractors who provide emergency response services, as well as local municipalities whose fire and police departments operate in cooperation with the Department of Public Safety on incidents within their jurisdiction. Requirements for shippers are maintained by the Arizona Department of Transportation's Enforcement Compliance Division.
71	**Environmental Justice and Title VI**	The section entitled *Title VI and Environmental Justice*, beginning on page 4-29 in the Draft Environmental Impact Statement, presents acceptable methods, data, and assumptions to assess the potential for disproportionately high and adverse effects from the proposed action on environmental justice populations and disparate impacts to populations protected under Title VI. Based upon the content of the section, no such effects would result from the action alternatives. In light of comments received on the Draft Environmental Impact Statement, the above-referenced conclusions were confirmed in the preparation of the Final Environmental Impact Statement. To provide further clarity, the discussions of environmental justice and Title VI were separated and additional text explaining the relationship of environmental justice and Title VI to various environmental elements was added throughout Chapter 4, *Affected Environment*, *Environmental Consequences, and Mitigation*, as exemplified by the inserted text on page 4-29 of the Final Environmental Impact Statement.

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71	It concludes: No undue hardship or disproportionate adverse impacts on populations afforded protection under Title VI, Executive Order 12898, the U.S. Department of Transportation Order 5610.2(a), and other related statutes would occur and, therefore, no mitigation would be required. Nothing could be farther than the truth.
72	**Air Toxics:** The JATAP monitoring at the St. Johns monitoring site on the GRIC found certain air toxics attributed to "mobile sources," or vehicular traffic burning hydrocarbons. These findings of the air toxics were many times the "accepted" cancer risk standard set by USEPA. The St. Johns monitoring site's annual mean concentrations of mobile source air toxics (MSATs): • benzene at 4.7 times the accepted cancer risk standard; • 1,3 butadiene at 3.9 times the accepted cancer risk standard The JATAP study also found other air toxics associated with transportation exhaust. Acetaldehyde, formaldehyde, ethylbenzene, m,p-Xylene, o-Xylene, and toluene were detected at high levels at the St. Johns monitoring site. Residents of the GRIC living around and adjacent to the monitoring site are currently being subjected to all of these carcinogens, not just one. And if a freeway were to be built near this monitoring site on the GRIC, there would be more air toxics in addition to the ones detected at levels that far exceed the USEPA risk standard. At the West Phoenix monitoring site, which is the same 43rd Avenue and Broadway site that has had many exceedances of the particulate matter standards, even higher levels of air toxics were found. This site is about a mile or so downwind from the proposed route of the South Mountain Freeway, and air toxics levels would be impacted by the freeway. The West Phoenix monitoring site's annual mean concentrations of mobile source air toxics (MSATs): • benzene at 18.7 times the accepted cancer risk standard; • 1,3 butadiene at 21.5 times the accepted cancer risk standard The JATAP study also found other air toxics associated with transportation exhaust. formaldehyde, ethylbenzene, m,p-Xylene, o-Xylene, and toluene were detected at high levels at the West Phoenix monitoring site. One of the JATAP's findings presented to the EPA National Air Monitoring Conference in November 2006 was, "**Annual average concentrations of formaldehyde,** 28

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72	**Air Quality**	The Draft and Final Environmental Impact Statements present information and analysis about the proposed action and the enhanced conditions when compared against the No-Action Alternative and would not cause substantial adverse effects. The results of the analysis are summarized in the prologue to the Final Environmental Impact Statement (page xiii) and are more fully described beginning on page 4-68 of the Final Environmental Impact Statement. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones. The Draft Environmental Impact Statement provided the results of modeling for each of the seven priority mobile source air toxics, in both the Eastern and Western Subareas, and compared relative mobile source air toxics emissions that would result from three different potential alternatives (W59, W71, W101) as compared with the No-Action Alternative. It also included modeling of mobile source air toxics emissions in the overall mobile source air toxics study area assuming the W59 Alternative (see pages 4-70 to 4-74 of the Draft Environmental Impact Statement) along with implementation of recent U.S. Environmental Protection Agency mobile source air toxics rules. The updated emission modeling developed for the proposed action showed that for the mobile source air toxics study area, there would be little difference in total annual emissions of mobile source air toxics emissions between the Preferred and No-Action Alternatives (less than a 1 percent difference) in 2025 and 2035. With the Preferred Alternative in 2035, modeled mobile source air toxics emissions would decrease by 57 percent to more than 90 percent, depending on the pollutant, despite a 47 percent increase in vehicle miles traveled in the Study Area compared with 2012 conditions (see discussion beginning on page 4-77 of the Final Environmental Impact Statement). For mobile source air toxics, the project would have a negligible effect on emissions in the mobile source air toxics study area. The Preferred Alternative would also reduce in-vehicle mobile source air toxics exposure as opposed to the No-Action Alternative. The U.S. Environmental Protection Agency has found that in-vehicle benzene concentrations were between 2.5 and 40 times higher than nearby ambient concentrations, based on a review of studies discussed in the Regulatory Impact Analysis for the U.S. Environmental Protection Agency's 2007 mobile source air toxics rule-making (Final Regulatory Impact Analysis, Environmental Protection Agency 420-R-07-002, 3-17 [February 2007]). Construction of the South Mountain Freeway would result in a reduction in benzene exposure to drivers and passengers for two reasons: decreased travel times (motorists would spend less time in traffic to reach their destinations) and lower emissions rates (attributable to speed improvements). Reducing on-road exposure would provide a health benefit for motorists using the freeway under consideration. Congestion relief resulting from the proposed freeway would provide localized air quality emissions reductions on area freeways and arterial streets and at interchanges, benefiting users of area highways and those living near congested roads.

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72	**acetaldehyde, benzene and 1,3 butadiene were on the high end of the range reported in EPA funded assessments of other US cities."**
	In the December 2006 ANALYSIS OF AIR TOXICS COLLECTED AS PART OF THE JOINT AIR TOXICS ASSESSMENT PROJECT FINAL REPORT, Page 3-6, it states this with more precision: **"How Do Air Toxics Concentrations Compare with Typical National Levels? Phoenix area urban concentrations of1,3-butadiene, acetaldehyde, formaldehyde, chloroform, benzene, and tetrachloroethene were typically on the high end of the national urban scale (i.e., above the 75th percentile). Other air toxics concentrations were typically within the interquartile range of national concentrations (25th to 75th percentile)."**
	This finding relates to any future proposed freeway in the JATAP study area, which includes in entirety the route of the proposed South Mountain Freeway and Truck Bypass. It also has huge environmental justice implications because, in other words, some of the worst air in the country, in terms of air toxics, was found in the JATAP study, and the high readings on the GRIC are among these highest readings.
	So the air toxics are already worse than most other areas of the United States, and the proposed freeway would add even more. Obviously, adding more vehicular traffic emissions by building a freeway where there had not been one would add to this toxic burden. Yet despite its claims about environmental justice, these real environmental problems are not mentioned, nor is a plan to mitigate these impacts ever mentioned.
	The JATAP also showed serious air toxics problems at the West and South Phoenix monitoring sites, and these monitoring sites are in the midst of other low-income and ethnic minority communities, mostly of Hispanic origin. These would be exacerbated by the addition of another source of mobile toxics, also. The JATAP and its results mentioned "toxic hot spots near freeways" specifically because freeways cause toxic hotspots for air toxics.
73	One must conclude that the DEIS itself is an extreme example of environmental injustice, despite its assertions.
72	***Thus, the failure to properly analyze and/or address the air toxics information from the JATAP study is a deliberate violation of the very Environmental Justice issues that ADOT and FHWA claim to be observing.***
73	The conclusion is that ADOT and HDR would sacrifice human health and safety to accomplish their goal of building the South Mountain Freeway and Truck Bypass, and would rather see people on the GRIC, West and South Phoenix suffer and die from cancer than simply conduct an honest and objective NEPA process. Again, that appears to be a premeditated violation of the civil rights of the GRIC residents near the St. Johns JATAP monitoring site, as well as the low-income and ethnic minority communities of west and South Phoenix.
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72 (cont.)		Summary information about the findings of the Joint Air Toxics Assessment Project study is provided as background information in the Draft and Final Environmental Impact Statements, but the study itself is not relevant to the type of analysis done pursuant to the Federal Highway Administration's mobile source air toxics guidance, which is an emissions analysis. Monitored ambient concentrations of mobile source air toxics (the focus of the Joint Air Toxics Assessment Project) do not inform this type of analysis. While monitoring data can be useful for defining current conditions in the affected environment (to the extent that the monitoring data are current), they don't tell us anything about future conditions, or the impacts of the project itself, which is why an emissions analysis was performed. The mobile source air toxic analysis presented beginning on page 4-77 of the Final Environmental Impact Statement is an estimated inventory of mobile source air toxic emissions for the entire Study Area for 2025 and 2035. This approach was used because the inventory estimate accounts for changes in traffic and emissions on all roadways affected by a proposed project, and would, therefore, be a more reliable predictor of changes in exposure to mobile source air toxics. The West Phoenix monitoring site is not the same as the West 43rd Avenue monitoring site.
73	**Environmental Justice and Title VI**	The section entitled *Title VI and Environmental Justice*, beginning on page 4-29 in the Draft Environmental Impact Statement, presents acceptable methods, data, and assumptions to assess the potential for disproportionately high and adverse effects from the proposed action on environmental justice populations and disparate impacts to populations protected under Title VI. Based upon the content of the section, no such effects would result from the action alternatives. In light of comments received on the Draft Environmental Impact Statement, the above-referenced conclusions were confirmed in the preparation of the Final Environmental Impact Statement. To provide further clarity, the discussions of environmental justice and Title VI were separated and additional text explaining the relationship of environmental justice and Title VI to various environmental elements was added throughout Chapter 4, *Affected Environment, Environmental Consequences, and Mitigation*, as exemplified by the inserted text on page 4-29 of the Final Environmental Impact Statement.

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74	**Hazardous Materials Incidents** The GRIC areas along the proposed freeway have extremely limited access and egress. A hazardous materials transportation incident such as a spill of gasoline, sulfuric acid, or chlorine and the potential consequences of that are detailed in the comments regarding the DEIS' complete failure to even mention the risks from a hazardous materials incident, much less mitigating the risks. Such an incident would certainly harm and/or doom the residents of the GRIC around the 51st Avenue pass, as well as the low-income, minority residents in portions of South and west Phoenix. This is another severe example of environmental injustice, as no consideration is made for the Native Americans on the GRIC, their lifestyle, and no plan or means for preparing for response to such a disaster is even mentioned in the DEIS. This is beyond the pale; it is akin to casually planning to set up small scale genocide. That is certainly an environmental injustice.
75	**No Real Outreach to Environmental Justice Organizations** There is mention in the DEIS of a myriad of organization and tribes that were approached about the DEIS, but not one environmental justice group in South or West Phoenix, or on the GRIC, were ever contacted. That has to be a deliberate step, as some of these groups even tried to approach ADOT and were rebuffed. All of this pattern of environmental racism is consistent with the theme of keeping out of the DEIS any mention of a negative against the construction of the freeway, even if it means, lying, obfuscating, ignoring data and organizations, and pretending problems don't exist, even when they are identified as some of the worst in the United States. **The following are comments related to impacts related to the CANAMEX highway:** The DEIS uses figures purposefully to overstate population and job growth based on the 2005 numbers. As disclosed at the meeting ADOT was aware of the discrepancies, but chose not to update with the 2010 census figures. Doesn't this discrepancy require correction before the final EIS ? There are some issues with the traffic studies in chapter three, they are quite convoluted: FOR THE E-1 Alignment 1) ADOT and MAG cite the organic population growth(postulated in 2005) in the East valley as creating traffic flows along the 60 west bound to the i-10, and along the south mountain 202 (Pecos Road) also west bound and flowing to the 10. There is no indication of growth or traffic volumes originating along I-10 between Riggs Road and Pecos road because they are outside the study area…However these flows also course along I-10 into 30

Code	Issue	Response
74	**Hazardous Materials**	According to 46 *Federal Register* 18026 (March 23, 1981), the environmental impact statement must discuss reasonably foreseeable actions. These are actions that are likely to occur or probable, rather than those that are merely possible. The section Hazardous Materials beginning on page 4-152 of the Draft Environmental Impact Statement, discusses in sufficient detail the issues of hazardous spills, and the text box "Transport of Hazardous Materials on the Regional Freeway System" on page 4-154, describes response procedures to hazardous spills. The chance of spills in the referenced area is no different and no higher than the chance near Ahwatukee or Laveen or Estrella Villages. Therefore, there is no disproportionately high potential for spills to occur at specific locations of the freeway. The comment also makes reference to indigenous populations. As shown in Table 4-10 of the Draft Environmental Impact Statement, "*Environmental Justice and Title VI Population percentages, Affected Study Area Jurisdictions*" on page 4-30, indigenous populations are accounted for in the impact analyses. Further, Chapter 2, *Gila River Indian Community Coordination*, discloses the comprehensive nature of consultation and coordination efforts with the Gila River Indian Community. Important to note is the history of impact study on Gila River Indian Community land. For much of the project, the tribe did not, as is its right as a sovereign nation (see page 2-1), permit any form of impact analyses on its resources, nor did it wish to have any information about the Gila River Indian Community disclosed in the Draft Environmental Impact Statement. In 2007, right-of-entry was granted, but expired 1 year later. In 2010, the permit was reissued to study an alignment on Gila River Indian Community land (which is discussed in Chapter 3, *Alternatives*), but was later withdrawn once consideration by the tribe for a Gila River Indian Community-located alignment was withdrawn. But despite the Gila River Indian Community's directive to neither study nor report on tribal resources and assets, the potential for such impacts is highly unlikely. Populations would not be directly affected by the proposed action. While the action may pose indirect impacts such as restricted access to place of tradition, adequate mitigation has been committed to ensure access would not be impeded. Further, in addition to the overall public outreach efforts, tribal members also had specific access to Gila River Indian Community-specific outreach. As outlined in Chapter 2, the Gila River Indian Community-specific outreach efforts were exhaustive.
75	**Public Involvement**	As noted in the section *Conclusions* on page 6-29 of the Final Environmental Impact Statement, the Arizona Department of Transportation and Federal Highway Administration exceeded National Environmental Policy Act requirements pertaining to public outreach. The measures are described in Chapter 6, *Comments and Coordination*, as well as throughout the Final Environmental Impact Statement. The Arizona Department of Transportation made effort to make all population sectors and representatives aware of the proposed action. Organizations, by default, are invited to participate in the environmental impact statement process. The public hearing for the proposed action was widely advertised. Newspaper ads in six newspapers of area-wide distribution ran advertisements at least twice each. Announcements occurred on five radio stations and six television stations. Mailers were sent on May 6, 2013 to 73,564 individuals (approximately 311 on the Gila River Indian Community) who had previously expressed an interest in the project. The Arizona Department of Transportation utilized the Government Delivery system to distribute to over 12,000 recipients. E-newsletters were distributed on three different occasions. All materials were also provided to the Gila River Indian Community Public Information Officer.

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	Hazardous Materials Incidents The GRIC areas along the proposed freeway have extremely limited access and egress. A hazardous materials transportation incident such as a spill of gasoline, sulfuric acid, or chlorine and the potential consequences of that are detailed in the comments regarding the DEIS' complete failure to even mention the risks from a hazardous materials incident, much less mitigating the risks. Such an incident would certainly harm and/or doom the residents of the GRIC around the 51st Avenue pass, as well as the low-income, minority residents in portions of South and west Phoenix. This is another severe example of environmental injustice, as no consideration is made for the Native Americans on the GRIC, their lifestyle, and no plan or means for preparing for response to such a disaster is even mentioned in the DEIS. This is beyond the pale; it is akin to casually planning to set up small scale genocide. That is certainly an environmental injustice. **No Real Outreach to Environmental Justice Organizations** There is mention in the DEIS of a myriad of organization and tribes that were approached about the DEIS, but not one environmental justice group in South or West Phoenix, or on the GRIC, were ever contacted. That has to be a deliberate step, as some of these groups even tried to approach ADOT and were rebuffed.
76	All of this pattern of environmental racism is consistent with the theme of keeping out of the DEIS any mention of a negative against the construction of the freeway, even if it means, lying, obfuscating, ignoring data and organizations, and pretending problems don't exist, even when they are identified as some of the worst in the United States.
	The following are comments related to impacts related to the CANAMEX highway:
77	The DEIS uses figures purposefully to overstate population and job growth based on the 2005 numbers. As disclosed at the meeting ADOT was aware of the discrepancies, but chose not to update with the 2010 census figures. Doesn't this discrepancy require correction before the final EIS ?
	There are some issues with the traffic studies in chapter three, they are quite convoluted:
78	FOR THE E-1 Alignment 1) ADOT and MAG cite the organic population growth(postulated in 2005) in the East valley as creating traffic flows along the 60 west bound to the i-10, and along the south mountain 202 (Pecos Road) also west bound and flowing to the 10. There is no indication of growth or traffic volumes originating along I-10 between Riggs Road and Pecos road because they are outside the study area…However these flows also course along I-10 into
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76	**Impacts**	The environmental impact statement process and the Draft Environmental Impact Statement documenting the process represent a transparent, disclosed examination of the potential for the proposed action to cause significant, adverse environmental impact and to propose mitigation where necessary. Throughout the Draft Environmental Impact Statement, adverse impacts are disclosed. Compliance with the environmental impact statement process is described throughout the entire Draft Environmental Impact Statement and is summarized in Figure S-3, Environmental Impact Statement Process, on page S-3.
77	**Purpose and Need**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future.
78	**Traffic**	The road network for the Maricopa Association of Governments regional travel demand model includes all of Maricopa County and a substantial portion of Pinal County. While a road may not be within the Study Area for the proposed action, because it is included in the Maricopa Association of Governments travel demand model road network, its influence is considered in the traffic analysis for the proposed action. Location #7, Pecos Road to Wild Horse Pass Boulevard, shown on Figure 1-8 on page 1-15 of the Final Environmental Impact Statement, illustrates the anticipated growth along Interstate 10 from locations south of Pecos Road (including the Riggs Road to Pecos Road section identified in the comment). Between 2012 and 2035, the Interstate 10 traffic volume is projected to increase from around 96,000 to 134,000 vehicles per day (a 40 percent increase).

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	Maricopa county This increased traffic growth created the gridlock at the Broadway curve, and will be even more constricted by 2035..
	This congestion according to ADOT is to be relieved by the SM202 alignment and is a pillar to support the E-1 Alignment.
79	The traffic flows exhibited in chapter 3 of the DEIS only describe how traffic originates on the 60 and SM202 and flows into or along the i-10. They merely describe how this creates constriction at the Broadway curve. There is no analysis of the traffic flows along I-10 and where they exit. This missing element creates a critical miss (in my opinion) to the purpose and need.
80	The majority of Traffic Westbound on I-10 flows onto 143 N to the airport and the 202 (red mountain) or to SR 51 North. These flows demonstrate a Northern flow of traffic North/ East Phoenix or even Western Scottsdale and Tempe, they do not flow through to downtown or I-17. Arterial Street traffic in downtown Phoenix in the AM does not support the argument that the traffic flows into or even past downtown into the West Valley.
81	This is demonstrated by showing a statistically insignificant (7 %) reduction in traffic at the Broadway curve using the current flawed assumptions. Adjusting for actual through flows to the 143 and SR 51 I believe the reduction in congestion at the curve to be less than 2 or 3 %.
82	The majority of traffic analysis is within the Western alignment where the West valley traffic needs relief to access I-10 along the northern route of the alignment….but this local commuter savings is not effected by the E-1 alignment. The E-1 alignment will not be utilized by this commuter traffic and will be utilized primarily as a truck bypass as acknowledged by ADOT on 6-11-13.
83	As for the CANAMEX
	2) Chapter three cites statistics that "more than one third", or 34 % of the nations freight flows through Phoenix, today. There is no data cited to support that number. If correct it is understated for 2035 projections
84	Further the study is lacking because there is no analysis of the current or enhanced increase in freight volume resulting from the port activity in Guyamas and Puerto Colonet and the Union Pacific rail efforts moving that freight form those ports into Tucson and then north to Phoenix.
	Tucson is now recognized internationally as a "Virtual Port". As of 2013 Union Pacific has agreed to move and receive 50,000 additional containers to be dispersed via truck and train north and East (correction from west). The ports of Long Beach and LA thus being obviated by the Ports and Rail lines in Mexico (Arizona Daily Star and SALEO Southern Arizona Logistics

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79	**Traffic**	Chapter 1 of the Draft Environmental Impact Statement discloses the purpose and need for the proposed action. The analyses results disclose existing and future capacity deficiencies throughout the regional system including as noted in the comment at the Broadway Curve. The transportation problem identified specific to the purpose and need relates to east-west regional mobility in the southwest valley unique from the Broadway Curve. While the Draft Environmental Impact Statement further discloses the proposed freeway would help reduce congestion at the Broadway Curve, improvements to Interstate 10 through the curve are a part of another planned project adopted in the region's Long Range Transportation Plan.
80	**Traffic**	While a portion of the traffic through the Broadway Curve is airport-related, an equal portion extends west to Interstate 17 and even to Interstate 10 west of downtown Phoenix.
81	**Traffic**	Chapter 1 of the Draft Environmental Impact Statement discloses the purpose and need for the proposed action. The analyses results disclose existing and future capacity deficiencies throughout the regional system including as noted in the comment at the Broadway Curve. The transportation problem identified specific to the purpose and need relates to east-west regional mobility in the southwest valley unique from the Broadway Curve. While the Draft Environmental Impact Statement further discloses the proposed freeway would help reduce congestion at the Broadway Curve, improvements to Interstate 10 through the curve are a part of another planned project adopted in the region's Long Range Transportation Plan.
82	**Traffic**	An analysis of the origins and destinations of projected freeway users is presented in Figure 3-18, on page 3-36 of the Final Environmental Impact Statement. Freeway users are defined as those motorists who pass through the bend of the freeway (around the South Mountains). Therefore, this would not count motorists in Laveen Village who go to Interstate 10 (Papago Freeway) and motorists in Ahwatukee Foothills Village who go to Interstate 10 (Maricopa Freeway). The results of the origin-destination analysis show that 73 percent of the traffic going around the South Mountains has origins or destinations in the area within or around the Study Area and supports the conclusion that the proposed action would serve east–west mobility consistent with commuting movements. In reference to the comment regarding trucks using the proposed freeway to avoid Interstate 10 through downtown Phoenix, the vehicle mix and specifically the percentages of trucks using the facility is similar in vehicle mix ratios found throughout the region's existing freeway system.
83	**Traffic**	The citation "MAG 2010c" is provided at the end of the first sentence of the third paragraph of the first column on page 3-64 of the Draft Environmental Impact Statement.
84	**Traffic**	As detailed in Chapter 1, *Purpose and Need*, in the Draft Environmental Impact Statement, the proposed action is not needed in response to national freight movement, nor is it intended to provide service primarily for freight movement. The proposed action is needed to address local capacity deficiencies and has been developed in response to local growth in population, housing, employment, and travel levels.

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	Education Organization). To accommodate this volume the " port of Tucson" has received a 10 X expansion since 2012. (KVOA Tucson). This information is omitted in the DEIS because it is outside the scope of the Study, which only encompasses Maricopa county, not the tri county (Maricopa, Pinal and Pima) alignment of the I-10 from Phoenix to Tucson, AKA the first leg of the CANAMEX.
85	ADOT will not address traffic flows originating outside Maricopa County.
	Also excluded from the DEIS because it is outside the scope of the report is that Union Pacific is currently negotiating with Arizona and the state land department to purchase state trust land to open a 950 acre rail yard at Picachio Peak. It is Planned to be the largest yard between Texas and California, multiple sources (AZ republic., AZ Starnet) the yard will handle tens of thousands of containers originating in California and Tucson ports
	The additional planned container traffic terminating at hubs in Pima (Tucson) county and the planned Pinal (Picachio peak) hubs create a significant increase in freight flows to Phoenix specifically to the hubs along 51st Ave.
	Arizona has identified the Intermodal Transportation industry as a critical potential "Pillar Industry" in Arizona.
	Chapter three describes freight and trucks as pass through, but that is a mis-statement. The assessment is technically correct, but not accurate. As a hub, Freight Enters Phoenix from Points south west and East. Those freight "Loads" are deposited and "exchanged" for loads heading in the opposite direction, So even though 70 % of the freight passes through Phoenix it terminates in Phoenix as a transfer point.
	Those volumes will increase by virtue of the intermodal transportation plans In Pima and Pinal counties, but were conveniently left out of the "study area".
86	ADOT admitted the 202 is a truck bypass while attempting to minimize the utilization of the loop as a potion of the CANAMEX. In the 6-11 SMCAT meeting it was freely discussed how Congress has not dictated the exact route, and how the CANAMEX' own web site self identifies the I-10 corridor, not any other. Additionally there is the current lack of suitability along the I-8/ 85 future I-11 route, which is obviated by the completion of the 202 highway anyway. In addition all Phoenix based shipping hubs are located "within" the new 202 loop and would be more efficiently accessed by ALL traffic types by using the 202.
87	ADOT surveyed truck drivers about routes in the early days of traffic review. Their surveys indicated that most traffic never passed through Phoenix. However the system of intermodal transport is hub and spoke, so freight comes in to a terminal and the driver drops the load and picks a new one, never passing through. So the Driver survey was

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85	**Traffic**	The road network for the Maricopa Association of Governments regional travel demand model includes all of Maricopa County and a substantial portion of Pinal County. While a road may not be within the Study Area for the proposed action, because it is included in the Maricopa Association of Governments travel demand model road network, its influence is considered in the traffic analysis for the proposed action.
86	**Purpose and Need**	The statements made on June 11, 2013, as paraphrased in the comment as trucks would use the proposed freeway to avoid Interstate 10 through downtown Phoenix is misleading. The proposed freeway is part of a transportation system developed to improve mobility in the region by increasing capacity and allowing traffic—including truck traffic—to access a segment of the "loop" system (see pages 1-21, 1-22, 3-1, and 3-3 of the Final Environmental Impact Statement) in the Phoenix metropolitan area. The proposed South Mountain Freeway would be a commuter corridor, helping to move local traffic. As with all other freeways in the region, trucks would use it for the through-transport of freight, for transport to and from distribution centers, and for transport to support local commerce. Recognition of the trucking contribution to traffic in the region is disclosed on page 3-64 of the Final Environmental Impact Statement. As supported by the traffic analysis presented in the Final Environmental Impact Statement, the primary user vehicles of the proposed freeway would be automobiles. The Maricopa Association of Governments regional travel demand model projects that truck traffic would represent approximately 10 percent of the total traffic on the proposed action, similar to what is currently experienced on other regional freeways such as Interstate 10, State Route 101L, and U.S. Route 60. As disclosed in the Final Environmental Impact Statement, trucking destinations in the Phoenix metropolitan area would still prompt truck drivers to enter congested areas. Choosing to travel on the proposed freeway versus Interstate 10 would not produce substantial travel-time benefits. Therefore, it is expected that "true" through-truck traffic (not having to stop in the metropolitan area) would continue to use the faster, designated, and posted bypass system of Interstate 8 and State Route 85.
87	**Purpose and Need**	The statements made on June 11, 2013, as paraphrased in the comment as trucks would use the proposed freeway to avoid Interstate 10 through downtown Phoenix is misleading. The proposed freeway is part of a transportation system developed to improve mobility in the region by increasing capacity and allowing traffic—including truck traffic—to access a segment of the "loop" system (see pages 1-21, 1-22, 3-1, and 3-3 of the Final Environmental Impact Statement) in the Phoenix metropolitan area. The proposed South Mountain Freeway would be a commuter corridor, helping to move local traffic. As with all other freeways in the region, trucks would use it for the through-transport of freight, for transport to and from distribution centers, and for transport to support local commerce. Recognition of the trucking contribution to traffic in the region is disclosed on page 3-64 of the Final Environmental Impact Statement.

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87	correct. What is not accurate is the notion that the freight stays behind. As indicated in Chapter three of the Study Nearly 35 % of US freight passed through Phoenix. Phoenix is not a train hub so all of these containers are by truck. The DEIS is inadequate in its description of this container traffic and its effect Understand that the two ports in Mexico mentioned below are developed in partnership with Union Pacific to obviate the need to expand Long Beach and Los Angeles Harbors. This is stated frequently by supporters of the CANAMEX. See also the description by PAG, Pima Association of Governments http://www.pagnet.org/programs/transportationplanning/intermodaltransportation/freight/tabid/245/default.aspx http://azttca.org/20130601-feature.aspx I-11http://interstate11.org/exhibits.aspx
	The following are comments related to impacts related to the Deficiencies in Description of Proposed Action:
88	A. The description of the proposed action is deficient. The action is described generally as building a freeway in compliance with the RTP. Lacking from the description are the following:
89	1. The typical cross-section of the freeway should be included, listing major deviations, if any, from the typical cross-section for each of the three West Alternatives and the single East Alternative. While at the outset the cross-section was not known, the 10-lane alternative was eliminated in the fourth-tier screening. A freeway with three general purpose (GP) and one High Occupancy Vehicle (HOV) lane in each direction, plus auxiliary lanes where necessary, was established for all alternatives.
90	2. The profile for the freeway should be described in general terms for each Alternative.
91	3. The location of proposed interchanges for each alternative should be shown.
92	4. The fact that park-and-ride lots would be provided at interchanges should be stated. The term park-and-ride appears only once in the Summary (Page S-19) in the context of a mitigation measure for Displacements and Relocations. The term park-and-ride does not appear at all in Chapter 1 (Purpose and Need); it appears three times in Chapter 3 (Alternatives) first on Page 3-6 as part of the discussion of Modal Screening Results, the second time on Page 3-15, Figure 3-8 (indicating that the park-and-ride lot at the 40th Street Interchange potentially would be expanded, and for the third time on Page 3-40 in the context of the No-Action Alternative. Thus unless a reader studied Figure 3-8 very carefully, he or she would not be aware of the potential expansion of the park-and-ride lot at the 40th Street Interchange.
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87 (cont.)		As supported by the traffic analysis presented in the Draft and Final Environmental Impact Statements, the primary user vehicles of the proposed freeway would be automobiles. The Maricopa Association of Governments regional travel demand model projects that truck traffic would represent approximately 10 percent of the total traffic on the proposed action, similar to what is currently experienced on other regional freeways such as Interstate 10, State Route 101L, and U.S. Route 60. As disclosed in the Final Environmental Impact Statement, trucking destinations in the Phoenix metropolitan area would still prompt truck drivers to enter congested areas. Choosing to travel on the proposed freeway versus Interstate 10 would not produce substantial travel-time benefits. Therefore, it is expected that "true" through-truck traffic (not having to stop in the metropolitan area) would continue to use the faster, designated, and posted bypass system of Interstate 8 and State Route 85.
88	**Proposed Action**	While the proposed action is summarily defined on page 1-1 of the Draft Environmental Impact Statement as the "construction and operation of a major transportation facility," design specifics for each action alternative are found in text beginning on page 3-40 of the Final Environmental Impact Statement. Sufficient detail is provided to: ensure meaningful comparison and analyses of the alternatives in reference to operational characteristics, cost, and impacts; and to convey sufficient information to reviewers of the characteristics of each alternative in accordance with 23 Code of Federal Regulations 771 Environmental Impact and Related Procedures or in the Federal Highway Administration Technical Advisory T 6640.8A Guidance for Preparing and Processing Environmental and Section 4(f) Documents.
89	**Alternatives**	Key elements of the alternatives studied in detail are presented in the Draft Environmental Impact Statement, beginning on page 3-40. A typical section of the proposed freeway is depicted in Figure 3-34, on page 3-58 of the Draft Environmental Impact Statement.
90	**Alternatives**	The vertical alignment of each action alternative is described beginning on page 3-40 of the Draft Environmental Impact Statement. The profiles are shown graphically in Figures 3-20 to 3-25.
91	**Alternatives**	The proposed interchange locations for each action alternative are shown in Figure 3-28, on page 3-51 of the Draft Environmental Impact Statement.
92	**Alternatives**	Inclusion of park-and-ride lots is not part of the scope of the proposed action. No new park-and-ride lots are proposed as part of the proposed action. Locations of future park-and-ride lots would be determined by the City of Phoenix and Valley Metro (see discussion of potential enhancements on page 3-60 of the Draft Environmental Impact Statement).
93	**Transit**	Inclusion of park-and-ride lots is not part of the scope of the proposed action. No new park-and-ride lots are proposed as part of the proposed action. Locations of future park-and-ride lots would be determined by the City of Phoenix and Valley Metro (see discussion of potential enhancements on page 3-60 of the Draft Environmental Impact Statement).

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93	There is no mention of park-and-ride in the Traffic Overview Report.
94	For the public in general, the Regional Transportation Plan (RTP) and complying with the RTP are abstract and perhaps foreign concepts. The Description of the Proposed Action should have sufficient information to help the public visualize what is being proposed on the ground.
95	**Deficiencies in Evaluation of Alternatives**
	B. **The evaluation of alternatives is deficient because there is no analysis of traffic impacts on local streets and local access.** A specific example would be how Pecos Road would be impacted by the Proposed Action. With the Proposed Action, the South Mountain Freeway (SMF) would obliterate and replace existing Pecos Road (as described as Alternative E1); access to the street system in the area would be provided via interchanges at 40th Street, 24th Street, Desert Foothills Parkway, and 17th Avenue.
96	1. The DEIS does not indicate what type of interchange would be constructed at these locations. Because there would be no access to the Gila River Indian Community (GRIC) on the south side, neither of the two typical interchanges depicted on Page 3-14, "Diamond Interchange" and "Single Point Urban Interchange," would be applicable. The DEIS should indicate the type of interchange to be provided, at least conceptually and with a simple graphic.
97	2. The DEIS should present recent traffic volume counts for Pecos Road and turning movement counts at the existing signalized intersections at 40th Street, 32nd Street, 24th Street, Desert Foothills Parkway, and 17th Avenue. Then it should discuss the impacts on existing traffic due to the loss of access at 32nd Street and how existing traffic patterns will change. Then, 2035 peak hourly traffic volumes at the interchanges should be presented so that the public can be informed of how present routings will be affected and what the impacts will be in 2035. The impacts on the cross streets are not dependent on the specific design details and can be evaluated based on the traffic volume projections.
98	3. The DEIS should discuss how the Proposed Action would affect emergency vehicle access times for the communities now served by the signalized intersection at Pecos Road/32nd Street.
99	4. With the Proposed Action, the eastbound left-turn and westbound right turn direct access to the park-and-ride facility at 40th Street will be lost, shifting the ride-share traffic to the two park-and ride access points via 40th Street. The southern access driveway is less than 300 ft (center-to-center) north of Pecos Road. The construction of the freeway ramps will shorten the spacing between the junction of the westbound ramp terminal and the southern access driveway for the park-and-ride lot. The impacts to traffic operations along 40th Street, impacts to park-
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94	**Alternatives**	As described in the responses above, the elements of the proposed freeway and the potential action alternatives were described in the Draft Environmental Impact Statement.
95	**Alternatives**	See responses to specific comments below. The alternatives analysis process of developing and screening documents was a disclosed, robust, comprehensive, objective and consistent with the National Environmental Policy Act's intent to use a logical, sequential interdisciplinary approach to establish a range of reasonable alternatives (as concluded in text beginning on page 3-26 of the Draft Environmental Impact Statement).
96	**Alternatives**	The third bullet in the third column on page 3-51 of the Draft Environmental Impact Statement states that "The diamond interchange configuration (see sidebar on page 3-14) was used to evaluate service traffic interchange needs." The comment is incorrect in assuming that there would be no access to the Gila River Indian Community to the south. At 40th Street, there is an existing road to the south, and the planned interchange at that location would provide access onto Gila River Indian Community land. Similarly, the interchanges at 24th Street, Desert Foothills Parkway, and 17th Avenue would be constructed to allow for future connections from Gila River Indian Community land. The initial layout would be similar to the interchanges at State Route 202L (Red Mountain Freeway) and Dobson Road. Figure 3-28 indicated whether the interchanges would include full access or half access. In some locations, a single-point urban interchange or other interchange type may be used to address higher traffic volumes. The determination of the interchange type would be made during final design in coordination with the local jurisdiction.
97	**Traffic**	Text beginning on page 3-60 of the Final Environmental Impact Statement presents the traffic analyses for the action and no action alternatives for existing and future conditions. The analyses used state-of-the-practice methods and analytical tools to demonstrate the traffic operational performance of each alternative. Ancillary to the effort, in 2006, the City of Phoenix conducted a traffic circulation study to evaluate the impacts of the freeway on the local street system, including the shift of access to Foothills Reserve and Calabrea from Pecos Road to Chandler Boulevard. The City study found no adverse effects on the local street system from the proposed freeway.
98	**Traffic**	Emergency responders would address the construction of the proposed freeway by amending the local emergency response plan to include the facility. As concluded in the section, *Social Conditions*, in Chapter 4 of the Draft and Final Environmental Impact Statements, response times for police, fire, and medical emergency services would be faster when compared with response times under the No-Action Alternative. Circulation on major arterial streets would be improved through better distribution of traffic onto the overall transportation network, the provision of alternative routes, and through localized operational improvements such as grade separations and planned interchanges.
99	**Traffic**	In addition to access from 40th Street, access to the park-and-ride lot would be provided from the westbound on-ramp. This is similar to the park-and-ride operations at Happy Valley Road and Interstate 17. Bus operations and circulation would continue to function as they do today. Traffic operational characteristics along 40th Street and at the Cottonwood Lane intersection would not be adversely affected by the freeway. The park-and-ride lot has been expanded to its ultimate configuration.

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	and-ride access, impacts on bus operations, impacts at the intersection of 40th Street/E Cottonwood Lane/bus access to park-and-ride should be evaluated, both for existing and 2035 traffic volumes. The long-term expansion of the park-and-ride facility should also be discussed.
100	5. The DEIS should discuss how access will be provided to the existing U-Haul Dealer on the south side of Pecos Road, now accessed directly via the signalized intersection at 32nd Street. Since there will be no interchange at 32nd Street with the Proposed Action, this property will become land-locked. It is unclear based on the information in Tables 4-12 and 4-13 (Pages 4-39 and 4-42, respectively) if this facility is being displaced.
101	C. **The evaluation of alternatives is deficient because** the presentation of the results of the "select link" analysis is misleading. On Page 3-36, Figure 3-18 presents the contribution of traffic to the select link by geographical areas, some of which are very large. The select link is at a point between the 51st Avenue and 17th Avenue interchanges on the South Mountain Freeway. The text accompanying Figure 3-18 states that *"A projected 73 percent of the travelers who might use the proposed action would have origins and/or destinations near the proposed action."* This statement is misleading, since it implies that 73% of the traffic using the South Mountain Freeway would have origins in close proximity to the proposed freeway. A review if a larger scale map in the Traffic Overview Report, which is the source of the information presented in Figure 3-18, indicates that about 15% of the selected link traffic would have origins or destinations within the Study Area as defined in Figure S-2 of the DEIS. If the definition of "proximity" were to be extended to the area within a 20-mile radius of the select link, the contribution of this entire 20-mile radius area would be about 40 to 50%.
102	**The following are comments related to impacts related to the Religious and Racial Discrimination and Civil Rights Violations in the South Mountain Freeway DEIS:** The DEIS clearly discriminates on the basis of religion and race, and the ongoing ADOT plans for blasting *Muhadagi Doog* (South Mountain) are ongoing civil rights violations. Throughout the DEIS, it is acknowledged that the GRIC and other native American tribes hold *Muhadagi Doog* as a sacred site. From the actual language of the DEIS: "The South Mountains are highly valued and considered sacred by some Native American communities. The Community, which includes the Akimel O'odham (River Pima) and Pee Posh (Maricopa) tribes, and other Native American entities—including the Colorado River Indian Tribes and three O'odham groups: the Salt River Pima-Maricopa Indian Community, the Ak-Chin Community, and the Tohono O'odham Nation—consider the South Mountains to play a role in their cultures, identities, histories, and oral traditions."

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100	**Traffic**	The determination to not include an interchange at 32nd Street was made in coordination with the City of Phoenix (see Figure 3-8 on page 3-15 of the Draft Environmental Impact Statement). The interchange would have displaced more than 100 homes and would have been located near an existing high school. In 2006, the City of Phoenix conducted a traffic circulation study to evaluate the impacts of the proposed freeway on the local street system, including the shift of access to Foothills Reserve and Calabrea from Pecos Road to Chandler Boulevard. The City study found no adverse effects on the local street system from the freeway (see Appendix 3-1 in the Final Environmental Impact Statement). The storage facility is located on Gila River Indian Community land and would not be displaced. Reasonable access to the facility would remain available from 32nd Street, Chandler Boulevard, and other east–west local streets. A grade-separated bridge would be constructed for the freeway to go over 32nd Street.
101	**Traffic**	The quotation noted in the comment has been changed to be consistent with a similar statement made in the caption to Figure 3-18: "Seventy-three percent of travelers anticipated to use the proposed action would be involved in trips beginning or ending in the Study Area itself or in the areas immediately surrounding it." The figure does portray the locations of the cities included in the different areas. The proposed action would serve regional travel from the southwestern to southeastern portions of the region (not just internal Study Area travel). The analysis does consider traffic that passes through the Phoenix metropolitan area It should also be noted that, by definition, these freeway users would not include traffic from Laveen Village to Interstate 10 (Papago Freeway) or from Ahwatukee Foothills Village to Interstate 10 (Maricopa Freeway). Therefore, the 15 percent of trips identified in the comment as Study Area-originated are by motorists traveling to the other side of the South Mountains.
102	**Cultural Resources**	The cultural and religious places of importance, like the South Mountains, are acknowledged in the Draft Environmental Impact Statement in several locations, notably pages 4-132 and 5-26. The proposed project, would accommodate and preserve (to the fullest extent possible from the available alternatives) access to the South Mountains for religious practices. The section entitled *Title VI and Environmental Justice*, beginning on page 4-29 in the Draft Environmental Impact Statement, presents acceptable methods, data, and assumptions to assess the potential for disproportionately high and adverse effects from the proposed action on environmental justice populations and disparate impacts to populations protected under Title VI. Based upon the content of the section, no such effects would result from the action alternatives. In light of comments received on the Draft Environmental Impact Statement, the above-referenced conclusions were confirmed in the preparation of the Final Environmental Impact Statement. To provide further clarity, the discussions of environmental justice and Title VI were separated and additional text explaining the relationship of environmental justice and Title VI to various environmental elements was added throughout Chapter 4, *Affected Environment, Environmental Consequences, and Mitigation*, as exemplified by the inserted text on page 4-29 of the Final Environmental Impact Statement. Since the beginning of the environmental impact statement process, the Federal Highway Administration and Arizona Department of Transportation have been carrying out cultural resource studies and engaging in an ongoing, open dialogue with the Gila River Indian Community Tribal Historic Preservation Office regarding

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102 (cont.)		the identification and evaluation of places of religious and cultural importance to the Gila River Indian Community that may be adversely affected by the proposed freeway. Such places are referred to as traditional cultural properties. As a result of these discussions and of studies conducted by the Gila River Indian Community's Cultural Resource Management Program, the Gila River Indian Community has identified traditional cultural properties that are eligible for listing in the National Register of Historic Places and that could be affected by construction of the proposed freeway. In certain cases, listing these properties on the National Register of Historic Places may offer them protection under Section 4(f) of the Department of Transportation Act. The traditional cultural properties identified are culturally important to other Native American tribes as well. For more discussion of traditional cultural properties, see the section, *Cultural Resources*, beginning on page 4-140 of the Final Environmental Impact Statement and pages 5-26 through 5-28. Section 106 of the National Historic Preservation Act requires a government-to-government relationship between the Federal Government and Indian tribes as described beginning on page 4-140 of the Final Environmental Impact Statement. Section 106 requires that federal agencies take into account the effects of their undertakings on historic properties. This process requires consultation with tribal authorities. Consultation has occurred with Gila River Indian Community government officials, the Tribal Historic Preservation Officer, the Cultural Resource Management Program, many different tribal authorities, and the State Historic Preservation Office. The consultation has resulted in concurrence from the Gila River Indian Community Tribal Historic Preservation Office and the State Historic Preservation Office on National Register of Historic Places eligibility recommendations (including traditional cultural properties), project effects, and proposed mitigation and measures to minimize harm. This consultation has been ongoing and will continue until any commitments in a record of decision are completed. The Draft Environmental Impact Statement, after consultation and coordination efforts, accommodates and preserves (to the fullest extent possible from the available alternatives) access to the South Mountains for religious practices. A very small portion of the mountain would be impacted by the proposed freeway (less than 0.03 percent of the total area). Although the Draft Environmental Impact Statement describes the impact on the South Mountains as adverse, Native Americans would not be kept from practicing their beliefs, access to the mountain would be maintained, and mitigation measures would be implemented based on input from members of the Gila River Indian Community.

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Code	Comment Document
102	There is plenty of correspondence in the DEIS and its Appendices in which the GRIC repeatedly asserts and reminds ADOT of this, to no avail. ADOT plans to blast Muhadagi Doog. If we were to take a look at the same issue and frame it as a danger to a sacred site that plays a role in cultures, identities, histories, and oral traditions of a white, European-based religion, such as the Vatican, a sacred site for the Roman Catholic Church, we can illuminate how this is clearly religious discrimination, and likely racial discrimination. If Rome, Italy decided there needed to be a freeway that needed to take out part of the Vatican, well, that would just be unthinkable to the people there of the Roman Catholic faith. Think of the outrage and outcry such a proposal would muster, even worldwide! So what is the difference between the Vatican and Roman Catholics' beliefs, and Muhadagi Doog and the "Native American entities?"
103	This attitude and planned action deliberately and intentionally violates the civil rights of the "Native American entities." In a 1979 consultation on the issue, the United States commission on civil rights defined religious discrimination in relation to the civil rights guaranteed by the Fourteenth Amendment to the United States Constitution. [**Section 1.** All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws.] As for racial discrimination, the equal protection clause was originally added to deal with the lack of equal protection provided by law to all in the course of administering justice in the states that had Black codes. The United States commission on civil rights noted, "Whereas religious civil liberties, such as the right to hold or not to hold a religious belief, are essential for Freedom of Religion (in the United States secured by the First Amendment), religious discrimination occurs when someone is denied "**the equal protection of the laws, equality of status under the law, equal treatment in the administration of justice**, and equality of opportunity and access to employment, education, housing, public services and facilities, and public accommodation **because of their exercise of their right to religious freedom**." (Emphasis added.) Also, the **American Indian Religious Freedom Act** (commonly abbreviated to AIRFA) is a US federal law and a joint resolution of Congress that was passed in **1978**. It was created to protect and preserve the traditional religious rights and cultural practices of American Indians, Eskimos, Aleuts and Native Hawaiians. These rights include, but are not limited to, **access of sacred sites**, **repatriation of sacred objects held in museums**, **freedom to worship through ceremonial and traditional rites, including within prisons,** and **use and possession of objects considered sacred**. (Emphasis added.) The

36

Code	Issue	Response
102 (cont.)		Several action alternatives were subject to the alternatives development and screening process; not just the E1 Alternative and alternatives located on the Gila River Indian Community (Figure 3-6 on page 3-10 of the Final Environmental Impact Statement illustrates a representation of such alternatives). Ultimately the other alternatives were eliminated from further study in the screening process and the Gila River Indian Community decided not to give permission to study alternatives on its land (see Final Environmental Impact Statement page 3-25). Therefore, the Arizona Department of Transportation, with concurrence from Federal Highway Administration, identified the E1 Alternative as the eastern section of the Preferred Alternative (which includes the W59 Alternative in the Western Section of the Study Area). In reaching its determination, the Arizona Department of Transportation sought to balance its responsibilities to address regional mobility needs while being fiscally responsible and sensitive to local communities.
103	**Title VI, 14th Amendment**	Since the beginning of the environmental impact statement process, the Federal Highway Administration and Arizona Department of Transportation have been carrying out cultural resources studies and engaging in ongoing, open consultation with the Gila River Indian Community Tribal Historic Preservation Office regarding the identification and evaluation of places of religious and cultural importance to the tribe that may be adversely affected by the proposed freeway. Such places are referred to as traditional cultural properties. As a result of these discussions and of studies conducted by the Gila River Indian Community's Cultural Resource Management Program, the Gila River Indian Community has identified traditional cultural properties that are eligible for listing in the National Register of Historic Places and that could be affected by construction of the proposed freeway. In certain cases, listing these properties on the National Register of Historic Places may offer them protection under Section 4(f) of the Department of Transportation Act. The traditional cultural properties identified are culturally important to other Native American tribes as well. For more discussion of traditional cultural properties, see the section, *Cultural Resources*, beginning on page 4-140 of the Final Environmental Impact Statement and pages 5-26 through 5-28. Section 106 of the National Historic Preservation Act requires a government-to-government relationship between the Federal Government and Indian tribes as described beginning on page 4-140 of the Final Environmental Impact Statement. Section 106 requires that federal agencies take into account the effects of their undertakings on historic properties. This process requires consultation with tribal authorities. Consultation has occurred with Gila River Indian Community government officials, the Tribal Historic Preservation Officer, the Cultural Resource Management Program, many different tribal authorities, and the State Historic Preservation Office. The consultation has resulted in concurrence from the Gila River Indian Community Tribal Historic Preservation Office and the State Historic Preservation Office on National Register of Historic Places eligibility recommendations (including traditional cultural properties), project effects, and proposed mitigation and measures to minimize harm. This consultation has been ongoing and will continue until any commitments in a record of decision are completed.

(Response 103 continues on next page)

Code	Comment Document
103	Act required policies of all governmental agencies to **eliminate interference with the free exercise of Native religion** (Emphasis added.), based on the First Amendment, and to accommodate access to and use of religious sites to the extent that the use is practicable and is not inconsistent with an agency's essential functions. It also acknowledged the prior violation of that right. Clearly, the No Build Alternative is the only viable option that does not constitute a violation of the 14th Amendment to the Constitution and a violation of the American Indian Religious Freedom Act as any freeway alternative proposed in the DEIS of the South Mountain Freeway requires blasting away part of Muhadagi Doog. 37

Code	Issue	Response
103 (cont.)		The American Indian Religious Freedom Act, 42 United States Code Section 1996, provides a policy statement of the United States "to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian . . . including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites." The Arizona Department of Transportation and Federal Highway Administration complied with the policy stated in the American Indian Religious Freedom Act throughout the environmental impact statement process, as evidenced by consultation efforts, mitigation measures, and a discussion of cultural resource issues in the Draft Environmental Impact Statement. The study would not violate the American Indian Religious Freedom Act because, as stated above, the Gila River Indian Community would not be prohibited from continuing to practice their beliefs even if the project goes forward, since access to the mountain will be maintained, impacts will be mitigated based on input by the Gila River Indian Community and others, and only a small fraction of the mountain would be affected.

Code	Comment Document
104	**Failure to Provide Timely Access to NEPA Documents and Public Records; Obstruction** ADOT made it extremely difficult for the public to actually review the DEIS, Appendices, and Technical Reports. ADOT was evasive and not at all forthcoming with these, even when proper processes to gain access to these were employed. This is in violation of NEPA regulations.
105	Despite the statements on page 6-23 of the South Mountain Freeway (Loop 202) DEIS and Section 4(f) Evaluation Chapter 6, Comments and Coordination that printed copies of the documents were "available for review only and at no charge at the following repositories throughout the Study Area," the Appendices and Technical Reports were not ever at these for review, even when this was pointed out to ADOT. (These repositories were: Phoenix Public Library – Ironwood Branch, 4333 East Chandler Boulevard, Phoenix, AZ 85048; Phoenix Public Library – Burton Barr Central Library, 1221 North Central Avenue, Phoenix, AZ; Sam Garcia Western Avenue Library, 495 East Western Avenue, Avondale, AZ 85323, and the Tolleson Public Library, 9555 West Van Buren Street, Tolleson, AZ 85353.)
106	This page, which was available on the Internet, also claimed that these documents were available, by appointment, "at the ADOT Environmental Planning Group, 1611 West Jackson Street, Phoenix, AZ 85007, (602) 712-7767" but no one ever answered this number or returned my repeated phone calls and messages.
107	The posting also claimed, "Compact disks are available at no charge and can be obtained by request by calling (602) 712-7767." Again, no one ever answered this number or returned phone calls, after I started calling and leaving messages on Thursday, June 6, 2013. I also requested them through the Public Information Officer for ADOT, to no avail. This led me to contact the ADOT director's office several times to ask for these materials on June 10, 2013, and I was finally handed a CD of the Technical Reports at 5PM of that day after driving to ADOT's offices to retrieve them.
108	However, when I loaded the CD on my computer, I found that three of the Technical Reports were not on the CD. I had to repeatedly call ADOT and request and re-request these, asking about the interminable delays in producing them. After 16 calendar days from that, I was finally allowed to see the final Technical Report on Cultural Resources. Brock J Barnhart, ADOT Assistant Communication Director, even tried to assert that some of these were confidential and restricted, claiming on June 18, 2013, when he finally did email me the Scoping Report,: "The reports are indeed confidential and are protected by the National Historical Preservation Act. Section 304

Code	Issue	Response
104	**Public Involvement**	The Draft Environmental Impact Statement was made available at five public locations throughout the area and was available for purchase at one location. The Draft Environmental Impact Statement was available also by compact disc by request, at the public hearing, and on the Web site at <azdot.gov/southmountainfreeway>. These locations were well advertised and documented on page 6-23 of the Draft Environmental Impact Statement. Technical reports and other information were available by request.
105	**Public Involvement**	Hard copies of the Draft Environmental Impact Statement and Section 4(f) Evaluation were made available at the repositories. All copies placed for public viewing contained the appendices as a compact disc in pockets in the back of the document. The comment is correct that the technical reports supporting the Draft Environmental Impact Statement were only available by request.
106	**Public Involvement**	The first record of a call placed to the Arizona Department of Transportation Environmental Planning Group by the commenter, was Saturday, June 8, 2013. The call was returned to the commenter on Monday, June 10, 2013 and a disc containing the technical reports was provided on the same day.
107	**Public Involvement**	The technical reports were provided to the commenter, as requested, on June 10, 2013, the same day they were requested.
108	**Public Involvement**	On June 17, 2013, the commenter contacted the Arizona Department of Transportation by e-mail to request a scoping technical report, if one existed. The scoping technical report was provided on June 18, 2013. Two of the technical reports requested (Cultural Resources and Section 4[f]) contained confidential information. After discussion with the Federal Highway Administration, release of the reports, in redacted form, was approved. Additional time was required for the Arizona Department of Transportation's cultural staff to review the documents and to redact the information deemed confidential. However, the redacted technical reports were provided on June 28, 2013.

Code	Comment Document
108	[16 U.S.C. 470w-3(a) — Confidentiality of the location of sensitive historic resources] (a) The head of a Federal agency or other public official receiving grant assistance pursuant to this Act, after consultation with the Secretary, shall withhold from disclosure to the public, information about the location, character, or ownership of a historic resource if the Secretary and the agency determine that disclosure may — (1) cause a significant invasion of privacy; (2) risk harm to the historic resources; or (3) impede the use of a traditional religious site by practitioners." Of course, this statute refers to information, not whole reports. When I pointed that out in an email, he agreed to produce the report, but that took another eight days. I gained access to the last of these Technical Reports on June 26, 2013, with portions redacted. That was less than 30 days before the close of comment.

Code	Issue	Response

Code	Comment Document

REPORTS

Four

Review and Critique of DEIS for Loop 202 (South Mountain Freeway) by Herman Basmaciyan, P.E. dated July 17, 2013.

Code	Issue	Response

Code	Comment Document

109

HERMAN BASMACIYAN, P.E.
Traffic, Transportation, Parking
Expert Witness and Consulting Services
701 Marguerite Avenue
Corona del Mar, CA 92625
Tel: 949-903-5738
herman.b@roadrunner.com

July 17, 2013

Ms. Pat Lawlis
President, Protecting Arizona's Resources and Children (PARC)
P.O.Box 50455
Phoenix, Arizona 85076-0455

Proj. No. 130601

Subject: DEIS for Loop 202, South Mountain Freeway

Dear Ms. Lawlis:

Per your request, I have reviewed the Draft Environmental Impact Statement (DEIS) for Loop 202, South Mountain Freeway (SMF) and related documents pertaining to travel modeling, traffic, circulation, and transportation and traffic engineering/planning.

I am a Registered Civil and Traffic Engineer in the State of California (Registration Numbers 20137 and 525, respectively) and a Registered Engineer (in retired status) in the States of Washington, Arizona, and Florida. I have over 50 years of experience in traffic and transportation engineering, traffic modeling and forecasting, parking studies, and the preparation of traffic impact studies. I have personally prepared or had a key role in the preparation of over 400 reports, including environmental documents, in various jurisdictions in California, Arizona, Washington, Oregon, Nevada, Colorado, Montana, Louisiana, and Ohio, as well as several multi-State projects sponsored by the U.S. Department of Transportation. My curriculum vitae (cv.) is attached.

Code	Issue	Response
109		See responses to direct comments below.

Code	Comment Document

Ms. Pat Lawlis
July 17, 2013 Page 2

Based on my review of the documents cited above and my education, professional knowledge and many years of experience, I have identified deficiencies and/or omissions in the environmental documentation for the Loop 202 South Mountain Freeway project. These deficiencies and/or omissions are discussed in my report, attached. In view of these deficiencies and/or omissions, I have concluded that the DEIS leads to the selection of a Preliminarily Preferred Action Alternative, improperly.

In my opinion, based on the information presented, the No Action Alternative should have been selected as the preferred course of action.

Please contact me if I can provide further details or clarification about any matters covered in this letter and the attached report.

Sincerely,

Herman Basmaciyan. P.E.

Attached:
Curriculum Vitae
Review and Critique of DEIS for Loop 202 (South Mountain Freeway)

Code	Issue	Response

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Herman Basmaciyan, P.E.

Profile

- Over 50 years of transportation planning and traffic engineering experience, including services to legal professionals
- Expert witness services in San Diego, Orange, Los Angeles, Riverside, and San Mateo Counties in eminent domain, traffic engineering, transportation engineering/planning, and parking matters
- Experience in numerous traffic impact studies, transportation planning projects, parking studies, analysis of land use/transportation system interrelationships and traffic/transportation engineering
- Management of, or key role in, a wide variety of transportation/traffic engineering projects in California, Oregon, Washington, Arizona, Nevada, Colorado, Montana, New Mexico, Ohio, and Louisiana

Education

- Master of Science in Civil Engineering, University of Virginia, 1962
- Bachelor of Science in Civil Engineering, Robert College,1960
- Numerous Short Courses in Transportation and Traffic Engineering

Registration

Professional Engineer:

- California, Civil
- California, Traffic
- Arizona (retired status)
- Florida (retired status)
- Washington (retired status)

Professional Organizations

- Institute of Transportation Engineers
- American Society of Civil Engineers

Employment History

- **Individual** Providing Expert Witness and Consultant Services, Corona del Mar, CA, since January 2005
- **Transportation Consultant,** County of Riverside, Riverside, CA, 2005-2011
- **Vice President**, Kimley-Horn and Associates, Inc, Orange, CA 1992-2004
- **Principal**, Basmaciyan-Darnell, Inc., Irvine, CA 1978-1992
- **Principal**, Herman Basmaciyan and Associates, Newport Beach, CA 1976-1978

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110		Résumé

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- **Senior Associate**, VTN Corporation, Irvine, CA, and Bellevue, WA 1971-1976
- **Senior Transportation Planning Engineer**, DeLeuw, Cather and Company, San Francisco, CA 1970-1971
- **Advisory Analyst**, Service Bureau Corporation (then a subsidiary of IBM), Palo Alto, CA 1967-1970
- **Director**, Puget Sound Regional Transportation Study, Seattle, WA 1962-1967
- **Research Assistant**, Virginia Council of Highway Research, Charlottesville, VA 1960-1962

Representative Projects in Arizona

- Business 8 Corridor Study, Yuma, AZ
- Development of Traffic Circulation Models, Flagstaff, AZ
- Downtown Transportation Study, Tempe, AZ
- FMPO Travel Demand Model Update and Data Collection, Flagstaff, AZ
- Arizona Passenger Rail Feasibility Study, Arizona Department of Transportation, AZ
- Business 8 Corridor Study, Yuma, AZ
- Phoenix Urban Area Public Transportation Study, Phoenix, AZ
- Statewide Rail Passenger Feasibility Study, Statewide, AZ
- Traffic Circulation Study, San Luis, AZ
- Yuma Area Service Highway Major Investment Study, Design Concept Report, and Environmental Assessment, Yuma, AZ
- Yuma Regional Transportation Study, Yuma, AZ
- Yuma Regional Transportation Study, Yuma, AZ

Other Major Representative Projects

- Analysis of Transit Services and Transit System Improvement Options, Boulder, CO
- MAGLEV in Southern California, Los Angeles, CA
- Major Investment Study for rail and bus transit improvements in Cincinnati, Ohio and vicinity
- Southeast Los Angeles/Western Orange County Transportation Study, Southern California Association of Governments, CA
- Public Transportation Alternatives Feasibility Study, including High-Speed Trains, Western WA
- Alternatives Analysis for Transitway Program, Orange County, CA
- Cross-Sound Transportation Study, Puget Sound Region, WA
- Downtown Transit Terminal Location Study, Mountain Line, Missoula, MT

HERMAN BASMACI AN, P.E.

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- Alternatives Analysis and Environmental Assessment for the Improvement of Facilities for High Occupancy Vehicles at and near the Interchange of I-405 and SR-55, Orange County Transportation Authority, CA
- Bridge and Major Thoroughfare Fee Study, County of San Diego, CA
- Central County Corridor Study, Orange County Transportation Authority, Orange, CA
- Circulation Element of El Segundo General Plan, El Segundo, CA
- Circulation Element of Westminster General Plan, Westminster, CA
- Circulation system planning analyses for the Rancho Santa Fe Association, Rancho Santa Fe, CA
- Circulation System Planning, East Otay Mesa Specific Plan, San Diego County, CA
- Environmental Documentation for California State Route 57 Improvements, Orange County, CA
- Front Avenue Corridor Study, Portland, OR
- Harbor Boulevard Smart Street Feasibility Study and Environmental Documentation, Garden Grove, Anaheim, Santa Ana, Fountain Valley, Orange County, CA
- Moulton Parkway Feasibility Study, Orange County, CA
- North-South/Central Orange County Corridor Study, Orange County, CA
- On-Call Transportation Planning and Traffic Engineering Services for Caltrans District 11, CA
- People-Mover/PRT Feasibility Study, Seattle, WA
- Regional Transit Plan, San Diego County, CA
- Santa Ana River Crossings Cooperative Study, Orange County, CA
- Santa Ana Transportation Corridor Alternatives Analysis and Environmental Documentation, Orange County, CA
- Station Area Traffic Analysis, Commuter Rail Service between Oceanside and San Diego, North San Diego County Transit Development Board, Oceanside, CA
- Station-Area Traffic Analysis, Commuter Rail Service between Oceanside and Escondido, North San Diego County Transit Development Board, Oceanside, CA
- Tri-Met Transit Development Program, Portland, OR

HERMAN BASMACI AN, P.E.

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Code	Comment Document

REVIEW AND CRITIQUE
of
DEIS FOR LOOP 202 (SOUTH MOUNTAIN FREEWAY)

Prepared for

Protect Arizona's Resources and Children (PARC), et al.
Phoenix, Arizona

by
Herman Basmaciyan, P.E.
July 17, 2013

Code	Issue	Response

Code	Comment Document

SECTION I - SUMMARY OF FINDINGS AND CONCLUSIONS

Following is a summary of the findings and conclusions of the review of the DEIS for Loop 202 (South Mountain Freeway) focused on traffic, travel forecasting, circulation, and related matters:

111 1. The socio-economic data projections presented in the Purpose and Need and elsewhere in the DEIS are faulty.

111 2. Since socio-economic data are the starting point for the MAG Travel Model, the travel-related forecasts presented in the Purpose and Need and elsewhere in the DEIS are faulty.

112 3. The forecast of vehicle miles of travel (VMT) lacks credibility. The DEIS states that VMT will grow at a higher rate compared to population and employment growth. This premise is contrary to actual national trends which uniformly show decreases in VMT. Moreover, in the DEIS the methodology used for computation of VMT is not adequately explained.

113 4. As presented in the DEIS, the Purpose and Need defines the need as "completing the Regional Freeway System," "adding capacity to the regional freeway and arterial system," and "serving travel needs in the Southwest area." No compelling need specifically for the South Mountain Freeway (SMF) is presented in the Purpose and Need.

5. The Description of the Proposed Action in the Summary Chapter of the DEIS fails to provide details essential for informed decision-making.

6. Some reasonable and feasible alternatives were not considered in the DEIS or were improperly eliminated early in the screening process.

7. Since the evaluation and selection of alternatives is based largely on the travel forecasts (among other considerations), the evaluations and selection are fatally flawed. As stated in Item 2 above, the travel forecasts were prepared based on faulty socio-economic forecasts.

8. Some impacts, including impacts on the arterial street system adjoining proposed interchanges, construction impacts, and the impacts of truck traffic are not addressed at all or are not adequately addressed in the DEIS.

Review and Critique of DEIS for Loop 202 (SMF)
Page 1

Code	Issue	Response
111	**Purpose and Need**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future.
112	**Traffic**	The local conditions and setting of the Phoenix metropolitan area are not consistent with areas of high-density cities in other parts of the country. In Maricopa County, daily vehicle miles traveled levels increased by almost 2 percent between 2011 and 2012, and the 2012 daily vehicle miles traveled are approaching the prerecession peak in 2007. (*Source*: the Arizona Department of Transportation's Multimodal Planning Division's Highway Performance Monitoring System Data for calendar years 2012 and 2011).
113	**Purpose and Need**	The actual need defined in Chapter 1 of the Draft Environmental Impact Statement is based on socioeconomic factors (see page 1-11) and on regional transportation demand and existing and projected transportation system deficiencies (see page 1-13). The proposed action is the construction and operation of a major transportation facility. Chapter 1, *Purpose and Need*, defines the need or the problem the proposed action would solve. Chapter 3 evaluates alternatives for addressing this need. The responsiveness of the proposed freeway to the purpose and need criteria is presented in the Draft Environmental Impact Statement, beginning on page 3-27.

Code	Comment Document

SECTION I - SUMMARY OF FINDINGS AND CONCLUSIONS

Following is a summary of the findings and conclusions of the review of the DEIS for Loop 202 (South Mountain Freeway) focused on traffic, travel forecasting, circulation, and related matters:

1. The socio-economic data projections presented in the Purpose and Need and elsewhere in the DEIS are faulty.

2. Since socio-economic data are the starting point for the MAG Travel Model, the travel-related forecasts presented in the Purpose and Need and elsewhere in the DEIS are faulty.

3. The forecast of vehicle miles of travel (VMT) lacks credibility. The DEIS states that VMT will grow at a higher rate compared to population and employment growth. This premise is contrary to actual national trends which uniformly show decreases in VMT. Moreover, in the DEIS the methodology used for computation of VMT is not adequately explained.

4. As presented in the DEIS, the Purpose and Need defines the need as "completing the Regional Freeway System," "adding capacity to the regional freeway and arterial system," and "serving travel needs in the Southwest area." No compelling need specifically for the South Mountain Freeway (SMF) is presented in the Purpose and Need.

114 5. The Description of the Proposed Action in the Summary Chapter of the DEIS fails to provide details essential for informed decision-making.

115 6. Some reasonable and feasible alternatives were not considered in the DEIS or were improperly eliminated early in the screening process.

116 7. Since the evaluation and selection of alternatives is based largely on the travel forecasts (among other considerations), the evaluations and selection are fatally flawed. As stated in Item 2 above, the travel forecasts were prepared based on faulty socio-economic forecasts.

117 8. Some impacts, including impacts on the arterial street system adjoining proposed interchanges, construction impacts, and the impacts of truck traffic are not addressed at all or are not adequately addressed in the DEIS.

Review and Critique of DEIS for Loop 202 (SMF)
Page 1

Code	Issue	Response
114	**Purpose and Need**	As pointed out on page S-1, in the sidebar, "*What you will find in the Summary chapter,*" the text in the Summary is not the "final word," and readers are urged to turn to the main text when questions about Summary content arise.
115	**Alternatives**	In accordance with the National Environmental Policy Act, a range of reasonable action alternatives to carry forward for further analysis was determined through application of multidisciplinary criteria in a logical, step-wise progression. Alternatives were not disposed of or dismissed without a thorough evaluation using the multidisciplinary criteria outlined in the alternatives development and screening process presented in Chapter 3 of the Draft Environmental Impact Statement. The preferred alternative was the outcome to this process. Text beginning on page 3-26 of the Draft Environmental Impact Statement establishes conclusions associated with the process.
116	**Traffic**	The Federal Highway Administration and the U.S. Environmental Protection Agency approved the air quality conformity determination that includes the Maricopa Association of Governments regional travel demand model that produced the traffic projections used in the traffic analysis for the project (see page 3-27 of the Draft Environmental Impact Statement). Traffic projections are regularly updated by the Maricopa Association of Governments. The traffic projections in the Draft Environmental Impact Statement are from a model adopted in 2011. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11.
117		See responses to specific comments following.

Code	Comment Document
118	9. Even assuming arguendo that the demographics used to demonstrate the need for the project are accurate (they are not), none of the Action Alternatives considered will alleviate the anticipated capacity deficiencies identified in the Purpose and Need. Despite the expenditure of about $2 billion to $3 billion to build the South Mountain Freeway and despite the displacement of many residences and business establishments, there will be capacity deficiencies at levels comparable to the No Action Alternative on freeways and arterials throughout the Metropolitan Area and on the South Mountain Freeway itself.
119	10. Appropriate mitigation measures are not proposed to mitigate the impacts of the Action Alternatives.
120	11. Based on these traffic and circulation considerations, none of the Action Alternatives should have been selected as the Preferred Alternative. Indeed, when correct socio-economic data is used, the No Action Alternative largely achieves the desired outcomes without exorbitant costs and/or negative impacts.

Supporting information for the summary of findings and conclusions is presented in Section II of this report. Exhibits are presented following the last page of Section II.

Review and Critique of DEIS for Loop 202 (SMF)
Page 2

Code	Issue	Response
118	**Purpose and Need**	Chapter 1 shows that there is a need for a major transportation facility (an action alternative) within the Study Area today and that without a major transportation facility in the Study Area in the future (the No-Action Alternative), the region would continue to suffer even greater congestion, traffic delays, and impacts on the movement of people and goods and the delivery of services. Capacity deficiencies would be substantially greater in the foreseeable future under No-Action when compared against the action alternatives.
119	**Impacts**	The comment provides no specifics. The Arizona Department of Transportation and Federal Highway Administration have included mitigation measures based on the level of impact associated with the proposed action. These mitigation measures have been coordinated and reviewed by local, regional, State, and federal agencies. Specific responses are made to specific comments later in this document.
120	**Alternatives**	The Arizona Department of Transportation, with concurrence from the Federal Highway Administration, has determined that the proposed freeway (as made up by the W59 and E1 Alternatives) is the appropriate solution to the transportation problem identified in the Draft Environmental Impact Statement. All of the alternatives were subject to a thorough evaluation using a multidisciplinary set of criteria in accordance with National Environmental Policy Act and Federal Highway Administration guidance.

Code	Comment Document

SECTION – II SUPPORTING INFORMATION FOR THE SUMMARY OF FINDINGS AND CONCLUSIONS

In this Section of the report, information is presented to support each of the numbered items 1 through 11 in Section I.

121

1. **The socio-economic data projections presented in the Purpose and Need and elsewhere in the DEIS are faulty.** The socio-economic data used in the DEIS was developed by MAG, relying primarily on information from the 2005 special census and not considering the 2010 U.S. Census. As a result, MAG's 2035 forecasts of population, households, and employment are overstated. The procedure MAG used to prepare the forecasts is explained below in a direct quote from the Traffic Overview Report.

A special census was conducted for Maricopa County in 2005 to capture the boom in population, housing, and employment that much of the region experienced during the first half of the decade. In 2007, MAG released socioeconomic projections for Maricopa County based on the results of the 2005 census through 2030. In 2009, MAG subsequently extended these projections through 2035. Table 3 presents the projections for Maricopa County.

Table 3. Projected Growth in Population, Housing, and Employment in Maricopa County, 2005–2035

Year	Population	Housing	Employment
2005	3, 681, 000	1, 480, 000	1, 748, 000
2010	4, 216, 000	1, 685, 000	2, 157, 000
2020	5, 230, 000	2, 104, 000	2, 788, 000
2030	6, 136, 000	2, 502, 000	3, 379, 000
2035	6, 545, 000	2, 676, 000	3, 600, 000

Source: Maricopa Association of Governments, 2007 and 2009

Based on the 2010 U.S. Census data, which should have been reflected in the DEIS, it is obvious that MAG's forecast of socio-economic data based on the 2005 special Census were too high by a large margin. The following table, presents a comparison of MAG's 2010 forecast to actual data from the 2010 U.S. Census.

Code	Issue	Response
121	**Purpose and Need**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future. Chapter 1 shows that there is a need for a major transportation facility (an action alternative) within the Study Area today and that without a major transportation facility in the Study Area in the future (the No-Action Alternative), the region would continue to suffer even greater congestion, traffic delays, and impacts on the movement of people and goods and the delivery of services. The Arizona Department of Transportation, with concurrence from the Federal Highway Administration, has determined that the proposed freeway (as made up by the W59 and E1 Alternatives) is the appropriate solution to the transportation problem identified in the Draft Environmental Impact Statement.

Code	Comment Document

Comparison of 2010 Census Data to MAG/DEIS Growth Projections, 2005-2010

TOTAL	2005 Actual	2010 Projected	2005-2010 Projected Annual Growth Rate	2010 Actual	2005-2010 Actual Annual Growth Rate
Population - County	3,681,025	4,216,499	2.75%	3,817,117	0.73%
Population - Study Area	1,951,251	2,274,221	3.11%	2,117,619	1.65%
Total Housing Units - County	1,479,767	1,685,134	2.63%	1,639,279	2.07%
Total Housing Units - Study Area	471,484	589,087	4.55%	478,340	0.29%

122 MAG's forecast of Maricopa County population for 2010 is 4,216,499 compared to the actual U.S. Census population of 3,817,117. The MAG forecast is too high by approximately 400,000, or about a 10% overstatement compared to the actual 2010 U.S. Census population. Housing units for Maricopa County are overestimated by about 3%. Population for the Study Area is overestimated by about 7%, and housing units for the Study area are overestimated by MAG by about 23%. Likewise there are large discrepancies in the forecast and actual annual growth rates between 2005 and 2010 in all categories.

Because of these inaccuracies in the MAG socio-economic forecasts even for a short term of five years (2005 to 2010), the long term forecasts for a 30-year period (2005 to 2035) are substantially overstated and are not reliable. If the DEIS had taken into account the information from the 2010 U.S. Census, the 2035 socio-economic forecasts would have started at a lower reference point for 2010. The resulting 2035 forecasts would have been lower even if all other procedures and modeling parameters were unchanged from those used in the 2007/2009 MAG forecasts.

123 2. **Since socio-economic data are the starting point for the MAG Travel Model, the travel-related forecasts presented in the Purpose and Need and elsewhere in the DEIS are faulty.** The DEIS should have presented travel forecasts based on correct socio-economic data in all affected text, tables and figures in the DEIS. Faulty travel forecasts affect the Air Quality and Noise impact analyses in addition to the analysis of traffic and circulation impacts.

3. **The forecast of vehicle miles of travel (VMT) lacks credibility. The DEIS states that VMT will grow at a higher rate compared to population and employment growth. This premise is contrary to actual national trends which uniformly show decreases in VMT. Moreover, in the DEIS the methodology used for computation of VMT is not adequately explained.** Figure 1-4 in the Purpose and Need chapter of the DEIS indicates that the number of daily vehicle miles of travel (VMT) will be approximately 185,000,000 and that VMT growth will outpace the growth in population, employment and housing units. This premise is contradictory to the following quote from the Traffic Overview Report (Page 2-5).

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122	**Purpose and Need**	The historical growth in the Maricopa Association of Governments region is discussed in the Draft Environmental Impact Statement, beginning on page 1-5. Critical factors such as available land, mild climate, affordable cost of living, and employment opportunities that led to the historical growth rates in the region remain unchanged. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future.
123	**Purpose and Need**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future.

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123	*"Historical and Projected Travel in the MAG Region* *Historical population growth in the region (see Table 2) greatly pressured the region's transportation system. As shown in Table 7, the growth in travel, as measured in vehicle miles traveled (VMT), has mirrored the growth in population in Maricopa County (an annual compound growth rate of approximately 5.4 percent). In 2010, travel demand reached 101 million VMT per day (MAG 2010a) and is projected to reach 185 million VMT per day in 2035 (MAG 2010a)."* The growth in VMT from 101 million in 2010 to 185 million in 2035 would represent an annual compound growth rate of about 2.5%. On the other hand, Table 20-4 on Page 20-8 (Exhibit 1) of the RTP states that in 2030 VMT will be approximately 139,740,000 if the RTP improvements are implemented. Accordingly, the 2035 VMT (per the DEIS) of 185,000,000 would represent a compound growth rate of about 7% per year for the 5 years between MAG's 2030 VMT forecast and the 2035 VMT forecast in the DEIS. These apparent discrepancies amongst the various sources cited cast serious doubt on the credibility of the VMT estimate presented in the DEIS. Notwithstanding the foregoing, if correct socio-economic data forecasts were used in the DEIS, the 2035 VMT would have been even lower. ADOT's over-statement of VMT in the DEIS is further compounded when viewed in the context of recent travel trends and forecasts. Travel surveys nationally and in the MAG region indicate that travel statistics such as trip length, VMT per person, and VMT per household have actually decreased in recent years or have been steady. According to the National Household Travel Survey (NHTS), which is a periodic travel survey sponsored by the US DOT, the average vehicle trip length was 9.9 miles in 2001 and 9.7 miles in 2009 (Table 3, Page 10) (see Exhibit 2). Since the 95% confidence interval stated by the survey is 0.2, statistically there was no change in the average trip length. Also the number of daily vehicle trips per household dropped from 5.95 in 2001 to 5.66 in 2009. Since the confidence interval in this case is .06, the decrease is statistically significant. Figure 6, Page 32 (Exhibit 3) indicates that average time spent in vehicles and miles traveled were lower in metropolitan areas in all population ranges and in rural areas. MAG was a participant in the 2009 NHTS Survey (surveys were conducted between April 2008 and April 2009) and augmented the national data base by added household surveys within the MAG Region. MAG documented the results of the survey in its publication "MAG 2008 NHTS Dataset for the MAG Region." Table 7 on Page 107 (Exhibit 4) of this publication daily trip rates in the MAG Region are presented. The daily trip rates range from a low of 3.72 on Sunday to Review and Critique of DEIS for Loop 202 (SMF) Page 5

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123 (cont.)		Under the National Environmental Policy Act, it is common for new data to avail itself and to, therefore, update the environmental impact statement as new data become available. It is not a requirement, however, to stop the environmental impact statement process in its entirety to wait for new information to become available. Completing an environmental impact statement under those terms would be quite difficult and, arguably, the public would not receive benefits associated with a proposed public infrastructure action. In this case, the project team experts were aware that socioeconomic projections were to be made available but it was likely (based on the Draft Environmental Impact Statement content and processes and a qualitative understanding of what the updated information would show and reveal) that conclusions affected by such data would not substantially change. The team undertook a quite acceptable, common, and understood practice of publishing the Draft Environmental Impact Statement while new data was developing and then present the new information in the Final Environmental Impact Statement. The new information would not automatically assume the need for a supplemental document.

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123	a high of 7.26 on a Tuesday. The 7-day weekly numerical average is 4.99 vehicle trips per household, and the numerical average of the five weekdays is 5.45 vehicle trips per household. The trip rates in the MAG data set are comparable to the NHTS national rates. The DEIS does not reference the 2009 NHTS results which do not support the projections of VMT levels relied on to support the South Mountain Freeway (SMF). In 2001 MAG conducted the Maricopa Regional Household Travel Survey. A Final Report was prepared making it possible to compare several trip-making characteristics and trends/changes between the 2001 and the 2008/2009 data sets. Trip rates per household for all modes increased between 2001 and 2008/2009 from 7.38 to 10.50, as reported on Page 120 of "MAG 2008 NHTS Dataset for the MAG Region" (Exhibit 5) The duration of trips in 2001 and 2008 (trip length in minutes) appears to be comparable, since the tabulated data for the 2001 survey (Pages 76 through 78 of the Final Report) (Exhibit 6) follows the same curve pattern illustrated in Figure 7-10 in the report "MAG 2008 NHTS Dataset for the MAG Region" (Exhibit 7). Again, comparing MAG data for 2001 and 2009, the drastic increases in VMT presented in the DEIS cannot be supported. Several sources, including the U.S. PIRG Education Fund, the Economist, and the New York Times, have published reports and articles about declining trends in VMT. Some of the downturn or flattening in VMT trends may be attributable to major events such as the recession in the early 1990s, bursting of the high tech bubble, the bursting of the housing bubble, and rises in fuel costs. On the other hand, changes in travel habits and the "travel time budget," or the concept that the time a driver will devote to driving on any given day is limited, could also have contributed to the flattening or reductions in vehicle miles of travel. In addition, factors to be considered include increased use of on-line shopping, a larger proportion of elderly persons who tend to make fewer, and/or shorter, driving trips, and other factors. The VMT numbers presented in the DEIS are at odds with this generally recognized downward trend in VMT. The reason for this apparent divergence from documented trends is not clear. Was the estimate of VMT for 2035 a direct unadjusted output generated by the MAG Regional Travel model or was it computed by another methodology? If not generated by the model, why not? What was the methodology used? A reliable forecast of VMT is important for the Air Quality impact analysis in addition to the analysis of traffic and circulation impacts. 4. **As presented in the DEIS, the Purpose and Need defines the need as "completing the Regional Freeway System," "adding capacity to the regional freeway and arterial system," and "serving travel needs in the Southwest area." No compelling need specifically for the South Mountain Freeway (SMF) is presented in the Purpose and Need.** The Purpose and Need statement in the DEIS is very general and is focused on the need to add freeway capacity but			

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123	not focused on building the SMF. The problems identified that lead to the proposed action (not direct quotes) are: • Accommodating population and employment growth in the Phoenix Metropolitan Area. • Completing the Regional Freeway and Highway System, that was delineated about 30 years ago. • Providing additional freeway capacity to reduce congestion in the Urban Core. • Serve travel needs in the Southwest portion of the Metropolitan Area. The stated needs point to Regional level problems and not to a specific facility such as the proposed South Mountain Freeway, Loop 202 (SMT). Following is a discussion of each of the stated problems and why they do not define the need for a specific facility:
124	• There is no question that historically, the Phoenix Metropolitan Area has grown very rapidly. Going forward, however, growth will likely not occur at a steady pace. Undoubtedly, there will be cyclical ups and downs. In the long-range future, the trend will likely be upwards, although it appears that the actual amount and rate of growth reached by the planning horizon year 2035 will be significantly less than forecasted in the DEIS. Nevertheless, in view of the anticipated growth, the case is made in the Purpose and Need (P&N) chapter of the DEIS that the transportation infrastructure needs to be improved. The P&N, however, does not support construction of the SMF (Loop 202), as would be appropriate for a DEIS that may lead to an action, in this case the construction of the freeway.
125	• The justification in the P&N that Loop 202 is in the RTP and has been on the books for 30 years is a self-fulfilling objective. The presentation of historical data in the P&N is beneficial because it gives the public a sense of what has transpired in the last 25 to 30 years. The Purpose and Need for the South Mountain Freeway however, should have been supported, in addition, by specific problems that Loop 202 would reasonably be expected to alleviate or address, since this DEIS is for a proposed implementation action and not for a programmatic action such as the adoption of the RTP.
126	• The P&N emphasizes that additional freeway capacity would be needed in the Phoenix Metropolitan Area. But, the capacity deficiencies are concentrated in the Urban Core and along I-10, I-17, S1, US 60 and other freeways to the east and north. The P&N does not identify the travel components (origin and destination combinations) that Loop 202 would divert away from the freeways that are congested now or are expected to be congested in 2035. The question arises whether all reasonable Review and Critique of DEIS for Loop 202 (SMF) Page 7

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124	**Purpose and Need**	Chapter 1, *Purpose and Need*, follows Federal Highway Administration guidance with respect to complying with the National Environmental Policy Act, which is to define the transportation problem. This Draft Environmental Impact Statement chapter analyzing the purpose and need for the proposed action does not identify a specific facility as the solution. That is addressed in Chapter 3. The comment notes that it is unlikely that growth will occur at a steady pace. First, there is no basis upon which this statement is made. Regardless, as illustrated in Chapter 1 of the Draft and Final Environmental Impact Statement, historical growth rates and trends are described that support the idea that growth has not occurred at a steady pace but is subject to external factors such as new technology, changes in market conditions, cost of living. However, the growth model for future planning purposes does take historical growth trends and "level" them out; a common practice in growth models used by metropolitan planning organizations such as the Maricopa Association of Governments.
125	**Purpose and Need**	Nowhere in the Draft Environmental Impact Statement is reference made that the proposed action is needed to comply with the *Regional Transportation Plan*. The analysis of purpose and need would have ended the environmental impact statement process at that point if a need in the form of a transportation problem had not been identified, and this is disclosed in the Draft Environmental Impact Statement. As observed in the comment, this information is provided for historical perspective. That is why it is presented in the section, *Historical Context of the Proposed Action*. By objectively examining travel in the region and establishing need as presented in Chapter 1 of the Draft Environmental Impact Statement, the alternatives process focused on a systematic, sequential, interdisciplinary approach to establishing a range of reasonable alternatives. An incidental benefit of the results as presented in text beginning on page 3-35 is consistency with local planning. In fact, as disclosed in Chapter 1, it is further explained that the analysis of purpose and need would have ended the environmental impact statement process at that point if a need in the form of a transportation problem had not been identified.
126	**Purpose and Need**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future. Information related to the origin and destination, including pass-thru, of vehicles that would use the proposed freeway is presented in Figure 3-18 on page 3-36 of the Draft Environmental Impact Statement.

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	alternatives have been considered in the DEIS, or if they may have been eliminated too early in the tiered screening process. Also please see the next item.
127	• The information in the P&N indicates that congestion on I-10 (Papago) extends to the West almost as far as Loop 101 (Agua Fria) and on I-10 (Maricopa as far South as Loop 202 (Santan) and beyond. Traffic volumes in the P&N (2010 and 2035) indicate that traffic volumes on the north south arterials in the Study Area go up approaching I-10 (Papago) and that traffic on the east-west arterials go up approaching I-10 (Maricopa). Clearly travel from the southwest area is oriented to the north and east, rather than to the west. Since traffic to/from the Southwest area will continue to use the congested portions of I-10, it is unclear how the SMF will alleviate congestion in the urban core.
128	• The north-south portion of Loop 202 (South Mountain), may be beneficial for north-south traffic destined for I-10 because some traffic that would be on the arterials would be able to use Loop 202 instead. However, on I-10, motorists would encounter congestion whether traveling east or west. The east-west portion of Loop 202 would not be an alternative to the congested east-west arterials because there is no north-south access across South Mountain. Therefore, congested arterials such as Baseline Road and other east-west arterials further north are not likely to receive much, if any, benefit from the east-west portion of Loop 202.
129	The P&N should have identified and itemized the problem (s) that create the need for the proposed action in specific terms such as: • Alleviating a specific current or expected future capacity deficiency (for example, I-10 between Point A and Point B) on the freeway system or on the arterials. • Providing an adequate roadway network to serve the circulation needs within the Study Area and identifying deficiencies in terms such as Baseline Road between Point A and Point B. • Accommodating commuters to/from the Study Area. Number of work trips between the Study Area and other parts of the Metropolitan Area should have been presented to support the need. • Serving pass-through truck traffic between major truck origins and destinations. An example might have been: About 1,000 trucks use I-10 through Phoenix now en route between the East Coast and Los Angeles, without stopping in Phoenix. This number is forecast to increase to 4,500 in 2035, contributing to worsening congestion on I-10.
	In summary, even if the supporting demographic forecasts are presumed accurate, the P&N in the DEIS does not support the construction of SMF (Loop 202). The DEIS should have but failed to identify, let alone analyze, the compelling
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126 (cont.)		In accordance with the National Environmental Policy Act, a range of reasonable action alternatives to carry forward for further analysis was determined through application of multidisciplinary criteria in a logical, step-wise progression. Alternatives were not disposed of or dismissed without a thorough evaluation using the multidisciplinary criteria outlined in the alternatives development and screening process presented in Chapter 3 of the Draft Environmental Impact Statement. The preferred alternative was the outcome to this process. Text beginning on page 3-26 of the Draft Environmental Impact Statement establishes conclusions associated with the process.
127	**Purpose and Need**	The comment states that "Clearly travel from the southwest is oriented to the north and east, rather than to the west." First, there is no basis upon which this statement is made. The purpose of a major transportation facility in the Study Area is to help address increased travel from the southwest to the east. The major transportation facility would provide an alternate route to congested portions of Interstate 10. The purpose and need analysis as described in Chapter 1 of the Draft and Final Environmental Impact Statements confirmed the Study Area as the appropriate area in which to define the transportation problem. While other transportation problems may existing in the region's transportation network, this environmental impact statement process focused appropriately on the identified problem in the southwest region of the Phoenix metropolitan area.
128	**Alternatives**	The purpose and need analysis as described in Chapter 1 of the Draft and Final Environmental Impact Statements confirmed the Study Area as the appropriate area in which to define the transportation problem. While other transportation problems may existing in the region's transportation network, this environmental impact statement process focused appropriately on the identified problem in the southwest region of the Phoenix metropolitan area. As stated in text in the Draft Environmental Impact Statement, beginning on page 3-27, the proposed freeway would appropriately shift traffic from some other freeway segments and the arterial network. Figure 3-12, in this section, illustrates positive effects on arterial roads such as the referenced Baseline Road.
129	**Purpose and Need**	In response to the comment, the reader is referred to both Chapters 1 and 3 of the Draft and Final Environmental Impact Statements. Text in each of these chapters speaks specifically to the context of purpose and need in terms of the four bulleted points in the comment. The proposed freeway would alleviate identified capacity deficiency, would enhance the circulation needs with the Study Area, would serve commuter travel, and would accommodate truck traffic at vehicle mix percentages similar to those percentages found throughout the region's freeway network.

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	problems and needs in the Study Area that the SMF would be intended to alleviate. Specific evaluation criteria could then have been developed to assess the effectiveness of each alternative to alleviate, wholly or partially, each of the problems in the Study Area. This lack of specificity in the Purpose and Need affects the identification of alternatives and the evaluation of alternatives.
130	5. **Some reasonable and feasible alternatives were eliminated early in the screening process, possibly due to the faulty Purpose and Need. With a revised and appropriately framed Purpose and Need, additional alternatives may emerge.** On Page 3-3 of the DEIS, the alternatives screening criteria are presented as quoted below.
131	*The following general categories reflect the criteria established for the screening process (Alternatives Screening Report [2003]):* ➢ *ability to satisfy purpose and need* ➢ *ability to minimize impacts on the human and natural environments* ➢ *ability to improve operational characteristics of the region's transportation system* ➢ *degree of public and political acceptability* ➢ *consideration of overall conceptual cost estimates*
132	Since one of the criteria is satisfying the Purpose and Need, a faulty Purpose and Need would result in a faulty screening process. In addition, the third bullet item in the criteria is one of the needs identified in the Purpose and Need; it is duplicative and is not a separate and distinct criterion.
133	Alternatives that should have been but were not included in the evaluations or those that should have been evaluated in greater detail include:
134	a) As discussed previously, the No Action Alternative should have been identified as the preferred alternative in the DEIS. The No Action Alternative is dismissed in the DEIS simply because it does not meet the Purpose and Need. Since the Purpose and Need is faulty, this reason for dismissing the No Action Alternative is not defensible. The No Action Alternative would have no physical impacts, including no impact on South Mountain. It may also have beneficial air quality and noise impacts because the No Action Alternative would result in less VMT, compared to the Preferred Action Alternative as indicated by the comparison of VMT for the "RTP 2030" and "No Build" Alternatives presented in the MAG RTP, Table 20-4 on Page 20-8 (Exhibit 1). Notwithstanding, there were other Action alternatives that would have met the Purpose and Need but were not considered in the DEIS or were not adequately addressed.
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130		See response to specific comments below.
131		See response to specific comments below.
132	**Purpose and Need**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future. Past determinations surrounding the alternatives development and screening process, including the reasons for the elimination of alternatives, as outlined in Chapter 3 of the Final Environmental Impact Statement, were reviewed for appropriateness based on the new data and were determined to remain appropriate screening determinations. The noted duplicate criterion has been deleted from the Final Environmental Impact Statement.
133		See response to specific comments below.
134	**Alternatives**	As stated on page 3-40 of the Final Environmental Impact Statement, the No-Action Alternative would not satisfy the purpose and need of the proposed action because it would result in further difficulty in gaining access to adjacent land uses, increased difficulty in gaining access to Interstate and regional freeway systems from the local arterial street network, increased levels of congestion-related impacts, continued degradation in performance of regional freeway-dependent transit services, increased trip times, and higher user costs. Further, the No-Action Alternative would be inconsistent with Maricopa Association of Governments' and local jurisdictions' long-range planning and policies. The No-Action Alternative was included in the Draft and Final Environmental Impact Statements for detailed study to compare impacts of the action alternatives with the consequences of doing nothing (impacts can result from choosing to do nothing).

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135	b) The initial list of modal alternatives does not include a hybrid consisting of freeway spot improvements where needed, new freeway segment (s), more lanes on selected arterials beyond the improvements included in the RTP, additional arterials not included in the RTP. A well-defined hybrid alternative should have been considered and evaluated. An example of a hybrid alternative, that would include some of the features of the Preferred Action Alternative and that would avoid any impacts on South Mountain, is presented in attached Exhibit 8. The salient features of the hybrid alternative would be: • Construction of a freeway along the alignment of the Preliminarily Selected Action Alternative (59th Avenue/63rd Avenue) between I-10 and W. Carver Road, • Construction of a new four-lane arterial along W. Carver Road between 59th Avenue and 51st Avenue, • Arterial improvements along 51st Avenue between W. Carver Road and W. Pecos Road (extended westerly from the western terminus of Pecos Road), • Construction of a new four-lane arterial between 51st Avenue and the present western terminus of Pecos Road (generally east west along an alignment approximating an extension of W. Pecos Road) • Extensive arterial improvements in the Southwest area.
136	c) Dismissal of all alternatives impacting GRIC land without thorough evaluation is not appropriate. When the complete set of benefits, costs and impacts are assessed one or more alternatives through GRIC may emerge to be a better choice than the Preferred Action Alternative. Alternatives not considered or not evaluated fully include: • The "Community Alternative" that is depicted in Figure 3-11 on Page 3-25 of the DEIS. This alternative would not have any impacts on South Mountain. An alignment similar to the Community Alternative is shown in an article on the Arizona Republic website. The link to the article is: http://www.azcentral.com/community/ahwatukee/articles/20130308south-mountain-freeway-plan-ignored.html • The various alternatives through GRIC land that parallel W. Pecos Road, depicted in Figure 3-5 on Page 3-7 of the DEIS.

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135	**Alternatives**	According to 23 Code of Federal Regulations §771.111(f)," the action evaluated in the environmental impact statement must connect logical termini and be of sufficient length to address environmental matters on a broad scope...". The proposed action should satisfy the project need and should be considered in the context of the local area socioeconomics and topography, the future travel demand, and other infrastructure improvements in the area. A partial freeway from Interstate 10 (Papago Freeway) to Laveen Village is not feasible because it would not meet the proposed freeway's identified purpose and need. Construction of Carver Road between 59th and 51st avenues is included in the City of Phoenix General Plan transportation element. Improving 51st Avenue between Carver Road and Pecos Road would require permission of the Gila River Indian Community. Any alternative on Gila River Indian Community land must consider tribal sovereignty. Tribal sovereignty is based in the inherent authority of Native American tribes to govern themselves. While this notion of sovereignty is manifested in many areas, generally Native American land is held in trust by the United States. Native American communities have the authority to regulate land uses and activities on their lands. States have very limited authority over activities within tribal land (see page 2-1 of the Final Environmental Impact Statement). From a practical standpoint, this means that the Arizona Department of Transportation and Federal Highway Administration do not have the authority to survey tribal land, make land use (including transportation) determinations directly affecting tribal land, or condemn tribal land for public benefit through an eminent domain process. Based on previous comments from the Gila River Indian Community related to pass-through traffic using 51st Avenue, the Gila River Indian Community would not support any activities that would increase unwanted traffic through its communities. Extending Pecos Road to 51st Avenue would not be feasible because a portion would be located on Gila River Indian Community land, and the Gila River Indian Community has not provided permission to construct a facility on its land. Based on previous comments from the Gila River Indian Community related to pass-through traffic using 51st Avenue, the Gila River Indian Community would not support any activities that would increase unwanted traffic through its communities. Improvements to the arterial street system in the southwestern area (Laveen and Estrella Villages) are planned in the City of Phoenix General Plan. For these reasons, alternatives similar to the hybrid alternative proposed in the comment were eliminated from detailed study.
136	**Alternatives**	Dismissal of all alternatives affecting Gila River Indian Community land is appropriate. The act by the Gila River Indian Community of not allowing alternatives on its land is sufficient evaluation. The Gila River Indian Community has consistently stated (beginning in 2000, with a Community Council resolution) that it is not interested in an alternative on its land. See Draft Environmental Impact Statement Chapter 2, *Gila River Indian Community Coordination*.

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	• The Riggs Road/Beltline Road/51st Avenue Alternative that would avoid any impacts on South Mountain • The Queen Creek Road Alternative that would have no impact on south Mountain
137	c) A depressed freeway alternative along W. Pecos Road in the Eastern Section of the SMF is discussed in the DEIS starting on Page 3-15 and several pages following. In the third tier screening of alternatives, the depressed freeway alternative was dropped from further evaluation because of drainage design complications, greater right-of-way need compared to the rolling profile, more residential displacements, and increased construction and right-of-way costs. In the third tier screening, the decision to construct the SMF as an eight-lane facility (three general purpose lanes plus one high occupancy lane in each direction) had not been made. The reduction of the SMF from a 10-lane facility to an 8-lane facility was made in the fourth tier screening. Therefore, it is unclear if the additional right-of-way need for about 150 acres is in reference to a 10-lane or an 8-lane design. The DEIS should have considered this matter and verify if, in fact, a depressed profile would require 150 acres of additional right-of-way beyond what ADOT has already acquired plus what ADOT would need to acquire to accommodate the 8-lane SMF rolling profile. Since 90% of the cost difference between the rolling and depressed alternatives is attributed to right-of-way, any reductions in right-of-way would make a large difference in cost and in residential displacements. The matter of a depressed profile should have been re-visited after the decision to use an 8-lane cross section to confirm or revise the previous findings based on the 10-lane alignment. This re-visit should have identified the additional parcels that would need to be acquired and the residential displacements.
	On Page 3-18 of the DEIS, Impacts on Ahwatukee Foothills Village are discussed in the following quote:
138	***Impacts on Ahwatukee Foothills Village*** *– The public generally perceives that a depressed freeway would reduce and/or eliminate impacts on visual resources and freeway-related noise. Visual and noise-level impacts from operation of the proposed E1 Alternative would, however, still occur and would require mitigation, as would be the case for the at-grade rolling profile.*
139	It is unclear from the statement in the DEIS if the impacts of the rolling profile and depressed alternatives would be identical or if the depressed alternative would have less impact. The DEIS should have this clear and recognize any advantages the depressed alternative might have, if any. If

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136 (cont.)		Tribal sovereignty is based in the inherent authority of Native American tribes to govern themselves. While this notion of sovereignty is manifested in many areas, generally Native American land is held in trust by the United States. Native American communities have the authority to regulate land uses and activities on their lands. States have very limited authority over activities within tribal land (see page 2-1 of the Draft Environmental Impact Statement). From a practical standpoint, this means that the Arizona Department of Transportation and Federal Highway Administration do not have the authority to survey tribal land, make land use (including transportation) determinations directly affecting tribal land, or condemn tribal land for public benefit through an eminent domain process.
137	**Alternatives**	All of the design options and refinements (such as tunnel and bridge options and depressed freeway options) considered in the Third-Tier screening were revisited after the determination to change the proposed freeway from ten to eight lanes. The comparisons presented in the Draft Environmental Impact Statement section, *Depressed Freeway Options*, reflect an eight-lane freeway concept for the at-grade/elevated profile and the depressed profile.
138		Quote from Draft Environmental Impact Statement.
139	**Drainage**	As noted on page 3-18 of the Draft Environmental Impact Statement, drainage served as the primary design constraint for the Pecos Road segment of the E1 Alternative. Assessments were performed to determine constructibility and effectiveness in avoiding or reducing impacts and to evaluate whether a depressed profile would generate other desired or undesired outcomes. Based on the results of these assessments, further design options were developed and refined in attempts to reduce impacts on the adjacent community. The modifications incorporated alternative drainage designs, use of retaining walls, and other features to reduce right-of-way requirements.

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	the depressed alternative would have less impact than the rolling profile alternative, less mitigation would be needed.
140	d) The Ray Road and Chandler Boulevard Alternatives were improperly dismissed from further consideration in the second tier screening on the basis of "substantial" impacts that were not quantified in the DEIS. In the western portion of the SMF, several location alternatives and variations were studied in detail. By comparison, in the eastern portion W. Pecos Road became the sole survivor of the screening process very early in the evaluation process.
141	e) In the screening process, the "freeway" alternatives of the westerly extension of the Superstition Freeway, the southerly extension of SR 51, and the southerly extension of I-10 to the Superstition Freeway (extended) were dismissed in the second tier of screening. The rationale for elimination from further consideration was not supported by substantive analysis in the DEIS. If there was any substantive analysis, it should have been presented in the DEIS. Because of the location of these alternatives, there would be no impacts on South Mountain.
142	f) Freeway improvements on the congested freeways in the urban core should have been considered and discussed in the DEIS. Possible improvements to alleviate congestion where the congestion now exists (rather than build the SMF) could include addition of high occupancy/toll lanes (HOT lanes), auxiliary lanes, interchange improvements, and others. If such improvements were deemed to be not feasible after substantive analysis, the conclusions should have been documented more thoroughly in the DEIS along with the rationale for rejecting such alternatives. Because of the location of such improvements, there would be no impacts on South Mountain.
143	g) The I-8/SR 85 Alternative, mentioned on Page 3-9, is dismissed because it does not meet the Purpose and Need for the proposed action. Since the Purpose and Need is faulty, the dismissal of this alternative on the basis of the Purpose and Need is also faulty. The benefits of this alternative, that would avoid any impacts on South Mountain, should have been quantified and presented in the DEIS.
144	h) The development of a complete arterial system in the Southwest area was not considered in the DEIS. As discussed in Item 5.b), the MAG RTP does not indicate any arterial improvements except one new arterial facility in the Southwest area. A complete arterial system would alleviate much of the forecasted congestion in the area and would meet the Purpose and Need objectives of adding capacity and improving circulation in the

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140	**Alternatives**	In accordance with the National Environmental Policy Act, a range of reasonable action alternatives to carry forward for further analysis was determined through application of multidisciplinary criteria in a logical, step-wise progression. As noted in Table 3-5 on page 3-12 of the Draft Environmental Impact Statement, the Ray Road and Chandler Boulevard alternatives would result in hundreds of residential and business displacements and would split the Ahwatukee Foothills Village. For these reasons, the two alternatives were eliminated from detailed study.
141	**Alternatives**	In the Eastern Section, the initial screening identified clear, undesirable aspects of the alternatives, with only the E1 Alternative being prudent and feasible. In the Western Section, the three action alternatives studied in detail each had positive and negative aspects, however none were substantial enough to eliminate the alternative (or other alternatives). The Draft Environmental Impact Statement is a summary of technical analyses providing the necessary details associated with the decision-making process. Additional details and quantities are documented in technical reports and memos. Alternatives were not disposed of or dismissed without a thorough evaluation using the multidisciplinary criteria outlined in the alternatives development and screening process.
142	**Alternatives**	The Draft Environmental Impact Statement is a summary of technical analyses providing the necessary details associated with the decision-making process. Additional details and quantities are documented in technical reports and memos. Alternatives were not disposed of or dismissed without a thorough evaluation using the multidisciplinary criteria outlined in the alternatives development and screening process. Improvements to other freeway corridors such as Interstate 10, other new freeways such as State Route 303 Loop, arterial street improvements, and expansion of the existing bus and light rail systems are included in the *Regional Transportation Plan*. See discussion beginning on page 1-9 of the Draft Environmental Impact Statement. The analysis of future conditions includes the assumption that all of the planned improvements identified in the *Regional Transportation Plan* would be in place by 2035. Draft Environmental Impact Statement Chapter 1, *Purpose and Need*, concludes that, even with these improvement in place, there is a clear need for a major transportation facility in the Study Area.

(Responses continue on next page)

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143	**Alternatives**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the need for the freeway has not changed. The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future. Past determinations surrounding the alternatives development and screening process, including the reasons for the elimination of alternatives, as outlined in Chapter 3 of the Final Environmental Impact Statement, were reviewed for appropriateness based on the new data and were determined to remain appropriate screening determinations. The Interstate 8/State Route 85 Alternative is in place today and will be in place in the future as an alternative route for motorists to use to bypass the entire Phoenix metropolitan area. The alternative serves that purpose, but provides no benefits to support regional travel within the Phoenix metropolitan area. For this reason, it was eliminated from further study.
144	**Alternatives**	The *Regional Transportation Plan* is not the primary source of funding for expansion of the arterial street system. Funding for the arterial street system generally comes from the local jurisdiction or through impact fees for development. It is anticipated that the arterial street network in the Study Area will be expanded in this same manner. The Maricopa Association of Governments regional travel demand model includes assumptions related to arterial street expansion based on local jurisdiction general planning. In the case of the Study Area, it is assumed that most of the arterial street network would be built out by 2035. Draft Environmental Impact Statement Chapter 1, *Purpose and Need*, concludes that, even with these improvement in place, there is a clear need for a major transportation facility in the Study Area. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future.

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	Southwest area. This alternative would avoid any impacts on South Mountain.
145	In summary, several reasonable and viable alternatives were not considered in the DEIS or were dismissed from further consideration without an appropriate level of analysis, even though many of them would not have any impacts on South Mountain. This is a major deficiency, since a major requirement of the DEIS is that all reasonable alternatives be evaluated with appropriate level of detail.
146	6. **The Description of the Proposed Action in the Summary Chapter fails to provide details essential for informed decision-making.** The action is described generally as building a freeway in compliance with the RTP. Lacking from the description are the following:
147	• The typical cross-section of the freeway, preferably with dimensions that ADOT commonly uses, should have been included. Major deviations, if any, from the typical cross-section for each of the three West Alternatives and the single East Alternative should have been identified.
148	• While at the outset the cross-section was not known, the 10-lane alternative was eliminated in the fourth-tier screening. A freeway with three general purpose (GP) and one High Occupancy Vehicle (HOV) lane in each direction, plus auxiliary lanes where necessary, was established for all alternatives.
149	• The profile for the freeway should have been described in general terms for each Alternative.
150	• The location of proposed interchanges for each alternative should have been shown.
151	• The fact that park-and-ride lots would be provided at/near some or all interchanges, if true, should have been stated. The term park-and-ride appears only once in the Summary (Page S-19) in the context of a mitigation measure for Displacements and Relocations. The term park-and-ride does not appear at all in Chapter 1 (Purpose and Need); it appears three times in Chapter 3 (Alternatives) first on Page 3-6 as part of the discussion of Modal Screening Results, the second time on Page 3-15, Figure 3-8 indicating that the park-and-ride lot at the 40th Street Interchange potentially would be expanded, and for the third time on Page 3-40 in the context of the No-Action Alternative. Thus unless a reader studied Figure 3-8 very carefully, he or she would not be aware of the potential expansion of the park-and-ride lot at the 40th Street Interchange. There is no mention of park-and-ride in the Traffic Overview Report.
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145	**Alternatives**	Alternatives were not disposed of or dismissed without a thorough evaluation using the multidisciplinary criteria outlined in the alternatives development and screening process. A thorough feasible and prudent avoidance analysis of the South Mountains was conducted as presented in Chapter 5 of the Draft and Final Environmental Impact Statements and concluded avoidance to the direct use of the resource was not feasible and prudent. In support of this response and given the concerns about the South Mountains, consider the following review from the U.S. Department of the Interior on the Draft Environmental Impact Statement: "Following our review of the Section 4(f) Evaluation, we concur that there is no feasible or prudent alternative to the Preferred Alternative selected in the document, and that all measures have been taken to minimize harm to these resources." The complete letter can be found in Appendix 7, Volume III, on page B4.
146	**Purpose and Need**	As pointed out in the Draft Environmental Impact Statement on page S-1, in the sidebar, "*What you will find in the Summary chapter,*" the text in the Summary is not the "final word," and readers are urged to turn to the main text when questions about Summary content arise. It is clear, as pointed out in Chapter 3, *Alternatives*, that a beneficial outcome of the alternatives screening process—a "... logical, sequential, step-by-step process using data and expertise from multiple disciplines ..." (page 3-27)—was that the mode determined to be appropriate for addressing the identified transportation problem was a highway that, in turn, was consistent with local and regional plans (as supported by stakeholder jurisdictions). Nowhere in the Draft Environmental Impact Statement is reference made that the proposed action is needed to comply with the *Regional Transportation Plan*. The analysis of the proposed action's purpose and need would have ended the environmental impact statement process at that point if a need in the form of a transportation problem had not been identified, and this is disclosed in the Draft Environmental Impact Statement.
147	**Design**	A typical section is provided in Figure S-9 on page S-10 of the Draft Environmental Impact Statement. As noted on page S-8 at the end of the section, *Action Alternatives*, "Chapter 3, *Alternatives*, has detailed descriptions of features of the alternatives." This information begins on page 3-40 of the Draft Environmental Impact Statement.
148	**Design**	Agree.
149	**Design**	This information is presented in Chapter 3 of the Draft Environmental Impact Statement. Descriptions of the horizontal and vertical alignments of the action alternatives are provided, beginning on page 3-40. Graphical depictions are shown in Figures 3-20 to 3-25.
150	**Design**	This information is presented in the Summary Chapter of the Draft Environmental Impact Statement; see Figure S-8. It is also presented in Chapter 3; see Figure 3-28.
151	**Design**	The inclusion of park-and-ride lots is not part of the scope of the proposed action. No new park-and-ride lots are proposed as part of the proposed action. Locations of future park-and-ride lots would be determined by the City of Phoenix and Valley Metro. As described in the responses above, the elements of the proposed freeway and the potential action alternatives were described in the Draft Environmental Impact Statement.

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	For the public in general, the Regional Transportation Plan (RTP) and complying with the RTP are abstract and perhaps foreign concepts. The Description of the Preliminarily Proposed Action should have had sufficient information to help the public visualize what is being proposed on the ground.
152	7. **Since the evaluation of alternatives is based on the travel forecasts (among other considerations), the evaluations are faulty. As stated in Item 2 above, the travel forecasts, in turn, are faulty because they are based on faulty socio-economic forecasts.** The MAG travel forecasting model was run with faulty data inputs. As a result, all figures and tables in the DEIS that present data from the model are incorrect, resulting in conclusions in the DEIS that cannot be supported by reliable analysis. The faulty travel forecasts affect the Air Quality and Noise impact analyses, as well, because they rely on traffic forecasts, as one of the inputs. On the basis of this fatal flaw alone, the DEIS should be thrown out, and the analysis should be done properly from the beginning.
153	8. **Some potential impacts, including impacts on the arterial street system adjoining proposed interchanges, construction impacts, and the impacts of truck traffic are not addressed at all or are not addressed in detail sufficient for a DEIS for an Action Alternative (as opposed to a programmatic action such as the adoption of the RTP).**
154	a) The DEIS does not present an analysis of traffic impacts on arterials in the vicinity of the proposed interchanges and impacts on local access. A specific example of this type of deficiency, that may be applicable elsewhere in the Study Area, is the lack of analysis as to how W. Pecos Road would be impacted by the Proposed Action. With the Proposed Action, the South Mountain Freeway (SMF) would obliterate and replace existing Pecos Road (described in the DEIS as Alternative E1); access to the street system in the area would be provided via interchanges at 40th Street, 24th Street, Desert Foothills Parkway, and 17th Avenue. There will be no interchange at 32nd Street. Under existing conditions, a signalized intersection at the intersection of W. Pecos Road and 32nd Street provides access to the community on the north side of W. Pecos Road. This access for the community will not be available when the SMF is built, and traffic that now uses 32nd Street will have to use other routes. Please see Item c) on Page 16 for more details about how this matter should have been addressed in the DEIS. A similar problem will be created at the western terminus of W. Pecos Road at 27th Avenue which is the sole access for the existing Foothill Reserve and Calabrea communities. When the SMF is constructed as proposed, this access will no longer be available and existing traffic will be forced to use another route. ADOT has proposed to construct an extension of Chandler Boulevard, between its existing terminus at 19th Avenue and 27th Avenue, to provide access to Foothill Reserve and
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152	**Purpose and Need**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future. All impact analyses affected by the updated socioeconomic data, including air quality and noise, were updated accordingly and those updates are reflected in the Final Environmental Impact Statement. Determinations relating to the identification of the Preferred Alternative were also confirmed in accounting for the new population, employment, housing, and traffic projections.
153		See responses to specific comments below.
154	**Traffic**	The determination to not include an interchange at 32nd Street was made in coordination with the City of Phoenix (see Figure 3-8 on page 3-15 of the Draft Environmental Impact Statement). The interchange would have displaced over 100 homes and would have been located near an existing high school. In 2006, the City of Phoenix conducted a traffic circulation study to evaluate the impacts of the proposed freeway on the local street system, including the shift of access to Foothills Reserve and Calabrea from Pecos Road to Chandler Boulevard. The City study found no adverse effects on the local street system from the freeway (see Appendix 3-1 in the Final Environmental Impact Statement).

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Calabrea. The DEIS should have analyzed the traffic implications of this rerouted traffic on 17th Avenue, Chandler Boulevard, and major intersections along the route, using methodology and data as described in Item c) on Page 16. The need for traffic controls (traffic signals, stop signs, and others) should have been identified in the DEIS.

155 This extension of Chandler Boulevard is identified as a "Newly constructed local street" in Figure 3-33 on Page 3-57 of the DEIS. East of 19th Avenue, Chandler Boulevard is constructed with a five-lane cross-section (two lanes in each direction, plus a two-way left-turn lane in the center. The DEIS should have stated that if the extension of Chandler Boulevard were to be constructed, it should continue the existing five-lane cross-section. This cross section would be necessary in order to accommodate the traffic increases due to the re-routing of Foothill Reserve and Calabrea traffic, as well as other traffic that would use Chandler Boulevard if it were to be constructed. Such other additional traffic would include:

- Traffic to and from the 247 acres of vacant land the City of Phoenix has purchased that lies north of Chandler Boulevard, between 19th and 27th Avenues. In addition to about 100 acres of open space, under consideration for this land would be 40 to 60 acre community park, a library, and other uses that may be identified in the City's future planning and community outreach processes.
- 156 Traffic to and from the vacant land (bounded by Chandler Boulevard on the north, W. Pecos Road on the south, 19th Avenue on the east, and 27th Avenue on the west) that was rezoned by the City of Phoenix to permit 11 acres of commercial uses, 11 acres of multi- family housing, and 650 to 1,050 single-family residences.
- 155 Any other traffic increases that would affect Chandler Boulevard.

157 Even with the construction of Chandler Boulevard between 19th Avenue and 27th Avenue, residents in Foothill Reserve and Calabrea will incur substantial out-of-direction travel and additional travel time to access the SMF, compared to the present route. To get home, these residents will have to exit the SMF at 17th Avenue, travel north on 17th Avenue to Chandler Boulevard, then southwest on Chandler Boulevard to connect with the street system within the two communities. The DEIS should have quantified the added time and distance of travel and should have considered the construction of a two lane access road between 17th Avenue and 27th Avenue on the north side of the SMF. In addition to facilitating access for the residents of Foothill Reserve and Calabrea, such an access road would help reduce future traffic on 17th Avenue and would help maintain emergency vehicle response times at levels comparable to existing.

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155	**Design**	The Chandler Boulevard extension was developed in close coordination with the City of Phoenix and supports the ultimate lane configuration and planned development in the area.
156	**Design**	Additional local roads would be constructed along with the development of this land (as identified in the City's General Plan).
157	**Design**	Reasonable access would remain to the noted developments. The travel time savings as a product of using the South Mountain Freeway in comparison to use of Pecos Road would likely offset any additional travel time attributable to the change in access. Emergency responders would address the construction of the proposed freeway by amending the local emergency response plan to include the facility.

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158	The SMF will cause similar alterations in local traffic patterns elsewhere along the route, primarily in the Western portion of the SMF. The DEIS should have discussed traffic impacts in the vicinity of all interchanges along the proposed action, with appropriate analysis, similar to that described in Item c), below.
159	b) The DEIS does not indicate what type of interchange would be constructed at the interchanges along W. Pecos Road. Because there would be no access to the Gila River Indian Community (GRIC) on the south side, neither of the two typical interchanges depicted on Page 3-14 of the DEIS, "Diamond Interchange" and "Single Point Urban Interchange," would be applicable. The DEIS should have indicated the type of interchange to be provided, at least conceptually and with a simple graphic.
160	c) The DEIS should have presented recent traffic volume counts for W. Pecos Road (between I-10 and 27th Avenue) and turning movement counts at the existing signalized intersections at 40th Street, 32nd Street, 24th Street, Desert Foothills Parkway, and 17th Avenue. Traffic counts should also have been made at major intersections along the path motorists would use to access Foothill Reserve and Calabrea when the construction of the SMF would cut off the present access via W. Pecos Road/ 27th Avenue. Then it should have discussed the impacts on existing traffic due to the loss of access at 32nd Street and 27th Avenue and how existing traffic patterns would change. Then, 2035 peak hourly traffic volumes at the interchanges should have been presented so that the public could be informed of how present routings would be affected and what the impacts would be in 2035. The impacts on the cross streets are not dependent on the specific design details and can be evaluated based on the traffic volume forecasts from the MAG travel model. Analyses with similar methodology should have been performed at interchanges along the entire route of the SMF.
161	d) The DEIS should have discussed how the Proposed Action would affect emergency vehicle access times for the communities now served by the signalized intersection at Pecos Road/32nd Street and via W. Pecos Road/27th Avenue (Chandler Boulevard). Extending this example, the DEIS should have discussed how emergency vehicle access would be affected at all locations along the proposed action where the arterial street pattern would be altered.
162	e) With the Proposed Action, the eastbound left-turn and westbound right turn direct access to the park-and-ride facility north of W. Pecos Road at 40th Street will be lost, shifting the park-and-ride traffic to the two access points via 40th Street. The southern access driveway is less than 300 ft (center-to-center) north of Pecos Road. The construction of the freeway

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158	**Traffic**	The proposed freeway would include improvements along arterial streets at interchange locations to facilitate the movement of traffic on, off, and across the freeway. The arterial street improvements are included within the right-of-way footprint used for the analysis of impacts.
159	**Traffic**	The third bullet in the third column on page 3-51 of the Draft Environmental Impact Statement states that "The diamond interchange configuration (see sidebar on page 3-14) was used to evaluate service traffic interchange needs." The assumption that there would be no access to the Gila River Indian Community to the south is incorrect. At 40th Street, there is an existing road to the south, and the planned interchange at that location would provide access onto Gila River Indian Community land. Similarly, the interchanges at 24th Street, Desert Foothills Parkway, and 17th Avenue would be constructed to allow for future connections from Gila River Indian Community land. The initial layout would be similar to the interchanges at State Route 202L (Red Mountain Freeway) and Dobson Road. Figure 3-28 indicated whether the interchanges would include full access or half access. In some locations, a single-point urban interchange or other interchange type may be used to address higher traffic volumes. The determination of the interchange type would be made during final design in coordination with the local jurisdiction.
160	**Traffic**	Existing traffic volumes on the City of Phoenix's streets is available at the City's Web site, <phoenix.gov/streets/traffic/volumemap>. In 2006, the City of Phoenix conducted a traffic circulation study to evaluate the impacts of the proposed freeway on the local street system. The City study found no adverse effects on the local street system from the freeway (see Appendix 3-1 in the Final Environmental Impact Statement).
161	**Traffic**	Emergency responders would address the construction of the proposed freeway by amending the local emergency response plan to include the facility. This would include emergency response on the freeway and alternative routes for diversion of traffic in the event that an incident occurred along the freeway. As concluded in the section, *Social Conditions*, in Chapter 4 of the Draft Environmental Impact Statement, response times for police, fire, and medical emergency services would be faster when compared with response times under the No-Action Alternative. Circulation on major arterial streets would be improved through better distribution of traffic onto the overall transportation network, the provision of alternative routes, and through localized operational improvements such as grade separations and planned interchanges.
162	**Traffic**	In addition to access from 40th Street, access to the park-and-ride lot would be provided off of the westbound on-ramp. This is similar to the park-and-ride operations at Happy Valley Road and Interstate 17. Bus operations and circulation would continue to operate as-is today. Traffic operational characteristics along 40th Street and at the Cottonwood Lane intersection would not be adversely affected by the freeway. The park-and-ride lot has been expanded to its ultimate configuration.

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	ramps will shorten the spacing between the junction of the westbound ramp terminal and the southern access driveway for the park-and-ride lot. The impacts to traffic operations along 40th Street, impacts to park-and-ride access, impacts on bus operations, impacts at the intersection of 40th Street/E Cottonwood Lane/bus access to park-and-ride should have been evaluated, both for existing and 2035 traffic volumes. The long-term expansion of the park-and-ride facility should also have been discussed.
163	f) The DEIS should have discussed how access would be provided to the existing U-Haul Dealer and storage facility on the south side of Pecos Road, now accessed directly via the signalized intersection at 32nd Street. Since there will be no interchange at 32nd Street with the Proposed Action, this property will become land-locked. It is unclear based on the information in Tables 4-12 and 4-13, (Pages 4-39 and 4-42, respectively in the DEIS, if this facility is being displaced.
	g) Construction period impacts are not adequately addressed in the DEIS. Solely from the standpoint of transportation, traffic, and circulation matters, the discussion provided in Section 4 under "Temporary Construction Impacts" and "Materials Sources and Waste Material" on Pages 4-161 through 4-164 in the DEIS is very general. While the estimate of "borrow" material is site-specific, the amount is expressed in millions of cubic yards, and not by some other measurement more easily understood by the public. The discussion of construction impacts should have been expanded to include more site specific information and should have included such items as:
164	• the number of truckloads of export or import materials • haul routes (the route trucks will use to haul away excess dirt or bring in dirt) during the grading of the route • number of trucks to bring in aggregate, asphalt/concrete, reinforcing steel, and any other construction materials • duration of construction • how traffic will be handled on the existing street system when useable segments of the freeway are opened to traffic prior to the completion of the entire freeway • impacts on traffic on I-10 (both Papago and Maricopa) during the construction period • detour routes and the traffic impacts of the detours • other considerations
165	h) The Construction Sequencing described in the DEIS (Page 3-59) is not consistent with Figure 8-4, the Plan Phasing - Freeways/Highways in the 2010 Update of the Regional Transportation Plan (RTP) (Exhibit 9). The RTP presents the following phasing schedule:
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163	Traffic	The determination to not include an interchange at 32nd Street was made in coordination with the City of Phoenix (see Figure 3-8 on page 3-15 of the Draft Environmental Impact Statement). The interchange would displace more than 100 homes and would have been located near an existing high school. In 2006, the City of Phoenix conducted a traffic circulation study to evaluate the impacts of the proposed freeway on the local street system, including the shift of access to Foothills Reserve and Calabrea from Pecos Road to Chandler Boulevard. The City study found no adverse effects on the local street system from the freeway (see Appendix 3-1 in the Final Environmental Impact Statement). The storage facility is located on Gila River Indian Community land and would not be displaced. Reasonable access to the facility would remain available from 32nd Street, Chandler Boulevard, and other east–west local streets. A grade-separated bridge would be constructed for the freeway to go over 32nd Street.
164	Construction	Information related to haul routes, number of trucks, traffic routing, and detouring is discussed in general terms because more detailed information is not available. These details depend highly on the construction sequencing and construction methods, which have not been determined at this stage in the process. As noted on page 6-23 of the Draft Environmental Impact Statement, during construction, the Arizona Department of Transportation typically holds information meetings at the beginning of construction activities regarding the upcoming improvements and work schedules. The public can be informed through construction updates/newsletters or many other means. The Arizona Department of Transportation is evaluating construction delivery methods for the proposed freeway. One concept is to deliver it as a single design-build project. This method would accelerate the construction duration for the entire project to around 3 to 3.5 years. Another concept would be to deliver the project in a more traditional method, breaking the 22-mile corridor into nine segments (each 1 to 3 miles long) and constructing them in phases. Each segment would be under construction for 1 to 3 years, and the total construction duration for the entire corridor would be 5 to 6 years. A discussion of construction implementation is provided beginning on page 3-59 of the Final Environmental Impact Statement. Any particular area of the Preferred Alternative would not be expected to see construction activities beyond an approximate 2-year period.
165	Implementation	The Arizona Department of Transportation is evaluating construction delivery methods for the proposed freeway. One concept is to deliver it as a single design-build project. This method would accelerate the construction duration for the entire project to around 3 to 3.5 years. Another concept would be to deliver the project in a more traditional method, breaking the 22-mile corridor into nine segments (each 1 to 3 miles long) and constructing them in phases. Each segment would be under construction for 1 to 3 years, and the total construction duration for the entire corridor would be 5 to 6 years. A discussion of construction implementation is provided beginning on page 3-59 of the Final Environmental Impact Statement. Any particular area of the Preferred Alternative would not be expected to see construction activities beyond an approximate 2-year period. As noted in the Draft Environmental Impact Statement on page 3-59, "Construction sequencing and duration could change based on several factors, including funding availability, traffic volumes, coordination with other major freeway projects, earthwork balancing, utility relocation schedules, and regional priorities."

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166	• In Fiscal Year (FY) 2011-2015 : Segment between I-10 (Papago) and Baseline Road also Segment between 51st Avenue and 19th Avenue • In FY 2016-2020 : Segment between I-10 (Maricopa) and 19th Avenue • In FY 2021-2025 : Segment between Baseline Road and 51st Avenue The phasing sequence in the DEIS, presented without an explanation of the rationale for the change from the RTP, is: • I-10 (Papago) to Baseline Road and concurrently, I-10 (Maricopa) to approximately 51st Avenue (along Pecos Road and through the South Mountains) • Baseline Road to 51st Avenue Despite repeated assertions throughout the DEIS that the Proposed Action is consistent with the RTP, this divergence in phasing between the RTP and the proposed action is not mentioned in the DEIS.
167	i) The evaluation of alternatives is deficient because the presentation of the results of the "select link" analysis is misleading. On Page 3-36 of the DEIS , Figure 3-18 presents the contribution of traffic to the select link by geographical areas, some of which are very large. The select link is at a point between the 51st Avenue and 17th Avenue interchanges on the South Mountain Freeway. The text accompanying Figure 3-18 states that: *"A projected 73 percent of the travelers who might use the proposed action would have origins and/or destinations near the proposed action."* This statement is misleading, since it implies that 73% of the traffic using the South Mountain Freeway would have origins in close proximity to the proposed freeway. A review of a larger scale map in the Traffic Overview Report, which is the source of the information presented in Figure 3-18, indicates that only about 15% of the selected link traffic would have origins or destinations within the Study Area as defined in Figure S-2 of the DEIS. If the definition of "proximity" were to be extended to the area within a 20-mile radius of the select link, the contribution of this entire 20-mile radius area would be about 40 to 50%. To reach the 73% level of contribution, a radius of about 30 miles would be needed.
168	j) The evaluation of alternatives is deficient because the cut line analysis presented in the Purpose and Need and in the Evaluation Chapters of the DEIS as well as in the Traffic Overview Report is faulty. The following points support this assertion. Review and Critique of DEIS for Loop 202 (SMF) Page 18

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166	**Implementation**	The Arizona Department of Transportation is evaluating construction delivery methods for the proposed freeway. One concept is to deliver it as a single design-build project. This method would accelerate the construction duration for the entire project to around 3 to 3.5 years. Another concept would be to deliver the project in a more traditional method, breaking the 22-mile corridor into nine segments (each 1 to 3 miles long) and constructing them in phases. Each segment would be under construction for 1 to 3 years, and the total construction duration for the entire corridor would be 5 to 6 years. A discussion of construction implementation is provided beginning on page 3-59 of the Final Environmental Impact Statement. Any particular area of the Preferred Alternative would not be expected to see construction activities beyond an approximate 2-year period. As noted in the Draft Environmental Impact Statement on page 3-59, "Construction sequencing and duration could change based on several factors, including funding availability, traffic volumes, coordination with other major freeway projects, earthwork balancing, utility relocation schedules, and regional priorities."
167	**Traffic**	The quote noted in the comment was changed in the Final Environmental Impact Statement to be consistent with a similar statement made in the caption to Figure 3-18: "Seventy-three percent of travelers anticipated to use the proposed action would be involved in trips beginning or ending in the Study Area itself or in the areas immediately surrounding it." The figure does accurately portray the locations of the cities included in the different areas. The observations in the comment further support that the proposed action would serve regional travel from the southwestern to southeastern portions of the region (not just internal Study Area travel). It should also be noted that by definition, these freeway users would not include traffic from Laveen Village to Interstate 10 (Papago Freeway) or from Ahwatukee Foothills Village to Interstate 10 (Maricopa Freeway). So, the 15 percent of trips identified in the comment as Study Area-originated are by motorists making trips to the other side of the South Mountains.
168		See responses to specific comments below.

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169	Only two of the six cut lines analyzed, (north-south cut lines 1 and 4, in Figure 3-13 in the DEIS) are in the Study Area. The limits of cut lines 2, 3, 5, 6 extend well beyond the boundaries of the Study Area, in each case with a small portion of the cut line in the Study Area. Therefore, the cut lines as designated do not convey a sense of deficiencies and traffic volume increases within the Study Area.
170	It is customary in presenting the results of a cut line analysis to itemize each of the facilities included in each cut line along with the capacity for each facility (existing or as proposed in the RTP as appropriate) and the traffic volume for each facility (existing, No Action, and Proposed Action as appropriate). Such information is not presented in the DEIS or in the Traffic Overview Report. Only aggregate quantities for Freeways and Arterials are presented in the various tables that address cut lines.
171	To make the cut lines relevant to the analysis of the South Mountain Freeway, cut lines other than 1 and 4 should have been revised as described below:
172	• Cut line 2 addresses north south traffic volumes and capacity. Near its western terminus, it should not include a crossing of SR 30, since this facility, when built would carry east-west traffic. Cut line 2 should have been subdivided into two segments, the first segment extending from the western limit (not including SR 30) of the cut line to 43rd Avenue, and the second from 43rd Avenue to a point just West (or South) of I-10 (Maricopa). I-10 should not be included in this cut line, since a segment of I-10 one interchange removed is included in cut line 6. Including the same facility in more than one cut line, especially at points so closely spaced, is an exaggeration of the effect of I-10 and represents double counting.
173	• Cutline 3 should also have been subdivided into two segments, the first segment extending from the western limit of the cut line to 43rd Avenue, and the second from 43rd Avenue to I-10 (Maricopa). • Cut lines 5 and 6 should have been subdivided into two segments, a southern segment south of South Mountain Park Preserve (SMPP) and a northern segment north of SMPP.
170	Facility-by-facility information, as described in the previous paragraph (paragraph "j"), should have been presented for the re-delineated cut lines.
174	k) The evaluation of alternatives is deficient because a potential freeway weaving problem is not identified and addressed. The distance between

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169	**Purpose and Need**	The purpose and need criteria for the proposed action address regional problems, not just problems localized in the Study Area. For this reason, it is appropriate to include cut lines within and in proximity to the Study Area to better understand the distribution of trips in the region.
170	**Traffic**	The itemized list of traffic volumes by facility has been added to the Traffic Overview Report as an appendix.
171	**Traffic**	As indicated in the responses below, the identified cut lines were selected to present specific travel patterns and are appropriate for the analysis of the proposed action.
172	**Traffic**	Cut line 2 is included to evaluate demand across the Salt River. The proposed changes, eliminating the proposed State Route 30 crossing and the Interstate 10 crossing, would discount two major crossings of the Salt River.
173	**Traffic**	The cut lines as presented represent industry standard practice and were developed in conjunction with leaders of traffic analysis practice in Arizona. The proposed changes would not provide any benefits to the analysis or results. Subdividing the cut lines would eliminate their usefulness in evaluating regional traffic, which is their purpose.
174	**Traffic**	The project development process includes detailed analyses of the freeway operational characteristics, including weaving areas along the entire freeway. Basic level of service information is presented in Figure 3-39 on page 3-63 of the Draft Environmental Impact Statement. In the figure, the noted section is shown to experience less than 2 hours of level of service E or F conditions during the morning and evening commuting periods.

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	the System Interchange at I-10 (Maricopa) and the signalized intersection at Pecos Road and 40th Street is approximately 3,500 ft. (measured between the signal and the merge point where the Loop 202 mainline and the ramps to and from I-10 come together). When the 40th Street Interchange is constructed, the distance between the ramp merge points will be approximately 2,500 ft. and possibly less. A distance of 2,500 ft between ramp merge and diverge points has the potential of creating a weaving problem on the freeway.
175	This potential problem should have been analyzed and appropriate mitigation proposed, if necessary, and should not have been deferred to the design phase, since the peak hourly traffic volumes are available from MAG, although not reported in the DEIS. Please note that Figure 3-39 in the DEIS indicates congestion at this location, even without a weaving analysis and without specifically considering the effect of bus traffic to/from the 40th Street park-and-ride facility and the effect of potentially high truck traffic volumes on freeway operations.
176	Similar weaving problems may be encountered elsewhere along the freeway.
177	l) The evaluation of alternatives is deficient because no substantive analysis of truck traffic is presented. As a sidebar on Page 3-64, the DEIS presents a good description of the nature of the trucking industry, goods movement in general, and the location of employment areas with heavy truck traffic, along with an illustration of the designated CanaMex route. Also in the sidebar, some general statistics about typical percentages (of trucks as a percent of total traffic) are provided. It is stated that the truck percentage on I-10 "near" the Proposed Action is 8%. Other than the information in the sidebar not much other truck-related statistics are provided. The sidebar also states that providing a truck by-pass is not a Purpose and Need for the SMF. This statement is contradicted by the statement on Page 3-24 of the DEIS, that presents as one of the criteria in the 5th tier screening for selecting a route for the freeway:
	➢ reduction of truck and commuter traffic on 51st Avenue and Beltline Highway
178	Thus the SMF, if constructed would act, at least, as a by-pass for trucks that now use 51st Avenue.
	Figure 4.10 in the "MAG Internal Truck Travel Survey and Truck Model Development Study" is attached as Exhibit 10. The figure indicates that more than 1,000 heavy trucks a day use the route via Riggs Road and Beltline Road to access 51st Avenue.
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175	Traffic	To mitigate this issue, the on-ramp from Interstate 10 would be extended beyond the 40th Street exit ramp to allow traffic to merge onto the State Route 202L main line.
176	Traffic	The preliminary design of the action alternatives is at a sufficient detail to ensure constructibility and operational feasibility. The analyses to support the environmental impact statement process included weaving considerations in the operational performance of the action alternatives.
177	Traffic	The comment incorrectly attributes the quoted text to the purpose and need for the proposed action when it is identified as being criteria that the Gila River Indian Community Governor requested to be addressed by an alignment on Gila River Indian Community land. The "reduction of truck and commuter traffic on 51st Avenue and the Beltline Highway" is consistent with a project goal as disclosed in the Draft Environmental Impact Statement of promoting better distribution of traffic onto the overall transportation network; better distribution does not equate to a "bypass".
178	Traffic	It is reasonable to conclude trucks using 51st Avenue are doing so currently to bypass downtown Phoenix. In other words, the bypass of Interstate 10 through downtown Phoenix is already occurring on streets not intended for such use. The proposed freeway would not introduce another bypass route but would better distribute regional and local traffic on the regional network.

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179	The ADOT traffic counts indicate that about 2,000 to 2,500 heavy trucks use SR 85 daily between I-8 and I-10. If the SMF is constructed, some through truck traffic would likely prefer to use the SMF for personal reasons and/or because the SMF route would be slightly shorter in miles than the route via I-8 and SR 85. Also the SMF route would avoid the congestion along I-10 through the urban core of the Phoenix Metropolitan Area.
180	The ADOT traffic counts indicate that about 2,400 heavy trucks are on I-10 (Maricopa) just south of SR 202 (Loop 202 Santan) and also north of SR 202. These trucks presumably have origins and destinations within the Phoenix Metropolitan Area. Depending on the location of the origins and destinations within the Metro Area, some of these heavy trucks would use the SMF to avoid traveling on the congested portions of I-10 in the urban core.
	The Final Report of the "MAG External Truck Travel Model Development" presents in Table 4-8 estimates of external-to-external (E-E) truck trips. These would be truck trips that travel through the area with no need to stop. No categorization of the size of trucks is provided. All trucks, except for small delivery vehicles, pickups, and vans, are included in the numbers. The table indicates that daily truck traffic on I-10 (between a point south of the junction of I-8 and a point west of SR 85) is approximately 6,200 in both directions combined. Since these are long trips, the majority of these trucks would be heavy trucks. Since there are about 2,000 to 2,500 heavy trucks on SR 85, it appears that 3,500 to 4,000 heavy trucks use I-10 to go through the Metropolitan Area or have an origin or destination within the Metro Area. Table 6-4 in the same report indicates that E-E trips between a point south of the junction of I-8 and a point west of SR 85 would grow at an annual rate of 3.7%. Undoubtedly some of this E-E heavy truck traffic would also use the SMF.
181	In addition the "MAG and PAG External Travel Study" and other MAG reports present information about truck movements, truck origins and destinations, both internally and outside the Metropolitan Area. Despite the availability of a substantial amount of data and a state-of-the-art modeling tool (TransCad) the DEIS does not address the impacts of heavy trucks using the SMF.
182	Also not addressed in the DEIS is the potential of the SMF to become an unintended by pass route, for all vehicles including heavy trucks, via Loop 202 (Santan) and Loop 202 (SMF) between US 60 and I-10 (Papago).
183	In summary, the SMF would become an attractive route for heavy trucks for travel to/from the Phoenix Metropolitan Area as well as for heavy

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179	**Trucks**	It is expected that "true" through-truck traffic (not having to stop in the metropolitan area) would continue to use the faster, designated, and posted bypass system of Interstate 8 and State Route 85. That the proposed freeway would avoid congestion along Interstate 10 would not seem material to trucks currently using the Interstate 8/State Route 85 bypass.
180	**Purpose and Need**	The proposed freeway is part of a transportation system developed to improve mobility in the region by increasing capacity and allowing traffic—including truck traffic—to access a segment of the "loop" system (see pages 1-21, 1-22, 3-1, and 3-3 of the Final Environmental Impact Statement) in the Phoenix metropolitan area. The proposed South Mountain Freeway would be a commuter corridor, helping to move local traffic. As with all other freeways in the region, trucks would use it for the through-transport of freight, for transport to and from distribution centers, and for transport to support local commerce. Nevertheless, the primary vehicles using the proposed freeway would be automobiles. The Maricopa Association of Governments regional travel demand model projects that truck traffic would represent approximately 10 percent of the total traffic on the proposed freeway, similar to what is currently experienced on other regional freeways such as Interstate 10, State Route 101L, and U.S. Route 60. As disclosed in the Final Environmental Impact Statement, it is expected that "true" through-truck traffic (not having to stop in the metropolitan area) would continue to use the faster, designated, and posted bypass system of Interstate 8 and State Route 85 (see page 3-64 of the Final Environmental Impact Statement).
181	**Trucks**	Among the factors considered in this study were 1) the amount of truck traffic that would be generated if an action alternative were to become the Selected Alternative and 2) that traffic's potential impact on the surrounding community. The Maricopa Association of Governments regional travel demand model forecasts approximately 10 percent truck traffic on the South Mountain Freeway in 2035 (see Final Environmental Impact Statement page 3-64). This percentage is similar to current conditions on Interstate 10 between Loop 101 and Interstate 17 and on U.S. Route 60. Air quality and noise modeling for the Draft and Final Environmental Impact Statements used this forecast truck traffic (see Final Environmental Impact Statement pages 4-68 and 4-100, respectively).
182	**Traffic**	Location #2 in Figure 3-12, on page 3-29 of the Draft Environmental Impact Statement, indicates that traffic along State Route 202L (Santan Freeway) just east of Interstate 10 would experience substantially higher traffic volumes with the proposed freeway when compared with conditions without the proposed freeway. This is an intended outcome for the region's freeway system. The project team does not anticipate that "all vehicles" would use State Route 202L; a large volume of traffic would continue to use U.S. Route 60 and Interstate 10 (see Figure 3-12).
183	**Trucks**	Among the factors considered in this study were 1) the amount of truck traffic that would be generated if an action alternative were to become the Selected Alternative and 2) that traffic's potential impact on the surrounding community.

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	trucks traveling through the Metro Area. The DEIS is deficient in not addressing truck traffic impacts and formulating and evaluating appropriate alternatives to deal with truck traffic, even though ADOT states in the DEIS that heavy trucks will use the SMF and even though a wealth of information is available about freight movements. The DEIS fails to take advantage of this wealth of information to provide an estimate of the number of trucks that can be expected on the SMF. Indications are that heavy trucks will use the SMF to a much greater extent than other freeways in the Metropolitan Area, with the possible exception of I-10. Also, as pointed out earlier, the Purpose and Need is faulty and has led to the elimination of several alternatives that might have been carried forward for further study if the truck traffic issue had been recognized at the outset.
184	m) **Sufficient information is not presented in the DEIS.** Numerous tables and figures carry the notation "Source: MAG, Year, Extrapolated Analysis." The actual source of the data should have been provided and the data provided by MAG should have been included in the Appendix. The Traffic Overview Report, which is the basis of much of Chapter 3 (Alternatives) in the DEIS, does not offer anything further in this matter. Without more backup information, it is not possible to ascertain what constitutes "extrapolation," and whether the extrapolation reflects the full extent and significance of the information available.
185	In Chapter 3 (Alternatives) of the DEIS, traffic volume, capacity, and other information is provided in spotty manner and does not offer the opportunity to ascertain if the information provided for selected locations is reasonable and if it fits in with the overall picture. For example, in Figure 3-38, daily traffic volumes are presented for the length of South Mountain Freeway between I-10 (Maricopa) and I-10 (Papago). However, traffic volumes are not presented for Loop 202 (Santan) and I-10 north, south, east, or west, of the junction (s) of I-10. Therefore routing changes attributable to the Proposed Action cannot be identified.
186	n) **The selection of the preliminarily selected alternative for the Western Section should have been based on a side-by-side comparative evaluation of the three action alternatives plus the No Action Alternative.** In the DEIS, the No Action Alternative is not included in the evaluation that leads to the selection of the preliminarily preferred alternative. In Figure 3-41, Page 3-67 of the DEIS, a comparison of the three action alternatives is presented. On the basis of this evaluation, the W71 Alternative is eliminated, even though it is unclear why it is substantially, if at all, inferior to the W59 Alternative and the W101 Alternative Options. The comparative information presented is:
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183 (cont.)		The Maricopa Association of Governments regional travel demand model forecasts approximately 10 percent truck traffic on the South Mountain Freeway in 2035 (see Final Environmental Impact Statement page 3-64). This percentage is similar to current conditions on Interstate 10 between Loop 101 and Interstate 17 and on U.S. Route 60. Air quality and noise modeling for the Draft and Final Environmental Impact Statements used this forecast truck traffic (see Final Environmental Impact Statement pages 4-68 and 4-100, respectively). Commercial trucks would use the proposed action. As with all other freeways in the Maricopa Association of Governments region, trucks would use it for the through-transport of freight, for transport to and from distribution centers, and for transport to support local commerce. And as with travel on all other freeways in the Maricopa Association of Governments region, the primary users of the proposed action would be automobiles. The proposed freeway is part of a transportation system developed to improve mobility in the region by increasing capacity and allowing traffic—including truck traffic—to access a segment of the "loop" system (see pages 1-21, 1-22, 3-1, and 3-3 of the Final Environmental Impact Statement) in the Phoenix metropolitan area. The proposed South Mountain Freeway would be a commuter corridor, helping to move local traffic. As with all other freeways in the region, trucks would use it for the through-transport of freight, for transport to and from distribution centers, and for transport to support local commerce. Nevertheless, the primary vehicles using the proposed freeway would be automobiles. The Maricopa Association of Governments regional travel demand model projects that truck traffic would represent approximately 10 percent of the total traffic on the proposed freeway, similar to what is currently experienced on other regional freeways such as Interstate 10, State Route 101L, and U.S. Route 60. As disclosed in the Final Environmental Impact Statement, it is expected that "true" through-truck traffic (not having to stop in the metropolitan area) would continue to use the faster, designated, and posted bypass system of Interstate 8 and State Route 85 (see page 3-64 of the Final Environmental Impact Statement).
184	**Traffic**	The sidebar, "*How are MAG data used in the DEIS?*," on page 1-4 of the Draft Environmental Impact Statement explains the citation notations. In general, the source of the traffic data is the Maricopa Association of Governments regional travel demand model, and analyses were performed using Maricopa Association of Governments data as inputs.
185	**Traffic**	The desired information is available in Figure 3-12, on page 3-29 of the Draft Environmental Impact Statement. This figure presents traffic volumes with and without the proposed freeway at locations similar to those noted in the comment.
186	**Alternatives**	The section, *Identification of a Preferred Alternative*, beginning on page 3-65 of the Draft Environmental Impact Statement, provides the logical process that was used by decision makers to identify the Preferred Alternatives. A summary of key elements of each action alternative is provided in Figure 3-41.

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187	• The W71 Alternative would require no Bureau of Land Management (BLM) land reclassification, whereas the W59 Alternative would. • The W71 Alternative would displace 22 businesses, compared to 41 for the W59 Alternative and 14 to 30 for the W101 Alternative Options. • The W71 Alternative would result in an annual tax revenue loss of $6.3 million in the City of Phoenix, but no revenue loss in Tolleson and Avondale. By comparison, the W59 Alternative would have a tax revenue loss of $5.1 million in Phoenix and none in Tolleson and Avondale. The W101 Alternative Options would have a tax revenue loss of $7.0 million to $8.0 million for all three cities combined. • The W71 Alternative would have a total project cost (right-of-way plus construction cost) of $1.54 billion, compared to $1.23 billion for the W59 Alternative and $1.72 to $1.87 billion for the W101 Alternative Options. • The W71 Alternative would displace 825 residential properties, compared to 733 for the W59 Alternative and 926 to 1304 (single family) for the W101 Alternative Options. • The W71 Alternative would affect 4 high priority hazardous sites, compared to 5 for the W59 Alternative and 1 for the W101 Alternative Options. • During the period December 2003 to April 2006, six Cities and Towns passed resolutions in support of the W59 Alternative and opposing the W101 Alternative, with the City of Tolleson passing two separate resolutions. Since the DEIS gives no indication to the contrary, it is assumed that none of these seven to nine year old resolutions opposed the W71 Alternative.
188	In summary, based on the information presented in Figure 3-41, the W71 Alternative would rank, at worst, in the middle of the three alternatives evaluated, and it should not have been eliminated from further consideration. This improper elimination of the W71 Alternative led to a final stage evaluation of the W101 and W59 Alternatives, once again without the inclusion of the No Action Alternative in this final stage of evaluation and with an entirely different set of evaluation criteria.
187	The comparative evaluation of the W101 and W59 Alternatives is described on Pages 3-68 and 3-69 of the DEIS. Notwithstanding the fact that the No Action Alternative was not included in this final evaluation stage and not withstanding the fact that an entirely new set of evaluation criteria was introduced, there are some flaws in the comparison of the two Alternatives as discussed below. While the discussion is focused on travel modeling, traffic, circulation, and transportation and traffic engineering/planning, readily apparent flaws in other subjects are also pointed out. This should not be construed as a complete review of matters pertaining to other subjects.

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186 (cont.)		As stated on page 3-40 of the Final Environmental Impact Statement, the No-Action Alternative would not satisfy the purpose and need of the proposed action because it would result in further difficulty in gaining access to adjacent land uses, increased difficulty in gaining access to Interstate and regional freeway systems from the local arterial street network, increased levels of congestion-related impacts, continued degradation in performance of regional freeway-dependent transit services, increased trip times, and higher user costs. Further, the No-Action Alternative would be inconsistent with Maricopa Association of Governments' and local jurisdictions' long-range planning and policies. The No-Action Alternative was included in the Draft and Final Environmental Impact Statements for detailed study to compare impacts of the action alternatives with the consequences of doing nothing (impacts can result from choosing to do nothing).
187	**Alternatives**	The information on page 3-41 of the Draft Environmental Impact Statement provides the elements that were used by decision makers to determine that the W71 Alternative would not be the Preferred Alternative. The Arizona Department of Transportation, in coordination with the Federal Highway Administration, determined that the W59 and W101 Alternatives would provide more benefits than would the W71 Alternative. The W71 Alternative was not "eliminated" because it is still a viable action alternative; it was just not the Preferred Alternative.
188	**Alternatives**	The information on page 3-41 of the Draft Environmental Impact Statement provides the elements that were used by decision makers to determine that the W71 Alternative would not be the Preferred Alternative. The Arizona Department of Transportation, in coordination with the Federal Highway Administration, determined that the W59 and W101 Alternatives would provide more benefits than would the W71 Alternative. The W71 Alternative was not "eliminated" because it is still a viable action alternative; it was just not the Preferred Alternative. The No-Action Alternative is included for detailed study in accordance with National Environmental Policy Act requirements to compare beneficial and adverse impacts of the action alternatives with those benefits and consequences (adverse impacts) of not proceeding with one of the action alternatives.

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Under the heading "Overall Transportation Needs" on Page 3-68:

189 • In reference to the first bullet item – Linking the southern areas of the region with the central metropolitan area was not identified as a goal in the Purpose and Need, so this should not be a basis for evaluation. Both Alternatives would provide an alternative route to I-10 for regional connectivity, as asserted elsewhere in the DEIS, so this cannot be used as a distinguishing factor. Also, based on this bullet item, the proposed action will merely change how traffic accesses I-10, not keep traffic out of the central metropolitan area. Ultimately, traffic will use the congested facilities in the central metropolitan area.

190 • In reference to the third bullet item – The statement is true and would be a point favoring the W101 Alternative.

191 • In reference to the fourth and fifth bullet items – These bullet items state that for the W101 Alternative widening improvements would be needed on Loop 101 and that for the W59 Alternative widening improvements would be needed on I-10. What the comparison fails to mention is that in addition to the widening of I-10, the W59 Alternative will necessitate the construction of a new freeway-to-freeway interchange, modifications of the existing interchanges at 51st Avenue, 59th Avenue, and 67th Avenue, as well as the construction of service roads between 51st and 67th Avenues. Likewise, in addition to widening improvements on Loop 101, a partial or full reconstruction of the interchange at I-10/Loop 101, relocation of ramps at McDowell Road and Thomas Road as well as modification of existing interchanges at 99th Avenue and 91st Avenue would be necessary. There is no indication as to the relative ease or difficulty of constructing the widening improvements and associated interchange modifications on I-10 and Loop 101. It is unclear how these two bullet items are used to select one alternative over the other.

Under the Heading "Consistency with Regional and Long-range Planning Goals" on Page 3-69:

192 In reference to the first bullet item – If less land is converted to freeway use, obviously more land would potentially be available for development. The rationale for the statement: ".....thereby optimizing opportunities for planned development" is unclear and should have been explained.

193 Under the Heading "Environmental and Societal Impacts" on Page 3-69:

194 In reference to the first bullet item – Per Figure 3-41, Page 3-67 of the DEIS, the W101 Alternative Options would displace 926 to 1,304 single-

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189	**Alternatives**	The comparative analysis was not confined to evaluating purpose and need criteria for the proposed action. It had already been determined that the W59 and W101 Alternatives met those purpose and need criteria. Otherwise, they would not have advanced to this stage of the alternatives development and screening process. The primary observation is that the W59 Alternative would provide a more direct route to the central metropolitan area as compared with the W101 Alternative. This is an accurate observation and a point favoring the W59 Alternative.
190		Comment noted.
191	**Alternatives**	The bullets are provided to offset the impacts of each. Neither provides a substantial improvement over the other with respect to improvements associated with the connections at Interstate 10 (Papago Freeway).
192	**Alternatives**	Further explanation has been provided on page 3-69 of the Final Environmental Impact Statement.
193		Comment noted.
194	**Alternatives**	The breakdown by type of displacement is presented in the section, *Displacements and Relocations*, on page 4-39 in the Draft Environmental Impact Statement. See Table 4-12. The 733 residential displacements for the W59 Alternative include 680 multifamily units.

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	family residential properties, and the W59 Alternative would displace 733 residential properties. For the W59 Alternative, the mix of multi-family and single-family residential properties is not stated, making it impossible to compare the number of housing units that would be displaced. Following is a direct quote from the "Title VI and Environmental Justice Report", Page 4-3.
194	*In addition to the single-family displacements, the W59 Alternative would result in the potential displacement of two apartment complexes having a total of 680 units. These apartments fall within a census block where greater than 50 percent of the population is minority. The majority of the apartment units are "market-rate" rents; however, one of the apartment complexes currently accepts Section 8housing vouchers. (Of the 264 units in the complex, 16 currently use Section 8 vouchers.*
195	Taking into consideration the 680 multi-family units, the W59 Alternative would result in the displacement 1411 housing units, which would be more than any of the W101 Alternative options.
	Under the heading "Operational Differences" on Page 3-69:
196	In reference to the first bullet item – Based on the information in Figure 3-40 on Page 3-66 of the DEIS, the statement in this bullet item is true. The DEIS fails to point out that Figure 3-40 also indicates, however, that operating conditions would be virtually identical for the two alternatives east of 59th Avenue, closer to the central metropolitan area.
197	In reference to the second bullet item - The statement is true and would be a point favoring the W101 Alternative.
198	In reference to the third bullet item – It is unclear what travel movements and how many motorists would benefit from this "direct access to downtown Phoenix." Regardless of which and how many motorists would benefit from this "direct access," travel would continue to be under congested conditions on I-10 east of 59th Avenue.
199	In reference to the fourth bullet item - The statement is true and would be a point favoring the W101 Alternative, although the number of motorists that would benefit from this "better access" is not presented.
200	In reference to the fifth bullet item – Since the location of SR 30 (called SR 801 in the RTP) and the timetable for its construction are unknown, this bullet item is speculative.
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195	**Acquisitions and Relocations**	The 680 multifamily units have already been counted in the total for the W59 Alternative. See Table 4-12, on page 4-39.
196	**Traffic**	Agree.
197	**Alternative**	Comment noted. The identification by the Arizona Department of Transportation, with concurrence from the Federal Highway Administration, of the W59/E1 Alternative as the Preferred Alternative (which includes the W59 Alternative in the Western Section of the Study Area) sought to balance agency responsibilities to address regional mobility needs while being fiscally responsible and sensitive to local communities and environmental conditions.
198		Comment noted.
199		Comment noted.
200	**Alternatives**	Projects in the *Regional Transportation Plan* historically have been funded and constructed. Therefore, the project is reasonably foreseeable.

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200	In reference to the sixth bullet item – Since the location of SR 30 (called SR 801 in the RTP) and the timetable for its construction are unknown, this bullet item is, in part, speculative.
	Under the heading "Estimated Costs" on Page 3-69:
201	Planning level cost estimates presented in Figure 3-36 and accompanying text on Page 3-59 of the DEIS do not indicate that an allowance for contingencies was included in the cost estimates. A contingency allowance of about 30 to 40 percent of the construction cost (excluding right-of-way) is typically included in the cost estimate at this level of project development. It is also noted in the DEIS that right-of-way costs will depend on growth in the region, and the actual right-of-way costs may differ from the estimates. Because of these unknowns, the actual difference in cost between the two alternatives may be lower or higher than the $490 million to $640 million range cited in this bullet item.
202	In summary, the comparative evaluation in the DEIS does not support the selection of the W59 Alternative as the Preliminary Preferred Alternative because: • The No Action Alternative was not included in the final comparative evaluation. • The W71 Alternative was unjustifiable eliminated. • Uniform comparative evaluation criteria were not used. • There were data and rationale flaws in the comparative evaluation process. • Viable alternatives to the proposed eastern portion of the project, discussed previously, would affect the selection of alternatives for the western alignment. The DEIS should have had a discussion of this matter in the comparative evaluation of the western alignments.
203	9. **None of the Action Alternatives will alleviate the anticipated capacity deficiencies identified in the Purpose and Need. Despite the expenditure of about $2 billion to $3 billion to build the South Mountain Freeway and despite the displacement of many residences and business establishments, there will be capacity deficiencies at levels comparable to the No Action Alternative on freeways and arterials throughout the Metropolitan Area and on the South Mountain Freeway itself.** While the levels of congestion may be slightly less, Level of Service E and F conditions will prevail at approximately the same levels and durations in 2035 with or without an Action Alternative. In all graphics that present congestion levels throughout the DEIS, no distinction is made between Level of Service (LOS) E and LOS F. Therefore it is impossible to ascertain if an improvement from LOS F to LOS E is achieved or a degradation from LOS E to LOS F.
204	Most, if not all, jurisdictions differentiate between LOS E and LOS F in their analyses. The reason is that, as stated on Page 1-14 of the DEIS, LOS E
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Code	Issue	Response
201	**Alternatives**	The cost estimates for all of the action alternatives include contingencies for construction and right-of-way. The same assumptions were made for each alternative. The estimates are identified as planning-level cost estimates and consideration of such estimates is appropriated in the environmental impact statement process.
202	**Alternatives**	The Draft Environmental Impact Statement presents the information that was used by the Arizona Department of Transportation, with concurrence from the Federal Highway Administration, to identify the W59 and E1 Alternatives as the Preferred Alternatives. The No-Action Alternative is included for detailed study in accordance with National Environmental Policy Act requirements to compare beneficial and adverse impacts of the action alternatives with those benefits and consequences (adverse impacts) of not proceeding with one of the action alternatives. (Impacts can occur through choosing to do nothing.) The No-Action Alternative would not satisfy the purpose and need of the proposed action (see Draft Environmental Impact Statement page 3-40) and was, therefore, not identified as the Preferred Alternative. The W71 Alternative was not eliminated; it was determined to be the least desirable of the three action alternatives in the Western Section (reasons are noted previously). There is no restriction on what ultimately become the determining factors among alternatives. The Draft Environmental Impact Statement presents those factors that were actually used by the Arizona Department of Transportation and Federal Highway Administration to identify the Preferred Alternative. The alternatives development and screening process was sound, and the information used was disclosed in the Draft Environmental Impact Statement. None of the other Eastern Section alternatives identified in the Draft Environmental Impact Statement or new alternatives proposed in the comment would change the alternatives development and screening process; they were all eliminated from detailed study.
203	**Traffic**	The comparison of traffic operational characteristics between the action alternatives and the No-Action Alternative is presented in the Draft Environmental Impact Statement, beginning on page 3-27 of the Draft Environmental Impact Statement. The analysis shows that the action alternatives would: · reduce overall traffic on the arterial street system (see Figures 3-12 and 3-13) · optimize travel on the region's freeway system (see Figure 3-12) · reduce the capacity deficiency to levels better than experienced today (see Figures 1-12 and 3-14) · reduce the duration of level of service E or F conditions in key areas of the region's freeway system (see Figure 3-15) · improve travel times on trips within the Study Area and across the region (see Figure 3-17 and Table 3-8) · provide improved regional mobility for areas projected to experience growth in the next 25 years (see Figures 1-7 and 3-18) When all of this is considered in the realm of travel time savings for motorists in the region, the user benefits approximate $200 million per year (see Table 4-26).

(Response 204 begins on the next page)

Code	Comment Document
204	represents unstable traffic flow with traffic volume approaching capacity or at capacity. LOS F, on the other hand, represents congested and stop-and-go conditions, with traffic volumes over capacity. Yet in the Traffic Overview LOS E is defined as a condition where the volume to capacity ratio (V/C ratio) is greater than 0.86 (Table 10, Page 2-8) (Exhibit 11). In other words, the DEIS asserts that congestion prevails when the traffic volume reaches 86% of capacity, contrary to the statement on Page 1-14 of the DEIS. Most jurisdictions (including the California Department of Transportation, Caltrans) define the upper limit of LOS D to be a V/C ratio of 0.89. V/C ratios in the range of 0.91 to 1.00 represent LOS E, and 1.01 and above represent LOS F.
205	Furthermore, as indicated in Exhibit 11, the DEIS uses a freeway capacity value of 2,030 vehicles per hour per lane (v/ph/pl), whereas the Highway Capacity Manual (a publication by the Transportation Research Board that is widely used by many jurisdictions for capacity calculations, including ADOT) cites a service volume of 2,250 passenger cars per hour per lane (pc/ph/pl) at LOS E. The reason for this difference is not explained.
206	Also no explanation is provided as to how the duration of congestion is determined. The DEIS should have provided a good explanation of how duration of congestion is determined for planning purposes on the basis of the V/C ratio, especially in the analysis in this DEIS, where no distinction is made between LOS E and LOS F.
207	Figure 3-14 on Page 3-31 of the DEIS states that the Proposed Freeway will accommodate 6% of the regional travel demand, but that 5% of the travel demand will remain unmet. The same illustration indicates that arterial system enhancements would accommodate 5% of the regional travel demand. Figure 9-3 in the MAG RTP (Exhibit 12) presents the planned arterial improvements. Only one arterial improvement, an easterly extension of SR 801, is shown within the Study Area even though the Summary and Purpose and Need Chapters stress that there will be large amounts of growth in the southwestern portion of the Metropolitan Area. Additional arterial improvements in the study area along with arterial system enhancements throughout the modeling area may be able to accommodate the remaining unmet travel demand. The addition of the freeway segment included in the hybrid alternative illustrated in Exhibit 8 would also help reduce the unmet travel demand. As a side note, it is not explained in Figure 3-14 why it was necessary to use "data extrapolated from the 41st Street cut line." MAG's TransCad model is capable of summarizing travel time, vehicle hours of travel, vehicle miles of travel by any geographic area, by facility type, by Level of service, and other selected filters. The use of "extrapolated data" appears to be unwarranted.
208	Figures 3-15 and 3-16 (Pages 3-32 and 3-33 in the DEIS) present changes in congestion with the No Action compared to the Proposed Action conditions. The differences are very subtle. Without the distinction between segments operating

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Code	Issue	Response
204	Traffic	Because much of the region's freeway system is congested, merely noting the level of service of a segment of freeway would not provide adequate information. Therefore, the project team provided the duration of congested conditions and defined congested conditions as being level of service E or F. The Arizona Department of Transportation typically uses level of service D as a threshold for acceptable conditions, so anything in excess of that was determined to be labeled as congested. The thresholds used in the analysis were determined in coordination with the Maricopa Association of Governments and based on observed traffic conditions in the Phoenix metropolitan area.
205	Traffic	Capacity levels used in the Draft Environmental Impact Statement were based on the thresholds used in the Maricopa Association of Governments regional travel demand model. The Maricopa Association of Governments model is calibrated to reflect conditions on Phoenix metropolitan freeways.
206	Traffic	The thresholds used to calculate duration of level of service E or F are provided in the Traffic Overview Report in Table 10. This level of detail is appropriate for the technical report.
207	Traffic	The *Regional Transportation Plan* is not the primary source of funding for expansion of the arterial street system. Funding for arterial streets generally comes from the local jurisdiction or through impact fees for development. It is anticipated that the arterial street network within the Study Area will be expanded in this same manner. The Maricopa Association of Governments regional travel demand model includes assumptions related to arterial street expansion based on local jurisdiction general planning. In the case of the Study Area, it is assumed that most of the arterial street network would be built out by 2035. Chapter 1, *Purpose and Need*, concludes that even with these improvements in place, there is a clear need for a major transportation facility in the Study Area. The analysis of capacity deficiency (unmet demand) in the region is presented in Figures 1-12 and 3-24. The analysis shows that the unmet demand in 2010 is 19 percent; in 2035, without the proposed freeway, the unmet demand increases to 24 percent; in 2035, with the proposed freeway, the unmet demand would be only 18 percent. The cut-line analysis (see Figure 3-13) shows that with the proposed freeway there would be a substantial shift in regional travel from arterial streets to freeways. The 41st Street cut line was used as a way to focus the analysis on the east–west movement that would be influenced by the proposed freeway. The noted information from the Maricopa Association of Governments travel demand model was used in other analyses.
208	Traffic	Because much of the region's freeway system is congested, merely noting the level of service of a segment of freeway would not provide adequate information. Therefore, the project team provided the duration of congested conditions and defined congested conditions as being level of service E or F. The Arizona Department of Transportation typically uses level of service D as a threshold for acceptable conditions, so anything in excess of that was determined to be labeled as congested. The thresholds used in the analysis were determined in coordination with Maricopa Association of Governments and based on observed traffic conditions in the Phoenix metropolitan area. The thresholds used to calculate the duration of level of service E or F are provided in the Traffic Overview Report in Table 10.

Code	Comment Document
	at LOS E and LOS F and without an explanation of how the duration of congestion is determined, the information presented is not very useful for a thorough evaluation by the public and for decision-making.
209	**10. Appropriate mitigation measures are not proposed to mitigate the impacts of the Action Alternatives.** Assuming for discussion purposes only, that the Preliminarily Preferred Action Alternative is implemented, appropriate mitigation measures should have been addressed in the DEIS. Some appropriate mitigation measures would include:
210	• Placement of truck weight limits on the SMF • Upgrading the Route via I-10/I-8/SR 85/I-10 to full freeway standards and obtaining Congressional approval for the designation of this route as the CanaMex Route • Development of an east-west truck route to by-pass the Phoenix Metropolitan Area • Formulation and inclusion in the RTP of a plan for arterials in the Southwest area to help guide development patterns so that desirable options are not precluded • Restricting the transporting of hazardous materials on the SMF • Others
211	**11. Based on these traffic and circulation considerations, none of the Action Alternatives should have been selected as the Preferred Alternative for the following reasons.**
212	a. It is understood that the Preliminarily Preferred Alternative would add capacity to the Regional Freeway System. On the other hand, the added capacity would have nominal effect on alleviating congestion in the central metropolitan area, where the need is greatest. This raises the question if the proposed SMF is the correct tool to deal with congestion in the central metropolitan area.
213	b. The Preferred Alternative is not consistent with the RTP because the phasing of construction presented in the DEIS differs from the phasing plan in the RTP.
214	c. There are many deficiencies in the DEIS, including:
215	• use of faulty socio-economic data; • faulty forecasts of vehicular travel resulting from the use of faulty socio-economic data as input to the travel model;
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Code	Issue	Response
209		See response to specific comments below.
210	**Trucks**	As it relates to truck weight limits and transport of hazardous materials, Arizona highways, as are most highways across the United States, are open to all kinds of traffic, so long as the cargo being carried is in accordance with U.S. Department of Transportation regulations for the specific type of cargo. The South Mountain Freeway, if implemented, is expected to operate under the same rules as other similar facilities in the state; truck traffic would be expected to be permissible (see text box on page 4-157 of the Final Environmental Impact Statement). Improvements to State Route 85 are included in the *Regional Transportation Plan*, and the plan is to continue to improve this corridor until it is completely access-controlled with a freeway section north of the Gila River. The *Regional Transportation Plan* is not the primary source of funding for expansion of the arterial street system. Funding for arterial streets generally comes from the local jurisdiction or through impact fees for development. It is anticipated that the arterial street network within the Study Area will be expanded in this same manner. The Maricopa Association of Governments regional travel demand model includes assumptions related to arterial street expansion based on local jurisdiction general planning. In the case of the Study Area, it is assumed that most of the arterial street network would be built out by 2035. The Arizona Department of Transportation has a few locations in the state with hazardous cargo restrictions, but these restrictions are based on emergency response issues or roadway design limitations specific to that location. For example, the Interstate 10 Deck Park Tunnel has certain hazardous cargo transport restrictions because of the limited ability for emergency responders to address a hazardous materials incident in the tunnel.
211		See responses to specific comments below.
212	**Alternatives**	The comment infers the transportation problem is congestion in the central metropolitan area. As presented in Chapter 1 of the Draft and Final Environmental Impact Statements, the purpose and need analysis demonstrated a transportation problem associated with east-west regional mobility in the southwestern region of the Phoenix metropolitan area. The Arizona Department of Transportation, with concurrence from the Federal Highway Administration, has determined that the South Mountain Freeway (as made up by the W59 and E1 Alternatives) is the appropriate solution to the described transportation problem. A contribution of the Preferred Alternative to alleviate congestion in the central metropolitan area would be an incidental benefit of the project and would support a goal of better distribution of regional traffic across the network.
213	**Implementation**	Construction phasing of a project is not an indicator of "consistency." The location and facility type are indicators of consistency. Nowhere in the Draft Environmental Impact Statement is it referenced that the proposed action is needed to comply with the *Regional Transportation Plan*.
214		Comment noted.

(Responses continue on next page)

Code	Comment Document
	• unreliable Air Quality and Noise impact analyses, since they are based on faulty travel forecasts; • failure to analyze viable alternatives with appropriate detail; • deficiencies in the evaluation process and methodology; • failure to analyze crucial potential impacts, such as truck traffic, impacts on arterials connecting to and near proposed interchanges, and others identified in this report.
216	These deficiencies in the DEIS render the DEIS useless as a decision-making tool. The selection of a Preliminarily Preferred Alternative on the basis of a faulty DEIS is inappropriate.
217	Because of these considerations and because it avoids any physical impacts on the environment, the No Action Alternative should have been selected as the Preferred Alternative.
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Code	Issue	Response
215	**Traffic**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future. The new projections were also used to update the air and noise analyses for the Final Environmental Impact Statement (see sections beginning on pages 4-68 and 4-88, respectively). All of the alternatives were subject to a thorough evaluation using a multidisciplinary set of criteria in accordance with National Environmental Policy Act and Federal Highway Administration guidance. Among the factors considered in this study were 1) the amount of truck traffic that would be generated if an action alternative were to become the Selected Alternative and 2) that traffic's potential impact on the surrounding community. The right-of-way footprints for the action alternatives include the necessary widening of arterial streets connecting to the proposed freeway. Additional traffic-related impacts have been coordinated with the appropriate local jurisdictions.

(Responses continue on next page)

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EXHIBITS

Code	Issue	Response
216	Alternatives	All analyses presented in the Draft Environmental Impact Statement used state-of-the-practice, scientific community accepted methods, data and assumptions and were updated as appropriate as new data and/or regulatory requirements were disclosed. Updating analyses throughout an environmental impact statement process is common and expected. The Final Environmental Impact Statement reflects those updates. The Arizona Department of Transportation and Federal Highway Administration, in cooperation with the U.S. Army Corps of Engineers, the U.S. Bureau of Indian Affairs, and the Western Area Power Administration, prepared the Draft and Final Environmental Impact Statements and Section 4(f) Evaluation in accordance with the National Environmental Policy Act of 1969 [42 United States Code § 4332(2)(c)], Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 United States Code § 303, as amended), and Section 404 of the Clean Water Act of 1977 (33 United States Code § 1251). All of these agencies are experienced in the review of National Environmental Policy Act documents and have found the logical sequence of decision making to be sound and in line with National Environmental Policy Act requirements. The Draft Environmental Impact Statement and Section 4(f) Evaluation 1) satisfies Federal Highway Administration and Arizona Department of Transportation's environmental analysis requirements; 2) provides a comparison of the social, economic, and environmental impacts that may result from implementation of the proposed action—construction and operation of a major transportation facility; and 3) identifies measures to avoid, reduce, or otherwise mitigate adverse impacts.
217	Alternatives	The No-Action Alternative would not avoid all physical impacts on the environment. In contrast, the No-Action Alternative would result in: · further difficulty in gaining access to adjacent land uses · increased difficulty in gaining access to Interstate and regional freeway systems from the local arterial street network · increased levels of congestion-related impacts such as deterioration of air quality · continued degradation in performance of regional freeway-dependent transit services · increased trip times and higher user costs For these reasons, the Arizona Department of Transportation, with concurrence from the Federal Highway Administration, did not select the No-Action Alternative, instead identifying the W59 and E1 Alternatives as the Preferred Alternatives.

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TABLE 20-4
ROADWAY PERFORMANCE MEASURES FROM MAG MODEL
(Maricopa County Portion of MAG Modeling Area)*

	Scenario		
Measures	2008 Base	2030 RTP	2030 No Build
Population**	4,236,286	6,381,4254	6,381,426
Supply Measures			
Lane-Miles			
Freeways	1,920	2,865	1,914
Arterials	10,270	19,596	18,166
Capacity Miles			
Freeways	53,210,043	79,389,209	53,048,469
Arterials	79,486,623	157,610,234	146,796,437
Demand Measures			
Daily Vehicle-Miles (VMT)			
Freeways	33,721,948	58,423,300	43,355,601
Arterials	46,296,429	81,316,235	92,823,216
Level of Service Measures			
Congested Lane-Miles			
Freeways	433	825	986
Arterials	1,236	2,277	3,994
% Congested Lane-Miles			
Freeways	22.6	28.8	50.5
Arterials	12.0	11.6	22.0
Daily Congested VMT			
Freeways	11,777,622	22,588,646	27,677,484
Arterials	10,095,551	19,153,038	33,478,230
% Daily Congested VMT			
Freeways	34.9	38.7	63.8
Arterials	21.8	23.6	36.1
Total Vehicle Hours of Delay			
Hours of Delay	686,069	1,436,565	2,115,615
Hrs of Delay per 1000 VMT	8.50	10.2	15.5

* Results are derived from Base Year 2008, 2030 RTP and 2030 No Build MAG model runs - August 2009
* The No-build is based on the 2008 Base Year Freeway and the Planned Arterial networks
** Resident population in households + resident population in group quarters (excluding institutional facilities, military and correctional facilities) + Transient population + Seasonal Population

doubles. The total vehicle hours of delay experiences an increase of 109 percent between the 2008 Base Year and the 2030 RTP, but dramatically increases by more than two hundred percent under the No Build scenario. Clearly, the freeway capacity added in the RTP helps significantly to mitigate the effects of a growing population. For arterials, the percentage of congested lane miles for the RTP increases by approximately three percent compared to the

EXHIBIT 1

Code	Issue	Response
218		Exhibits reviewed.

Code	Comment Document

Summary of Travel Trends

The trends data indicate that the *per capita* growth in travel that the U.S. experienced over the last four decades may be slowing. Statistically, of the ten major travel indicators shown in Table 3, in 2009 seven estimates were lower than the same estimate in 2001 estimates and the remainder are statistically the same (within the confidence interval).

Importantly, all of the travel estimates related to households are slightly lower in 2009 than 2001--including person and vehicle trips and the average daily person and vehicle miles generated by U.S. households. The longstanding decline in household size continued between 2001 and 2009. In addition, the average number of vehicle trips and vehicle miles of travel per driver are significantly lower than the 2001 estimate. The data shows both average person trip length and average vehicle trip length to be about the same as in 2001 (that is, within the confidence interval).

Table 3. Summary of Travel Statistics
1969, 1977, 1983, 1990, and 1995 NPTS, and 2001 and 2009 NHTS.

	1969	1977	1983	1990	1995	2001	2009	95% C.I.
Per Person								
Daily Person Trips	2.02	2.92	2.89	3.76	4.30	3.74	3.79	0.03
Daily PMT	19.51	25.95	25.05	34.91	38.67	36.89	36.13	1.35
Per Driver								
Daily Vehicle Trips	2.32	2.34	2.36	3.26	3.57	3.35	3.02	0.03
Daily VMT	20.64	19.49	18.68	28.49	32.14	32.73	28.97	0.71
Per Household								
Daily Person Trips	6.36	7.69	7.20	8.94	10.49	9.66	9.50	0.09
Daily PMT	61.55	68.27	62.47	83.06	94.41	95.24	90.42	3.38
Daily Vehicle Trips	3.83	3.95	4.07	5.69	6.36	5.95	5.66	0.06
Daily VMT	34.01	32.97	32.16	49.76	57.25	58.05	54.38	1.34
Per Trip								
Average person trip length (miles)	9.67	8.87	8.68	9.47	9.13	10.04	9.75	0.36
Average vehicle trip length (miles)	8.89	8.34	7.90	8.85	9.06	9.87	9.72	0.22

Note:

- Average trip length is calculated using only those records with trip mileage information present.
- 1990 person and vehicle trips were adjusted to account for survey collection method changes (see 2001 Summary of Travel Trends Appendix 2).
- PMT is Person Miles of Travel. VMT is Vehicle Miles of Travel. CI is Confidence Interval. NPTS is Nationwide Personal Transportation Survey.

EXHIBIT 2

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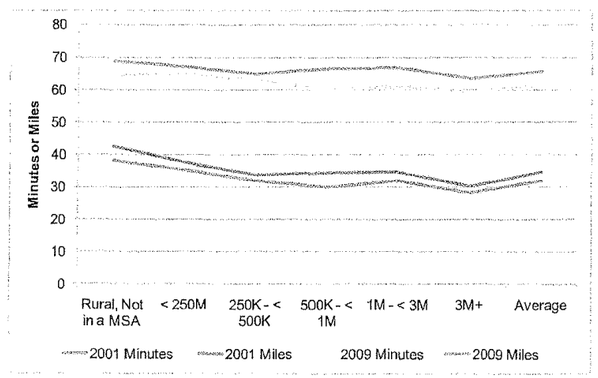
Summary of Travel Trends

Figure 6. Average Time Spent In Vehicles and Miles Traveled 2001 and 2009 NHTS.



PRIVATE VEHICLE TRAVEL 32

EXHIBIT 3

Code	Issue	Response

Code	Comment Document

7.1 Variation in Trip Rate-Weekday Versus Weekend

Table 7-9 indicates the variation in vehicle trip rate by day of week. The average household trip rate was highest on Saturdays. The average auto occupancy was also highest on Saturdays. However, the average vehicle trip rate was highest on a weekday (Tuesday). Weekday vehicle trip rate on any given day was higher than vehicle trip rate for Saturday or Sunday. Freeway traffic counts for the Valley indicate more volumes during weekdays than during weekends.

Vehicle Trip Rate by Day of Week			
Travel Day	Average Household Trip Rate by Day of Week	Average Occupancy by Day of Week	Average Vehicle Trip Rate by Day of Week
Sunday	9.26	2.49	3.72
Monday	9.05	1.98	4.57
Tuesday	11.04	1.52	7.26
Wednesday	11.09	1.83	6.06
Thursday	8.52	2.11	4.04
Friday	10.89	2.04	5.34
Saturday	13.67	3.44	3.97

Table 7-9 Variation in Vehicle Trip Rate by Day of Week

EXHIBIT 4

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Locations Table

1. All home locations were geo-coded.
2. About ninety-five percent of work and school locations were geo-coded.

Trips Table

1. Based upon weighted data, Auto continues to be a dominant mode of transportation. Walk trips constitute 9 percent of overall trips (but not all of these trips are modeled), while bike trips constituted about 1 percent of overall trips. The transit share of trips is slightly above 1 percent.
2. Overall auto occupancy is higher in 2008-2009 NHTS than when compared to 2001 MAG household travel survey. NHTS captured a much higher rate of HOV travel than the MAG 2001 household travel survey.
3. Work trips constitute a lower percentage of overall trips in 2008-2009 than when compared to 2001 MAG household travel survey.
4. Average trip length between home and work has increased between 2001 MAG household travel survey and 2008-2009 National Household Travel Survey dataset for MAG. The average (reported) trip length increased to 12.92 miles (weighted data for weekday) in 2008 NHTS from 10.6 miles (estimated) in 2001 survey.
5. The average daily household trip rate (weighted) in 2008 travel survey (10.50) is higher than the corresponding value in 2001 household travel survey (7.38).
6. The average vehicle occupancy (weighted) was higher during the weekends (3.44 on Saturday and 2.49 on Sunday) than during weekdays (1.88).
7. The average person trip rate was highest during a weekend and the average auto occupancy was highest during a weekend. However, the average vehicle trip rate was the highest during the weekday.

10.2 Conclusions

Data from the NHTS Add-on surveys have been successfully used for travel demand models estimation and calibration. Data quality was either comparable to or exceeded that of similar surveys and was suitable for its intended applications. The data set contains necessary details and is easy to work with. Data imputation was required (example, for school locations) and warrants consideration of innovative GPS-based approaches.

The performed analysis demonstrated general applicability of the survey data for analytical purposes as well as for the purposes of models estimation, calibration and validation. A few issues with the survey data were identified and analyzed. The survey had a relatively small sample of transit users, thus its applicability for some of transit modeling tasks is questionable.

Segments like low-income households and Hispanic households were under-sampled. Targeted effort to reach these population groups will be required in future regional travel surveys. Pilot studies could be recommended prior to the original survey, concentrating on these household segments. For the 2008 NHTS, there is no record of any pilot study in the literature provided to MAG.

The NHTS survey tour/trip production rates were found to be comparable to other surveys. Overall 2008 Add-on NHTS survey data proved to be a valuable dataset suitable for advanced transportation modeling, planning and analytical work. Emerging GPS-based methodologies should be carefully considered for future survey efforts in order to support advanced transportation models and analyses.

EXHIBIT 5

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The average reported trip duration was 20 minutes. As shown in Table T-17, 70% of all trips were 20 minutes or shorter. Trips by Transit tended to be the longest, while those by walk and bike were the shortest. Tables T-18 through T-22 show the reported trip durations by mode for the standard trip purposes.

Table T-17
Reported Trip Durations

Trip Duration	N	All Trips	Auto-Driver	Auto-Pass	Transit	Walk	Bike	Other
5 min or less	12588	21.5%	19.9%	23.2%	4.5%	39.4%	21.0%	5.5%
6 to 10 minutes	12101	20.9%	20.5%	23.0%	6.7%	21.6%	21.3%	10.2%
11 to 15 min	11465	19.7%	19.2%	20.9%	10.1%	19.0%	21.0%	20.4%
16 to 20 min	5703	9.8%	9.9%	9.4%	8.1%	7.3%	6.3%	15.0%
21 to 25 min	2856	4.8%	5.3%	4.1%	4.7%	2.4%	2.9%	8.2%
26 to 30 min	7320	12.4%	13.4%	10.5%	12.6%	7.2%	14.4%	20.7%
31 to 35 min	1136	1.9%	2.2%	1.4%	4.9%	.5%	1.9%	3.6%
36 to 40 min	907	1.5%	1.7%	1.0%	5.5%	.5%	1.4%	2.8%
41 to 45 min	1466	2.5%	2.9%	1.7%	8.7%	.7%	.8%	4.5%
46 to 50 min	406	.7%	.7%	.4%	5.3%	.2%	1.4%	1.9%
51 to 55 min	196	.3%	.3%	.2%	2.8%	.0%	.6%	.7%
56 to 60 min	1096	1.9%	2.0%	1.7%	9.3%	.4%	4.3%	1.7%
61 to 65 min	92	.2%	.1%	.1%	2.0%	.1%	.5%	.5%
66 to 70 min	115	.2%	.2%	.2%	1.4%	.0%	.3%	.4%
71 to 75 min	163	.3%	.3%	.2%	3.0%	.1%	.5%	.5%
76 to 80 min	56	.1%	.1%	.1%	.6%	-	.2%	.2%
81 to 85 min	35	.1%	.1%	.0%	.2%	.0%	-	.1%
86 min +	772	1.3%	1.0%	1.7%	9.5%	.6%	1.2%	3.3%
Total	58473	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average		20.48	21.02	19.15	42.92	13.32	19.56	29.51

Base: All trips, weighted.

Table T-18
Reported Trip Durations by Trip Purpose

Trip Duration	N	All Trips	Home-based Work	Home-based Shop	Home-based Other	Non-Home Based
5 min or less	12588	21.5%	6.3%	28.4%	23.9%	25.6%
6 to 10 minutes	12101	20.9%	9.7%	29.5%	22.5%	21.9%
11 to 15 min	11465	19.7%	17.2%	20.0%	20.9%	18.9%
16 to 20 min	5703	9.8%	11.4%	9.4%	9.2%	9.7%
21 to 25 min	2856	4.8%	6.1%	2.8%	4.6%	5.4%
26 to 30 min	7320	12.4%	27.6%	5.4%	10.6%	7.9%
31 to 35 min	1136	1.9%	3.2%	.6%	1.6%	2.3%
36 to 40 min	907	1.5%	2.8%	.8%	1.2%	1.6%
41 to 45 min	1466	2.5%	5.8%	.9%	1.8%	2.1%
46 to 50 min	406	.7%	1.4%	.4%	.5%	.7%
51 to 55 min	196	.3%	.6%	.2%	.3%	.4%
56 to 60 min	1096	1.9%	5.0%	.7%	1.2%	1.3%
61 to 65 min	92	.2%	.3%	.1%	.1%	.1%
66 to 70 min	115	.2%	.3%	.2%	.2%	.2%
71 to 75 min	163	.3%	.6%	.3%	.2%	.2%
76 to 80 min	56	.1%	.1%	-	.1%	.1%
81 to 85 min	35	.1%	.1%	-	.1%	.1%
86 min +	772	1.3%	1.6%	.5%	1.2%	1.6%
Total	58473	100.0%	6.3%	28.4%	23.9%	25.6%
Average		20.48	32.73	13.74	18.41	18.02

Base: All trips, weighted.

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Code	Issue	Response

Code	Comment Document

Table T-19
Reported Trip Durations by Trip Purpose for Home-based Work Trips

Trip Duration	N	All Trips	Auto-Driver	Auto-Pass	Transit	Walk	Bike	Other
5 min or less	674	6.3%	5.9%	4.3%	-	36.5%	10.4%	6.3%
6 to 10 minutes	1040	9.7%	9.7%	7.9%	4.9%	20.3%	12.5%	12.5%
11 to 15 min	1835	17.2%	17.3%	17.0%	4.9%	17.8%	22.2%	18.8%
16 to 20 min	1218	11.4%	11.9%	9.3%	4.9%	8.1%	4.2%	9.4%
21 to 25 min	648	6.1%	6.5%	3.9%	1.4%	2.0%	5.6%	-
26 to 30 min	2951	27.6%	27.5%	33.5%	17.6%	10.2%	18.8%	31.3%
31 to 35 min	347	3.2%	3.5%	2.0%	3.5%	1.0%	1.4%	-
36 to 40 min	299	2.8%	2.8%	2.3%	6.3%	1.0%	2.8%	-
41 to 45 min	616	5.8%	5.8%	6.2%	9.9%	.5%	1.4%	3.1%
46 to 50 min	151	1.4%	1.4%	1.4%	3.5%	.5%	1.4%	-
51 to 55 min	61	.6%	.5%	.7%	3.5%	-	2.8%	-
56 to 60 min	531	5.0%	4.6%	7.7%	11.3%	-	7.6%	-
61 to 65 min	32	.3%	.2%	.3%	4.9%	-	2.1%	-
66 to 70 min	33	.3%	.3%	.1%	2.8%	-	.7%	-
71 to 75 min	59	.6%	.5%	.5%	4.2%	-	2.1%	3.1%
76 to 80 min	16	.1%	.1%	.1%	1.4%	-	.7%	-
81 to 85 min	9	.1%	.1%	.1%	.7%	-	-	-
86 min +	173	1.6%	1.2%	2.6%	14.1%	2.0%	3.5%	15.6%
Total	10692	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average		32.73	32.05	36.85	52.04	22.01	28.72	76.95

Base: All home-based work trips, weighted.

Table T-20
Reported Trip Durations by Trip Purpose for Home-based Shop Trips

Trip Duration	N	All Trips	Auto-Driver	Auto-Pass	Transit	Walk	Bike	Other
5 min or less	1586	28.4%	30.4%	24.7%	3.9%	25.9%	29.1%	15.4%
6 to 10 minutes	1648	29.5%	30.6%	28.9%	9.8%	21.5%	21.8%	17.9%
11 to 15 min	1121	20.1%	19.9%	20.6%	7.8%	18.5%	27.3%	28.2%
16 to 20 min	525	9.4%	8.5%	10.9%	9.8%	13.2%	7.3%	20.5%
21 to 25 min	155	2.8%	2.7%	3.0%	5.9%	1.5%	1.8%	5.1%
26 to 30 min	303	5.4%	4.3%	6.5%	15.7%	16.1%	1.8%	7.7%
31 to 35 min	32	.6%	.6%	.1%	5.9%	.5%	1.8%	2.6%
36 to 40 min	42	.8%	.5%	1.2%	5.9%	1.0%	-	-
41 to 45 min	53	.9%	.9%	1.1%	3.9%	-	1.8%	-
46 to 50 min	25	.4%	.2%	.7%	2.0%	.5%	5.5%	-
51 to 55 min	8	.1%	.1%	.1%	3.9%	-	-	-
56 to 60 min	38	.7%	.5%	.8%	11.8%	.5%	1.8%	2.6%
61 to 65 min	3	.1%	.1%	-	-	-	-	-
66 to 70 min	11	.2%	.1%	.3%	2.0%	-	-	-
71 to 75 min	14	.3%	.1%	.3%	5.9%	.5%	-	-
76 to 80 min	-	-	-	-	-	-	-	-
81 to 85 min	-	-	-	-	-	-	-	-
86 min +	26	.5%	.3%	.6%	5.9%	.5%	-	-
Total	5590	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average		13.74	12.75	14.94	40.40	16.08	14.53	16.82

Base: All home-based shop trips, weighted.

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Code	Issue	Response

Code	Comment Document

Table T-21
Reported Trip Durations by Trip Purpose for Home-based Other Trips

Trip Duration	N	All Trips	Auto-Driver	Auto-Pass	Transit	Walk	Bike	Other
5 min or less	6535	23.9%	24.0%	25.0%	3.2%	32.5%	22.8%	4.6%
6 to 10 minutes	6170	22.5%	23.4%	23.9%	3.2%	22.8%	25.5%	9.7%
11 to 15 min	5717	20.9%	20.3%	21.8%	9.6%	22.3%	20.2%	19.9%
16 to 20 min	2519	9.2%	8.8%	8.8%	7.0%	8.2%	6.6%	16.3%
21 to 25 min	1261	4.6%	4.9%	4.2%	4.5%	2.9%	1.9%	7.6%
26 to 30 min	2901	10.6%	10.2%	9.2%	14.0%	8.4%	14.9%	23.0%
31 to 35 min	425	1.6%	1.6%	1.3%	7.6%	.4%	1.9%	4.0%
36 to 40 min	332	1.2%	1.3%	.9%	7.6%	.4%	.8%	3.2%
41 to 45 min	483	1.8%	2.0%	1.1%	6.4%	.8%	.5%	4.4%
46 to 50 min	128	.5%	.4%	.2%	5.7%	.1%	1.1%	2.1%
51 to 55 min	75	.3%	.3%	.2%	3.2%	.1%	-	.6%
56 to 60 min	330	1.2%	1.2%	1.1%	7.6%	.4%	3.7%	1.9%
61 to 65 min	35	.1%	.1%	.1%	1.3%	.0%	-	.6%
66 to 70 min	44	.2%	.1%	.2%	.6%	-	-	.4%
71 to 75 min	66	.2%	.3%	.1%	3.8%	.1%	-	.4%
76 to 80 min	20	.1%	.1%	.0%	.6%	-	-	.2%
81 to 85 min	16	.1%	.1%	.1%		.0%	-	.1%
86 min +	333	1.2%	1.0%	1.5%	14.0%	.5%	.3%	1.3%
Total	27390	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average		18.41	18.42	17.88	48.81	13.36	17.00	26.88

Base: All home-based other trips, weighted.

Table T-22
Reported Trip Durations by Trip Purpose for Non-Home Based Trips

Trip Duration	N	All Trips	Auto-Driver	Auto-Pass	Transit	Walk	Bike	Other
5 min or less	3793	25.6%	23.1%	24.6%	10.3%	63.0%	28.2%	8.7%
6 to 10 minutes	3241	21.9%	22.4%	23.1%	10.3%	18.5%	18.3%	11.9%
11 to 15 min	2791	18.9%	19.3%	20.2%	16.0%	9.9%	16.9%	22.7%
16 to 20 min	1439	9.7%	10.2%	10.3%	11.5%	3.5%	7.0%	8.1%
21 to 25 min	792	5.4%	5.8%	4.3%	7.7%	1.2%	5.6%	12.5%
26 to 30 min	1164	7.9%	8.6%	7.5%	6.4%	1.0%	11.3%	9.3%
31 to 35 min	332	2.2%	2.5%	2.0%	3.2%	.6%	2.8%	2.4%
36 to 40 min	233	1.6%	1.9%	1.0%	2.6%	.4%	2.8%	1.2%
41 to 45 min	314	2.1%	2.2%	1.7%	11.5%	.6%	1.4%	5.4%
46 to 50 min	100	.7%	.7%	.5%	7.7%	.2%	-	.9%
51 to 55 min	52	.4%	.4%	.2%	1.3%	-	-	1.2%
56 to 60 min	195	1.3%	1.2%	1.6%	8.3%	.3%	1.4%	.9%
61 to 65 min	21	.1%	.1%	.1%	.6%	.2%	-	-
66 to 70 min	28	.2%	.2%	.1%	.6%	-	1.4%	.9%
71 to 75 min	24	.2%	.1%	.2%	-	-	-	.9%
76 to 80 min	21	.1%	.1%	.3%	.6%	-	-	.3%
81 to 85 min	10	.1%	.1%	.0%	-	-	-	.3%
86 min +	239	1.6%	1.2%	2.2%	1.3%	.6%	2.8%	12.5%
Total	14789	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average		18.02	17.75	18.20	29.34	10.92	18.70	40.13

Base: All non-home-based trips, weighted.

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Code	Issue	Response

Code	Comment Document

Figure 7-10 shows the frequency distribution of all trips by trip duration. About 65 percent of all reported trips have duration of at the most 15 minutes. Similarly, *Figure 7-11* shows the frequency distribution of all trips by trip length. About 42 percent of all reported trips have a trip length of at the most 3 miles. From the NHTS data, the average reported trip length for HBW trip (all days) was about 12.61 miles.

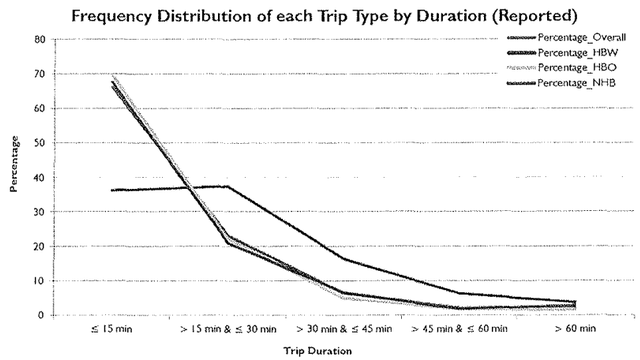


Figure 7-10 Frequency Distribution of Trip Duration by Purpose

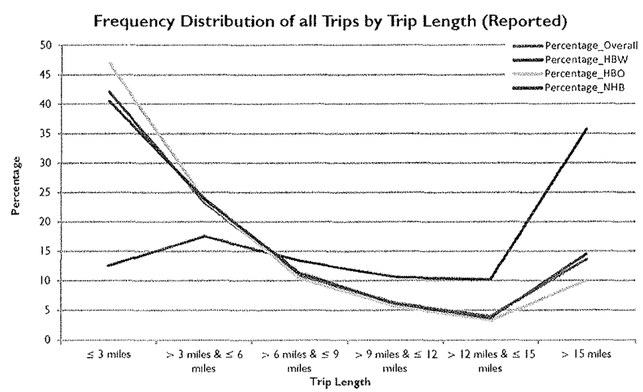


Figure 7-11 Frequency Distribution of Trip Length by Purpose

EXHIBIT 7

Code	Issue	Response

Code	Comment Document

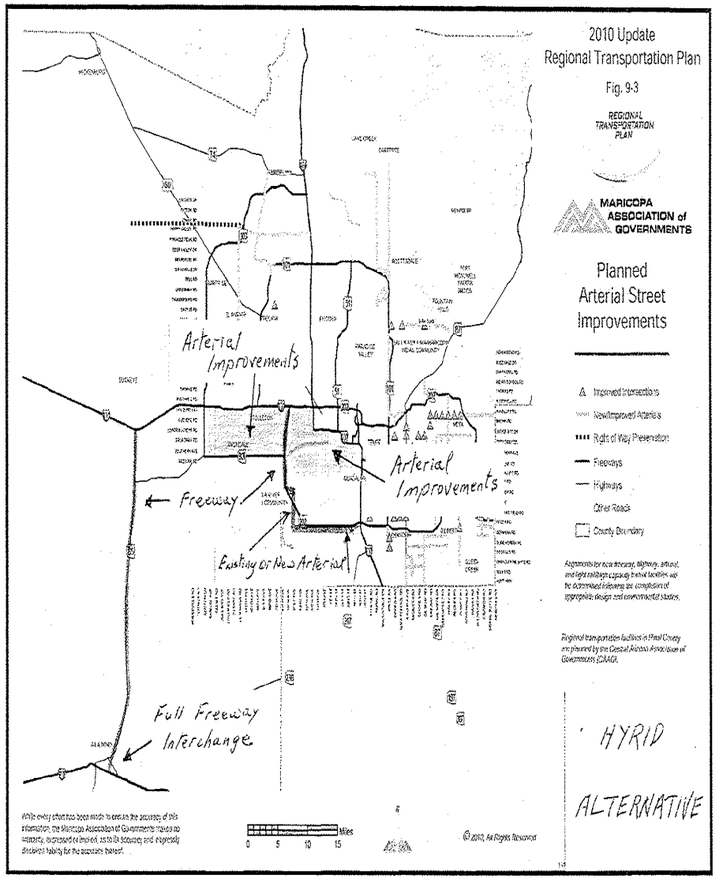


EXHIBIT 8

Code	Issue	Response

Code	Comment Document

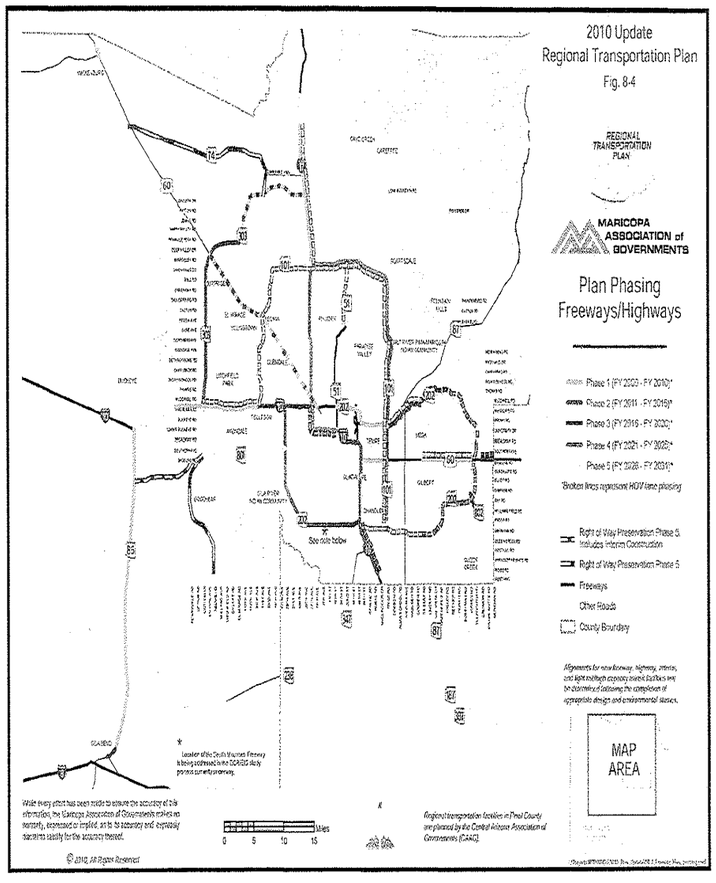


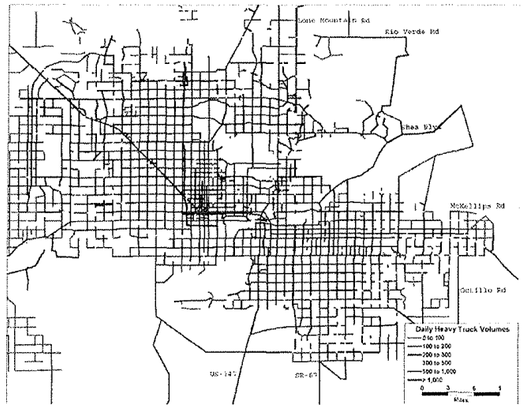
EXHIBIT 9

Code	Issue	Response

Code	Comment Document

MAG Internal Truck Travel Survey and Truck Model Development Study

Figure 4.10 Daily Heavy-Truck Volumes – Phoenix Area



4-26 *Cambridge Systematics, Inc.*

EXHIBIT 10

Code	Issue	Response

Code	Comment Document

Table 9. Average Daily Traffic Volumes on Arterial Streets (without the Proposed Action), 2010 and 2035

Segment		Vehicles Per Day		
		2010	2035	Change (%)
Buckeye Road	35th Avenue to 27th Avenue	34,475	34,928	1.3
	51st Avenue to 43rd Avenue	34,654	34,141	–1.5
	83rd Avenue to 75th Avenue	28,002	33,625	20.1
Baseline Road	19th Avenue to 7th Avenue	26,168	46,575	78.0
	24th Street to 32nd Street	43,815	58,482	33.5
	40th Street to 48th Street	59,984	66,748	11.3
Chandler Boulevard	24th Street to 32nd Street	21,589	29,289	35.7
	40th Street to 48th Street	25,303	32,086	26.8
	48th Street to I-10	42,300	58,464	38.2
Pecos Road	32nd Street to 40th Street	21,211	18,955	–10.6
	Desert Foothills Parkway to 24th Street	10,759	9,634	–10.5
	17th Avenue to Desert Foothills Parkway	3,708	7,440	100.6

Source: Maricopa Association of Governments, 2010a, extrapolated analysis
Note: The 2035 road network includes all of the improvements from the RTP except the proposed action.

Operational Performance of Freeways in the MAG Region

The previous section concluded that traffic volumes would increase between 2010 and 2035 because of increases in capacity (additional lanes) and demand (additional VMT). This section presents the analytical results addressing how these changes in traffic volumes would affect system efficiency in terms of level of service (LOS). The analysis focuses on the region's freeway system and presents the duration of LOS E or F (congested conditions) as modeled by the MAG regional travel demand model. The duration of LOS E or F conditions is determined by comparing the ratio of the projected traffic volume to the capacity (2,030 vehicles per hour per lane) of the freeway segment as presented in Table 10. Figures 3 and 4 present the morning (AM) peak travel period results for 2010 and 2035, respectively. Figures 5 and 6 present the evening (PM) peak travel period results for 2010 and 2035, respectively.

Table 10. Duration LOS E or F as Volume-to-Capacity Ratio

Volume-to-Capacity Ratio	Duration LOS E or F
≤ 0.86	no congestion
> 0.86 to 1.01	less than 2 hours
> 1.01 to 1.06	from 2 to 3 hours
> 1.06	greater than 3 hours

Source: Maricopa Association of Governments, 2010a, extrapolated analysis

EXHIBIT 11

Code	Issue	Response

Code	Comment Document

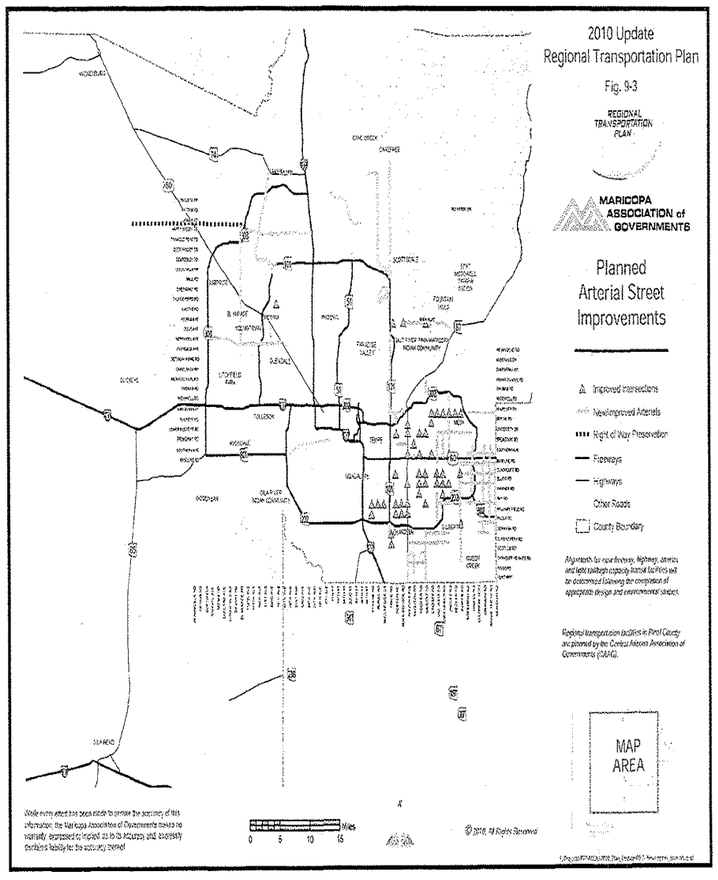


EXHIBIT 12

Code	Issue	Response

Code	Comment Document

REPORTS

Five

SWCA Comments on ADOT
South Mountain DEIS (April 2013)

Code	Issue	Response

Code	Comment Document

SWCA Comments on ADOT South Mountain Freeway Draft EIS (April 2013) Prepared for PARC et al.

ADEQUACY OF THE NEPA ANALYSIS

	Chapter	Section/Subsection	Page(s)	Resource Area	Comment
219	1	All	1-22	General NEPA – Purpose and Need	Chapter 1 of the DEIS, *Purpose and Need*, presents a lengthy and elaborate explanation of the need for the proposed freeway ("as recognized in over 25 years of transportation planning") based on Phoenix area growth rates from 1950 to the present day coupled with MAG growth projections to 2035. However, even if one accepts these future growth projections as reasonably accurate and that the "need" is real, there is nothing in the stated "purpose" to demonstrate why the proposed freeway remedy must be built within the selected Study Area and nowhere else. In short, other reasonable alternatives exist that could also fulfill the stated Purpose and Need, but these have been arbitrarily excluded from detailed analysis in violation of 40 CFR 1502.14. (Also see question/answer 2a of "Forty Most Asked Questions Concerning CEQ's NEPA Regulations": "In determining the scope of alternatives to be considered, the emphasis is on what is 'reasonable' rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.")
220	1	All	1-22	General NEPA – Study Area	NEPA requires that the EIS "Rigorously explore and objectively evaluate all reasonable alternatives [emphasis added]," including those "not within the jurisdiction of the lead agency" (40 CFR 1502.14(a) and (c)). In reviewing the April 2013 South Mountain Freeway (Loop 202) Draft Environmental Impact Statement and Section 4(f) Evaluation, we find no technical or scientific rationale or justification presented as to why the project Study Area comprises the precise area it does. Why is it declared to fall along these particular boundaries and not others? The impression is that these boundaries were drawn for political and procedural reasons to comport with MAG's and ADOT's previous planning efforts, rather than to allow a comprehensive, objective NEPA assessment. Specifically, this Study Area appears configured so as to exclude freeway alternatives further south or west (including potential alternatives in Pinal or Pima Counties), thus deliberately avoiding evaluation of other "reasonable alternatives" to the Pecos Road alignment.
221					Standard practice in preparing NEPA documents, per CEQ regulations at 40 CFR 1502.24 ("Methodology and Scientific Accuracy"), is to use, and to present to the public, the "best available" scientific and technical information. Moreover, in accordance with Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554; H.R. 5658), the federal Office of Management and Budget (OMB) issued Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies, which state they are "designed to help agencies ensure and maximize the quality, utility, objectivity and integrity of the information that they disseminate (meaning to share with, or give access to, the public)" and, furthermore, that "It is crucial that information Federal agencies disseminate meets these guidelines." (OMB 2002)
222	All	All	All	General NEPA – Omitted, Outdated, and Inaccurate Information Used as Basis for Impact Analysis and Public Comment	It is our assessment that ADOT has failed in the *South Mountain Freeway (Loop 202) Draft Environmental Impact Statement and Section 4(f) Evaluation* to present to the public the "best available" scientific and technical information. This is particularly true of the following resources and associated impact analyses. Air Quality: • The data presented in Figure 4-18 *Comparison of National Economic and Demographic Growth Indicators and Air Emissions, 1970-2005*, is outdated. The U.S. EPA website http://www.epa.gov/airtrends/aqtrends.html#comparison provides data through 2011. • The subsection fails to include a discussion of more recent ambient monitoring data for calendar years 2011 and 2012. The *MCAQD 2011 Air Monitoring Network Review* is readily available (http://www.maricopa.gov/aq/divisions/monitoring/docs/pdf/2011_Network_Assessment.pdf) and should have been employed in the analysis. Furthermore, the most recent available ambient monitoring data from 2012 should have been incorporated into the DEIS. These data are available at: http://www.epa.gov/airdata/. • Figure 4-20 *Nonattainment Areas for Particulate Matter, Carbon Monoxide, and Ozone, Maricopa County*, is not up-to-date.

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Code	Issue	Response
219	**Purpose and Need**	As discussed beginning on page 1-11 of the Draft Environmental Impact Statement, the proposed action is needed to serve projected growth in population and accompanying transportation demand and to correct existing and projected transportation system deficiencies. The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. As presented in text beginning on page 3-1 of the Draft Environmental Impact Statement, a comprehensive alternatives development and screening process was undertaken that represented an objective, defensible, and fully disclosed logical, sequential, step-by-step process using data and expertise from multiple disciplines applied to a comprehensive set of alternatives to establish the appropriate range of reasonable alternatives for detailed study in the Draft Environmental Impact Statement. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The Federal Highway Administration and the U.S. Environmental Protection Agency approved the air quality conformity determination that includes the Maricopa Association of Governments regional travel demand model that produced the traffic projections used in the traffic analysis for the project (see Final Environmental Impact Statement page 3-27). The model projects demand for multiple modes of travel, including automobile, bus, and light rail. Driving patterns and alternative modes of transportation are among the key model inputs used to forecast travel demand in the Study Area.
220	**Purpose and Need**	The parameters for delineation of the Study Area are described in Chapter 1, *Purpose and Need*, of the Draft and Final Environmental Impact Statements as the area defining the transportation problem. As presented in the chapter, transportation models were used to determine where the characteristics of the transportation problem would diminish, and, generally, it is at these locations where the definition of the Study Area took shape. This effort was coordinated with stakeholder agencies, including the U.S. Environmental Protection Agency. The statement that the project team excluded alternatives outside of the Study Area is not supported by the facts presented in the Draft Environmental Impact Statement. Alternatives considered in the Draft Environmental Impact Statement included many that were located outside of the Study Area. Examples include the Riggs Road Alternative (see page 3-9), the State Route 85/Interstate 8 Alternative (see page 3-9), the U.S. Route 60 Extension (see page 3-12), the Interstate 10 Spur (see page 3-12), and the Central Avenue Tunnel (see page 3-12).
221		Comment noted. Specific comments are addressed below.

(Response 222 begins on next page)

Code	Comment Document
223	SWCA Comments on ADOT South Mountain Freeway Draft EIS (April 2013) Prepared for PARC et al. While footnote "6" attempts to address an expansion to the 8-hour ozone nonattainment area, it does not include the Pinal County PM2.5 nonattainment area approximately 15 miles to the south of the project. An interactive GIS map available on ADEQ's website identifies the current nonattainment boundaries in the vicinity of the project http://gisweb.azdeq.gov/arcgis/emaps/?topic=nonattain • Figure 4-24 *Priority Mobile Source Air Toxics Emissions, 1999, On-road Versus Other Sources*, presents outdated information. More recent data should have been obtained from: http://www.epa.gov/ttn/chief/eiinformation.html • While we agree the EPA transportation guidance provided on December 20, 2010, established modeling guidance for performing transportation conformity along with a 2-year grace period. However, based upon the FHWA's *Information: Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA* released on December 6, 2012, states "At the end of this grace period, i.e., beginning December 20, 2012, project sponsors should use MOVES to conduct emissions analysis for NEPA purposes." http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm Noise: • Vibration from blasting is qualitatively discussed in the Topography, Geology, and Soils section of the DEIS; however, vibration from non-blasting construction activities and from operational impacts is not discussed anywhere within the DEIS. Procedures for screening and analyzing for vibrational impacts from construction and highway operation are provided in the U.S. Department of Transportation Federal Transit Administration "Transit Noise and Vibration Impact Assessment" (2006): http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf • The DEIS notes that "To further clarify the process of noise analysis and the evaluation of noise abatement, ADOT adopted a Noise Abatement Policy (NAP), last updated in 2007" (pg. 4-80). However, the most recently issued ADOT Noise Abatement Policy is dated July 13, 2011; it superseded the 2007 version cited in the DEIS. It does not appear that the DEIS utilized the most recent ADOT Noise Abatement Policy in the noise analysis. The latest copy is available here: http://www.azdot.gov/highways/EPG/EPG_Common/Documents_Technical_Noise.asp • The DEIS includes an incomplete review of the regulations regarding noise. The only regulations analyzed in the DEIS for noise impacts in any detail are those dealing with the Federal Highway Administration Noise Abatement Criteria (found in 23 CFR 772), and the ADOT Noise Abatement Plan dated 2007 (which isn't even the most up-to-date version). The following additional laws and guidelines could also impact the project: ○ Noise Control Act of 1972, as amended (PL 92-574, 42 USC 4901 et seq.); ○ The Quiet Communities Act of 1978 (42 USC 4913) promoting the development of state and local noise control programs; ○ U.S. Department of Transportation Federal Transit Administration (FTA) guidelines that specifically addresses issues of community noise (FTA-VA-90-1003-06); ○ Occupational Safety and Health Administration (OSHA) Occupational Noise Exposure, Hearing Conservation Amendment (Federal Register 48[46]:9738-9785); ○ U.S. Department of Housing and Urban Development (24 CFR 51.101(a)(8)); and ○ County, city, or local noise ordinances applicable to the project.
224	Water Resources: Analysis of water availability makes use of outdated and/or erroneous information, in two specific instances. • Water levels are referenced from 1992; more recent information is readily available from the Arizona Department of Water Resources (https://gisweb.azwater.gov/waterresourcedata/) • A feasibility study regarding water availability in the Ahwatukee Foothills area dated 1996 is relied upon to assess viable sources of replacement water for lost groundwater wells. Reliability on this report has resulted in erroneous information, as it indicates

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222	**Air Quality**	The data presented in Figure 4-18 of the Draft Environmental Impact Statement are included to demonstrate that emissions of criteria pollutants have decreased and continue to decrease. More recent data merely make a stronger case that these emissions have declined and do not change the conclusion. The monitoring data presented beginning on page 4-60 of the Draft Environmental Impact Statement demonstrate pollutant trends in the Study Area. More recent data merely make a stronger case that these emissions have declined and do not change the conclusion. Where information was deemed important to decision-making—for example, more recent trends in attainment status for various criteria pollutants—that information has been included. See for example the discussion on particulate matter that begins on page 4-61. Pinal County is not included in the Study Area and is, therefore, not discussed. All nonattainment areas presented in Figure 4-20 on page 4-61 of the Draft Environmental Impact Statement are current. As clarification, the title of Figure 4-20 was changed in the Final Environmental Impact Statement from "Nonattainment Areas for Particulate Matter, Carbon Monoxide, and Ozone, Maricopa County" to "Nonattainment and Maintenance Areas for Particulate Matter, Carbon Monoxide, and Ozone, Maricopa County." 40 Code of Federal Regulations § 93.111(c) was followed to conduct a qualitative analysis for particulate matter (PM_{10}) for the proposed action. This analysis complied with National Environmental Policy Act requirements for the development of the Draft Environmental Impact Statement. In December 2010, the U.S. Environmental Protection Agency established transportation conformity guidance for performing quantitative particulate matter ($PM_{2.5}$ and PM_{10}) hot-spot analyses for transportation projects and established a 2-year grace period. U.S. Environmental Protection Agency conformity guidance continues to allow qualitative particulate matter (PM_{10}) hot-spot conformity analyses for analyses that were started before or during the grace period and if the final environmental document for the project is issued no more than 3 years after issuance of the draft environmental document. A particulate matter (PM_{10}) qualitative analysis was performed for this project because the initial air quality technical analysis report for the proposed action was produced in October 2005. The Arizona Department of Transportation and Federal Highway Administration have updated the qualitative analysis to a quantitative analysis for the Final Environmental Impact Statement to ensure that a state-of-the-art analysis is completed for the proposed project. The results of the analysis are summarized in the prologue to the Final Environmental Impact Statement (page xiii) and are more fully described beginning on page 4-68 of the Final Environmental Impact Statement. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones. The mobile source air toxics discussion was also updated to reflect the Federal Highway Administration's 2012 guidance. This discussion begins on page 4-77 of the Final Environmental Impact Statement.
223	**Traffic**	There are no federal requirements directed specifically to highway traffic induced vibration. All studies the highway agencies have done to assess the impact of operational traffic induced vibrations have shown that both measured and predicted vibration levels are less than any known criteria for structural damage to buildings. The noise analysis was updated for the Final Environmental Impact Statement using most recent Federal Highway Administration and Arizona Department of

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225	SWCA Comments on ADOT South Mountain Freeway Draft EIS (April 2013) Prepared for PARC et al. that effluent is available as a source of water. The referenced effluent plant was removed in the late 1990s and is no longer a viable source of replacement water. Socioeconomics: • Growth projections should have cited 2012 Arizona Department of Administration (ADOA) estimates, rather than 2009 Maricopa Association of Governments (MAG) projections—the MAG data significantly overstates future growth compared to current ADOA projections. • DEIS assessments of real estate and homes values are based on 2006 data—i.e., data from before the recent recession and housing market downturn began. This is misleading. More current datasets are available and should have been presented and used for impact analysis in the DEIS. • Though ADOA projections and other recent data sources are preferable, at the very least ADOT could have consistently utilized readily available 2010 Census data rather than 2000 Census data (no explanation is given as to why this was not done). It is a great disservice to the general public and stakeholder groups for ADOT to present outdated and inaccurate data in the DEIS in its representation of environmental and social conditions around the proposed Loop 202 South Mountain Freeway. For most members of the public, the opportunity to comment on the Draft EIS is the only real chance they will have to voice their opinions and concerns. The impact analyses contained in the April 2013 DEIS are, in many cases, based on documents and data which are known to be inaccurate. If the inputs are flawed, the conclusions in the DEIS are likewise flawed. Thus, ADOT is presenting an EIS analysis that is not accurate, yet will likely be the only version of the document that the overwhelming majority of the public will ever have the opportunity—or ability—to comment on.
226	AIR QUALITY Ch. 4 — General Comment — - — Air Quality The DEIS discussion is incomplete or lacking in the following areas: • There is no discussion with regard to federally listed Class I areas. The Clean Air Act and its supporting regulations are intended to protect human health, our natural and man-made environments, and to preserve visibility of scenic vistas by preventing the degradation of air quality; • Provides no quantitative or qualitative discussion on air quality impact difference between the alternatives during construction (e.g., fugitive dust emissions during construction, emissions due to concrete batch or hot-mix asphalt plants, construction workforce and non-road equipment tailpipe emissions; • Provides no discussion with regard to potential air quality impacts due to ongoing maintenance activities (i.e., re-striping, re-surfacing, landscaping maintenance, etc.); • Provides no discussion of whether a carpooling lane will be included and the potential benefits impacts; and • Provides no clear discussion of cumulative impacts including reasonably foreseeable development. • It is unclear what vehicle traffic mix was used for the emission estimates/modeling. • It is unclear whether increases in heavy duty diesel traffic from the CANAMEX project and other truck traffic (such as commercial trucks having a haul load origin or destination in the Phoenix metro area) were included in this assessment. Ch. 4 — Figure 4-18 — 4-58 — Air Quality — The data presented in Figure 4-18 *Comparison of National Economic and Demographic Growth Indicators and Air Emissions, 1970-2005*, is outdated. The U.S. EPA website http://www.epa.gov/airtrends/aztrends.html#comparison provides data through 2011. Ch. 4 — Subsection - Criteria Pollutants — 4-58 thru 4-59 — Air Quality — While this section describes attainment and nonattainment areas it is completely silent on maintenance areas. This is important as the Study Area is located in a currently designated CO Maintenance Area. Ch. 4 — Table 4-27 — 4-59 — Air Quality — While the data provided within Table 4-27 National Ambient Air Quality Standards, is accurate and up-to-date, the actual 1-hour and annual standards for nitrogen dioxide should be listed in parts per billion (ppb). http://www.epa.gov/air/criteria.html 3

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223 (cont.)		Transportation policy and traffic projections provided by the Maricopa Association of Governments in August 2013. This updated analysis begins on page 4-88 of the Final Environmental Impact Statement. No substantial differences between the analyses presented in the Draft and the Final Environmental Impact Statements resulted. As stated in the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, environmental impact statements should be analytic rather than encyclopedic (40 Code of Federal Regulations Part 1502.2(a). Those noise regulations of direct consequence to the proposed action were discussed.
224	**Groundwater**	As noted on page 4-97 of the Draft Environmental Impact Statement, although groundwater level data in Ahwatukee Foothills Village were shown from 1972 to 1992, this information was gathered from the U.S. Geological Survey in 2009. Groundwater data in other areas may indeed be more current. This information would not alter the conclusions of this section of the Draft Environmental Impact Statement. The comment is correct that wastewater effluent is not available as a replacement source and is not being used. The City of Phoenix did operate a wastewater reclamation facility in this area, but it was removed from service and demolished. The City of Phoenix still owns the property, but all facilities have been removed from the site. Thus, only two water sources are available for irrigation and lake supply for the Foothills Community Association: the well that would be acquired and potable water from the City of Phoenix. The discussion on page 4-100 of the Draft Environmental Impact Statement has been modified in the Final Environmental Impact Statement to reflect that reclaimed wastewater would not be available; however, the conclusion on page 4-100 is still appropriate. As stated on page 4-100 of the Draft Environmental Impact Statement, "In the event that well replacement were to be impossible, Arizona Department of Transportation would still replace the water that would be lost through the acquisition."
225	**Purpose and Need**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future. The new projections were also used to update the air and noise analyses for the Final Environmental Impact Statement (see sections beginning on pages 4-68 and 4-88, respectively).

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					that effluent is available as a source of water. The referenced effluent plant was removed in the late 1990s and is no longer a viable source of replacement water. Socioeconomics: • Growth projections should have cited 2012 Arizona Department of Administration (ADOA) estimates, rather than 2009 Maricopa Association of Governments (MAG) projections—the MAG data significantly overstates future growth compared to current ADOA projections. • DEIS assessments of real estate and homes values are based on 2006 data—i.e., data from before the recent recession and housing market downturn began. This is misleading. More current datasets are available and should have been presented and used for impact analysis in the DEIS. • Though ADOA projections and other recent data sources are preferable, at the very least ADOT could have consistently utilized readily available 2010 Census data rather than 2000 Census data (no explanation is given as to why this was not done). It is a great disservice to the general public and stakeholder groups for ADOT to present outdated and inaccurate data in the DEIS in its representation of environmental and social conditions around the proposed Loop 202 South Mountain Freeway. For most members of the public, the opportunity to comment on the Draft EIS is the only real chance they will have to voice their opinions and concerns. The impact analyses contained in the April 2013 DEIS are, in many cases, based on documents and data which are known to be inaccurate. If the inputs are flawed, the conclusions in the DEIS are likewise flawed. Thus, ADOT is presenting an EIS analysis that is not accurate, yet will likely be the only version of the document that the overwhelming majority of the public will ever have the opportunity—or ability—to comment on.			
	AIR QUALITY				
	Ch. 4	General Comment	-	Air Quality	The DEIS discussion is incomplete or lacking in the following areas: • There is no discussion with regard to federally listed Class I areas. The Clean Air Act and its supporting regulations are intended to protect human health, our natural and man-made environments, and to preserve visibility of scenic vistas by preventing the degradation of air quality; • Provides no quantitative or qualitative discussion on air quality impact difference between the alternatives during construction (e.g., fugitive dust emissions during construction, emissions due to concrete batch or hot-mix asphalt plants, construction workforce and non-road equipment tailpipe emissions; • Provides no discussion with regard to potential air quality impacts due to ongoing maintenance activities (i.e., re-striping, re-surfacing, landscaping maintenance, etc.); • Provides no discussion of whether a carpooling lane will be included and the potential benefits impacts; and • Provides no clear discussion of cumulative impacts including reasonably foreseeable development. • It is unclear what vehicle traffic mix was used for the emission estimates/modeling. • It is unclear whether increases in heavy duty diesel traffic from the CANAMEX project and other truck traffic (such as commercial trucks having a haul load origin or destination in the Phoenix metro area) were included in this assessment.
225	Ch. 4	Figure 4-18	4-58	Air Quality	The data presented in Figure 4-18 *Comparison of National Economic and Demographic Growth Indicators and Air Emissions, 1970-2005*, is outdated. The U.S. EPA website http://www.epa.gov/airtrends/actrends.htmlfcomparison provides data through 2011.
227	Ch. 4	Subsection - Criteria Pollutants	4-58 thru 4-59	Air Quality	While this section describes attainment and nonattainment areas it is completely silent on maintenance areas. This is important as the Study Area is located in a currently designated CO Maintenance Area.
228	Ch. 4	Table 4-27	4-59	Air Quality	While the data provided within Table 4-27 National Ambient Air Quality Standards, is accurate and up-to-date, the actual 1-hour and annual standards for nitrogen dioxide should be listed in parts per billion (ppb). http://www.epa.gov/air/criteria.html

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226	**Air Quality**	Mobile sources are not regulated for impacts on visibility in Class 1 areas (40 Code of Federal Regulations § 51.307). Quantification of short-term impacts associated with construction or maintenance activities is not required; qualitative discussion may be found under *Mitigation* on page 4-85 of the Final Environmental Impact Statement. The proposed high-occupancy vehicle lane is discussed on page 3-19 of the Draft Environmental Impact Statement. Cumulative impacts are discussed on page 4-167 of the Draft Environmental Impact Statement. Vehicle traffic mix projections were provided by Maricopa Association of Governments and are consistent with the regional conformity analyses; they are discussed in greater detail in the air quality technical report prepared for the project. The results of the analyses are summarized in the Draft Environmental Impact Statement and have been updated in the Final Environmental Impact Statement. The air quality analysis has been updated for the Final Environmental Impact Statement using most recent Federal Highway Administration and U.S. Environmental Protection Agency guidance and traffic projections provided by the Maricopa Association of Governments in August 2013. This updated analysis begins on page 4-68 of the Final Environmental Impact Statement. No substantial differences between the analyses presented in the Draft and the Final Environmental Impact Statements resulted.
	Trucks	The Maricopa Association of Governments regional travel demand model forecasts approximately 10 percent truck traffic on the South Mountain Freeway in 2035 (see Final Environmental Impact Statement page 3-64). This percentage is similar to current conditions on Interstate 10 between Loop 101 and Interstate 17 and on U.S. Route 60. Air quality and noise modeling for the Draft and Final Environmental Impact Statements used this forecast truck traffic (see Final Environmental Impact Statement pages 4-68 and 4-100, respectively).
227	**Air Quality**	The maintenance area is discussed in the subsection, *Carbon Monoxide*, on page 4-59 Draft Environmental Impact Statement. As clarification, the title of Figure 4-20 was changed in the Final Environmental Impact Statement from "Nonattainment Areas for Particulate Matter, Carbon Monoxide, and Ozone, Maricopa County" to "Nonattainment and Maintenance Areas for Particulate Matter, Carbon Monoxide, and Ozone, Maricopa County."
228	**Air Quality**	According to the U.S. Environmental Protection Agency, the official level of the annual nitrogen dioxide standard is 0.053 parts per million. See footnote #2 (epa.gov/air/criteria.html).

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229	Ch. 4	Subsection – Characteristics of Criteria Pollutants	4-60 thru 4-62	Air Quality	The subsection fails to include a discussion of more recent ambient monitoring data for calendar years 2011 and 2012. For example: • According to Maricopa County Air Quality Department's *2011 Air Monitoring Network Review*, there were a total of 18 unique days when at least one monitor exceeded the ozone standard. There were 70 individual exceedances of the 8-hour standards at 14 different sites. For the year there was one violation of the 8-hour ozone standard. • In terms of PM10, there were 19 unique days when at least on a monitor exceeded the 24-hour standard and 11 sites that violated the 24-hour standard. It should be noted that some of these exceedances were petitioned to be classified as exceptional events; however, EPA approval of these requests can take over a year. • In addition, there were 9 unique days when at least one monitor exceeded the standard; however, there were no violations of the 24-hour or annual PM2.5 standards. The MCAQD *2011 Air Monitoring Network Review* should have been obtained from: http://www.maricopa.gov/aq/divisions/monitoring/docs/pdf/2011_Network_Assessment.pdf Furthermore, the most recent available ambient monitoring data from 2012 should have been incorporated into the DEIS and is available at: http://www.epa.gov/airdata/
230	Ch. 4	Figure 4-20	4-61	Air Quality	Figure 4-20 *Nonattainment Areas for Particulate Matter, Carbon Monoxide, and Ozone, Maricopa County*, is not up-to-date. While footnote "b" attempts to address an expansion to the 8-hour ozone nonattainment area further to the south, Figure 4-20 does not include the Pinal County PM2.5 nonattainment area approximately 15 miles to the south of the project. An interactive GIS map is available on ADEQ's website identifies the current nonattainment boundaries in the vicinity of the project http://azisweb.azdeq.gov/arcgis/emaps/?topic=nonattain
231	Ch. 4	Figure 4-23	4-62	Air Quality	It is unclear what time period (i.e., year) is being presented in Figure 4-23 *Sources of the 188 Hazardous Air Pollutants Regulated by the Environmental Protection Agency*. Data from 2008 should have been obtained from: http://www.epa.gov/ttn/chief/eiinformation.html
232	Ch. 4	Figure 4-24	4-62	Air Quality	Figure 4-24 *Priority Mobile Source Air Toxics Emissions, 1999, On-road Versus Other Sources*, presents outdated information. More recent data from 2008 should have been obtained from: http://www.epa.gov/ttn/chief/eiinformation.html
233	Ch. 4	Local Emissions of Priority MSATs	4-64	Air Quality	The DEIS fails to discuss the findings of Joint Air Toxics Assessment Project (JATAP) which occurred within the DEIS Air Quality Study Area. According to data collected during the Pilot Study (March 2003 – March 2004), annual average concentrations of formaldehyde, acetaldehyde, benzene and 1,3 butadiene were on the high end of the range when compared to EPA funded assessment of other U.S. cities.
234	Ch. 4	Table 4-30	4-65	Air Quality	It is unclear as what year is being represented in Table 4-30 *Priority Mobile Source Air Toxic Emissions, South Phoenix*. Data from 2008 should have been obtained from: http://www.epa.gov/ttn/chief/eiinformation.html
	Ch. 4	Environmental Consequences – CO	4-65	Air Quality	The EPA transportation guidance provided on December 20, 2010, established modeling guidance for performing transportation conformity and under certain circumstances allows for a 2-year grace period. However, based upon the FHWA's *Information: Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA* released on December 6, 2012, states "At the end of this grace period, i.e., beginning December 20, 2012, project sponsors should use MOVES to conduct emissions analysis for NEPA purposes." Therefore, in accordance with FWHA guidance the CO analysis presented in the DEIS should have been updated using MOVES2010, which is the current EPA/FHWA approved model.
	Ch. 4	Environmental Consequences – CO	4-65	Air Quality	It is unclear whether the maximum projected 1-hour and 8-hour CO concentrations at intersections/interchanges reported on Table 4-31 and 4-32 include background concentrations or existing permitted stationary sources in the study area.
	Ch. 4	Environmental Consequences – Ozone	4-65	Air Quality	The DEIS lacks discussion of potential impacts with regard to ozone on a quantitative or even a qualitative level. While we agree that O3 is a regional pollutant, just because another agency is responsible for the developing plans to reduce emissions of O3 precursors does not mean that potential impacts due to ozone should have been discounted.
	Ch. 4	Environmental	4-65	Air Quality	The EPA transportation guidance provided on December 20, 2010, established modeling guidance for performing transportation

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Code	Issue	Response
229	**Air Quality**	The carbon monoxide analysis presented on page 4-65 of the Draft Environmental Impact Statement was updated on page 4-75 of the Final Environmental Impact Statement to represent current conditions. The Arizona Department of Transportation also conducted a quantitative particulate matter (PM_{10}) hot-spot analysis that is discussed on page 4-76 of the Final Environmental Impact Statement. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones. As noted on page 4-76 of the Final Environmental Impact Statement, since ozone is a regional pollutant, there is no requirement to analyze potential impacts and no possibility of localized violations of ozone to occur at the project level. The Maricopa Association of Governments is responsible for developing plans to reduce emissions of ozone precursors in the Maricopa area. The Preferred Alternative is included in the *Regional Transportation Plan* that has been determined by the U.S. Department of Transportation to conform to the State Implementation Plan on February 12, 2014.
230	**Air Quality**	Pinal County is not included in the Study Area and is, therefore, not discussed. All nonattainment areas presented in Figure 4-20 on page 4-61 of the Draft Environmental Impact Statement are current. As clarification, the title of Figure 4-20 was changed in the Final Environmental Impact Statement from "Nonattainment Areas for Particulate Matter, Carbon Monoxide, and Ozone, Maricopa County" to "Nonattainment and Maintenance Areas for Particulate Matter, Carbon Monoxide, and Ozone, Maricopa County."
231	**Air Quality**	As noted in the footnote reference to Figure 4-23, the information was based on the Federal Highway Administration publication, Transportation Air Quality Facts and Figures, January 2006. The data referenced were from 1999. This figure was removed from the Final Environmental Impact Statement.
232	**Air Quality**	As noted in the footnote reference to Figure 4-23, the information was based on the Federal Highway Administration publication, Transportation Air Quality Facts and Figures, January 2006. This figure was removed from the Final Environmental Impact Statement.
233	**Air Quality**	Summary information about the findings of the Joint Air Toxics Assessment Project study is provided as background information in the Draft and Final Environmental Impact Statements, but the study itself is not relevant to the type of analysis done pursuant to the Federal Highway Administration's mobile source air toxics guidance, which is an emissions analysis. Monitored ambient concentrations of mobile source air toxics (the focus of the Joint Air Toxics Assessment Project) do not inform this type of analysis. While monitoring data can be useful for defining current conditions in the affected environment (to the extent that the monitoring data are current), they don't tell us anything about future conditions, or the impacts of the project itself, which is why an emissions analysis was performed. The mobile source air toxic analysis presented beginning on page 4-77 of the Final Environmental Impact Statement is an estimated inventory of mobile source air toxic emissions for the entire Study Area for 2025 and 2035. This approach was used because the inventory estimate accounts for changes in traffic and emissions on all roadways affected by a proposed project, and would, therefore, be a more reliable predictor of changes in exposure to mobile source air toxics.

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	Ch. 4	Subsection – Characteristics of Criteria Pollutants	4-60 thru 4-62	Air Quality	The subsection fails to include a discussion of more recent ambient monitoring data for calendar years 2011 and 2012. For example: • According to Maricopa County Air Quality Department's *2011 Air Monitoring Network Review*, there were a total of 18 unique days when at least one monitor exceeded the ozone standard. There were 70 individual exceedances of the 8-hour standards at 14 different sites. For the year there was one violation of the 8-hour ozone standard. • In terms of PM10, there were 19 unique days when at least one monitor exceeded the 24-hour standard and 11 sites that violated the 24-hour standard. It should be noted that some of these exceedances were petitioned to be classified as exceptional events; however, EPA approval of these requests can take over a year. • In addition, there were 9 unique days when at least one monitor exceeded the standard; however, there were no violations of the 24-hour or annual PM2.5 standards. The MCAQD *2011 Air Monitoring Network Review* should have been obtained from: http://www.maricopa.gov/aq/divisions/monitoring/docs/pdf/2011_Network_Assessment.pdf Furthermore, the most recent available ambient monitoring data from 2012 should have been incorporated into the DEIS and is available at: http://www.epa.gov/airdata/
	Ch. 4	Figure 4-20	4-61	Air Quality	Figure 4-20 *Nonattainment Areas for Particulate Matter, Carbon Monoxide, and Ozone, Maricopa County*, is not up-to-date. While footnote "b" attempts to address an expansion to the 8-hour ozone nonattainment area further to the south, Figure 4-20 does not include the Pinal County PM2.5 nonattainment area approximately 15 miles to the south of the project. An interactive GIS map is available on ADEQ's website identifies the current nonattainment boundaries in the vicinity of the project http://azsweb.azdeq.gov/azsdq/
	Ch. 4	Figure 4-23	4-62	Air Quality	It is unclear what time period (i.e., year) is being presented in Figure 4-23 *Sources of the 188 Hazardous Air Pollutants Regulated by the Environmental Protection Agency*. Data from 2008 should have been obtained from: http://www.epa.gov/ttn/chief/eiinformation.html
	Ch. 4	Figure 4-24	4-62	Air Quality	Figure 4-24 *Priority Mobile Source Air Toxics Emissions, 1999, On-road Versus Other Sources*, presents outdated information. More recent data from 2008 should have been obtained from: http://www.epa.gov/ttn/chief/eiinformation.html
	Ch. 4	Local Emissions of Priority MSATs	4-64	Air Quality	The DEIS fails to discuss the findings of Joint Air Toxics Assessment Project (JATAP) which occurred within the DEIS Air Quality Study Area. According to data collected during the Pilot Study (March 2003 – March 2004), annual average concentrations of formaldehyde, acetaldehyde, benzene and 1,3 butadiene were on the high end of the range when compared to EPA funded assessment of other U.S. cities.
	Ch. 4	Table 4-30	4-65	Air Quality	It is unclear as what year is being represented in Table 4-30 *Priority Mobile Source Air Toxic Emissions, South Phoenix*. Data from 2008 should have been obtained from: http://www.epa.gov/ttn/chief/eiinformation.html
235	**Ch. 4**	**Environmental Consequences – CO**	**4-65**	**Air Quality**	**The EPA transportation guidance provided on December 20, 2010, established modeling guidance for performing transportation conformity and under certain circumstances allows for a 2-year grace period. However, based upon the FHWA's *Information: Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA* released on December 6, 2012, states "At the end of this grace period, i.e., beginning December 20, 2012, project sponsors should use MOVES to conduct emissions analysis for NEPA purposes." Therefore, in accordance with FWHA guidance the CO analysis presented in the DEIS should have been updated using MOVES2010, which is the current EPA/FHWA approved model.**
236	**Ch. 4**	**Environmental Consequences – CO**	**4-65**	**Air Quality**	**It is unclear whether the maximum projected 1-hour and 8-hour CO concentrations at intersections/interchanges reported on Table 4-31 and 4-32 include background concentrations or existing permitted stationary sources in the study area.**
237	**Ch. 4**	**Environmental Consequences – Ozone**	**4-65**	**Air Quality**	**The DEIS lacks discussion of potential impacts with regard to ozone on a quantitative or even a qualitative level. While we agree that O3 is a regional pollutant, just because another agency is responsible for the developing plans to reduce emissions of O3 precursors does not mean that potential impacts due to ozone should have been discounted.**
235	**Ch. 4**	**Environmental**	**4-65**	**Air Quality**	**The EPA transportation guidance provided on December 20, 2010, established modeling guidance for performing transportation**

Code	Issue	Response
234	**Air Quality**	The footnote to Figure 4-30 on page 4-65 of the Draft Environmental Impact Statement references data from the 2004 Joint Air Toxics Assessment Project. These data are from 2003–2004.
235	**Air Quality**	40 Code of Federal Regulations § 93.111(c) was followed to conduct a qualitative analysis for particulate matter (PM_{10}) for the proposed action. This analysis complied with National Environmental Policy Act requirements for the development of the Draft Environmental Impact Statement. In December 2010, the U.S. Environmental Protection Agency established transportation conformity guidance for performing quantitative particulate matter ($PM_{2.5}$ and PM_{10}) hot-spot analyses for transportation projects and established a 2-year grace period. U.S. Environmental Protection Agency conformity guidance continues to allow qualitative particulate matter (PM_{10}) hot-spot conformity analyses for analyses that were started before or during the grace period and if the final environmental document for the project is issued no more than 3 years after issuance of the draft environmental document. A particulate matter (PM_{10}) qualitative analysis was performed for this project because the initial air quality technical analysis report for the proposed action was produced in October 2005. The Arizona Department of Transportation and Federal Highway Administration have updated the qualitative analysis to a quantitative analysis for the Final Environmental Impact Statement to ensure that a state-of-the-art analysis is completed for the proposed project. The results of the analysis are summarized in the prologue to the Final Environmental Impact Statement (page xiii) and are more fully described beginning on page 4-68 of the Final Environmental Impact Statement. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones.
236	**Air Quality**	The modeling protocols area is discussed in greater detail in the air quality technical report prepared for the project. The results of the analyses are summarized in the Draft Environmental Impact Statement. The carbon monoxide analyses used a background value of 2 parts per million. This has been updated in the Final Environmental Impact Statement (see page 4-75).
237	**Air Quality**	As noted on page 4-76 of the Final Environmental Impact Statement, since ozone is a regional pollutant, there is no requirement to analyze potential impacts and no possibility of localized violations of ozone to occur at the project level. The Maricopa Association of Governments is responsible for developing plans to reduce emissions of ozone precursors in the Maricopa area. The Preferred Alternative is included in the *Regional Transportation Plan* that has been determined by the U.S. Department of Transportation to conform to the State Implementation Plan on February 12, 2014.

Code	Comment Document			
				conformity along with a 2-year grace period. However, based upon the FHWA's *Information: Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA* released on December 6, 2012, states "At the end of this grace period, i.e., beginning December 20, 2012, project sponsors should use MOVES to conduct emissions analysis for NEPA purposes." http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm The December 20, 2010 FR notice (Vol. 75, No. 243) specifies "that any quantitative PM hot-spot analyses conducted during the grace period must use MOVES1010a, since MOBILE6.2 does not have the capabilities to produce viable results for project-level PM emissions analysis and is therefore not appropriate for this purpose." Therefore, in accordance with FWHA guidance the PM analysis presented in the DEIS should have used MOVES2010, which is the current EPA/FHWA approved model.
238	Ch. 4	Environmental Consequences – Particulate Matter	4-65	Air Quality
239	Ch. 4	Environmental Consequences – Particulate Matter	4-65	Air Quality
240	Ch. 4	Environmental Consequences – Particulate Matter	4-65	Air Quality
238	Ch. 4	Mobile Source Air Toxics – Emissions Model	4-70	Air Quality
241	Ch. 4	Mobile Source Air Toxics – Emissions Model	4-70	Air Quality
242	Ch. 4	Figure 4-28	4-71	Air Quality
243	Ch. 4	Table 4-34	4-72	Air Quality
238				

The FHWA guidance specifies "the implications of MOVES on MSAT emissions estimates compared to MOBILE are" lower estimates of total MSAT emissions; significantly lower benzene emissions; significantly higher diesel PM emissions, especially for lower speeds. Consequently, diesel PM is projected to be the dominate component of the emissions totals."

Therefore, in accordance with FWHA guidance the MSAT analysis presented in the DEIS should have used MOVES2010, which is the current EPA/FHWA approved model.

Was a formal interagency consultation process conducted to determine whether the current qualitative analysis is adequate for the purpose of full disclosure of potential PM10 and PM2.5 impacts associated with the action alternatives?

The analysis fails to address impacts of PM2.5. This is a significant flaw as the project is within approximately 15 miles of the Pinal County PM2.5 nonattainment area.

The DEIS states "The implications of MOVES related to MSAT emissions estimates compared with MOBILE as used in this analysis are lower estimated of total MSAT emissions; and significantly lower benzene emissions; significantly higher DPM emissions, especially for lower speeds."

Therefore, in accordance with FWHA guidance the MSAT analysis presented in the DEIS should have used MOVES2010, which is the current EPA/FHWA approved model.

MSAT emissions and impacts during construction of proposed action and the alternatives are lacking. Furthermore, it is unclear whether morning and afternoon rush hour short-term emissions were included in the modeling?

It is unclear what type of vehicle is being represented by this graph (i.e., gasoline passenger vehicle, diesel passenger vehicle, heavy-duty diesel truck, etc.). The DEIS should be updated to clarify what type vehicle this represents and provide a comparison to the other vehicle classes.

It is unclear in both ADOT's *Environmental Planning Group Draft Report Air Quality Assessment South Mountain Freeway SR 202L* dated March 1, 2013 and the DEIS what is the breakdown of VMT for light duty/ heavy duty gasoline and diesel vehicles under the various alternatives?

The assessment and DEIS should have clearly specified the vehicle mix. As stated in the DIES "The implications of MOVES related to MSAT emissions estimates compared with MOBILE as used in this analysis are lower estimated of total MSAT emissions; and significantly lower benzene emissions; significantly higher DPM emissions, especially for lower speeds."

Therefore, in accordance with FWHA guidance the MSAT analysis presented in the DEIS should have used MOVES2010, which is the current EPA/FHWA approved model.

Code	Issue	Response
238	Air Quality	As noted on page 4-70 of the Draft Environmental Impact Statement, MOBILE6.2 was used to project emissions at a regional level consistent with 40 Code of Federal Regulations Part 93.111(c), since the mobile source air toxics analysis for the proposed action started before or during the grace period for using the MOVES2010 emissions model. However, the mobile source air toxics analysis presented on page 4-70 of the Draft Environmental Impact Statement was updated on page 4-77 of the Final Environmental Impact Statement using the MOVES2010 model.
239	Air Quality	The air quality analysis parameters were determined through the process established by the Arizona Department of Transportation interagency consultation procedures [40 Code of Federal Regulations § 93.105(c)(1) (i)].
240	Air Quality	Maricopa County is in attainment for the particulate matter ($PM_{2.5}$) National Ambient Air Quality Standard; the Pinal County particulate matter ($PM_{2.5}$) nonattainment area is not included in the Study Area.
241	Air Quality	The Arizona Department of Transportation is evaluating construction delivery methods for the proposed freeway. One concept is to deliver it as a single design-build project. This method would accelerate the construction duration for the entire project to around 3 to 3.5 years. Another concept would be to deliver the project in a more traditional method, breaking the 22-mile corridor into nine segments (each 1 to 3 miles long) and constructing them in phases. Each segment would be under construction for 1 to 3 years, and the total construction duration for the entire corridor would be 5 to 6 years. A discussion of construction implementation is provided beginning on page 3-59 of the Final Environmental Impact Statement. Any particular area of the Preferred Alternative would not be expected to see construction activities beyond an approximate 2-year period. The mobile source air toxics analyses as presented in the Draft Environmental Impact Statement were based on average daily traffic volumes over a 1-year period. However, a quantitative project-level particulate matter (PM_{10}) hot-spot analysis has been prepared for the proposed project. The results of the analysis are summarized in the prologue to the Final Environmental Impact Statement (page xiii) and are more fully described beginning on page 4-68 of the Final Environmental Impact Statement. For this analysis, emission factors were generated for the morning peak, midday hours, afternoon peak, and overnight. Particulate matter (PM_{10}) emissions were modeled incorporating operating conditions included in the U.S. Environmental Protection Agency's *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas*, publication number EPA-420-B-13-053, dated November 2013. The development of the particulate matter (PM_{10}) hot-spot modeling protocol for this analysis used a formal interagency consultation process.
242	Air Quality	The data presented were based on the U.S. Environmental Protection Agency's MOBILE6.2 national defaults, including the national default vehicle fleet mix.
243	Air Quality	Vehicle traffic mix projections were provided by the Maricopa Association of Governments.

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Code	Comment Document				
244	Ch. 4	Table 4-34	4-72	Air Quality	ADOT's Environmental Planning Group Draft Report Air Quality Assessment South Mountain Freeway SR 202L dated March 1, 2013, which is the basis for the modeled impact results presented in the DEIS, does not account for increases in heavy duty diesel vehicles from the CANAMEX project and/or Phoenix-area origination and destination traffic, as "Average daily traffic volumes are projected to range from approximately 60,000 to over 200,000; heavy-truck traffic is expected to account for approximately 5-7% of the volume (MAG, 2010b)." The potential increases to heavy-truck traffic could result in significant increases to criteria pollutant and MSAT emissions, and vehicles originating from outside of the United States may not have the same level of emission controls or diesel fuel standards. In addition, it is unclear whether the potential increases to heavy-truck traffic were considered based on the natural bypass potential of the project. The DEIS should have accounted for all increases in heavy-duty diesel vehicle traffic from the CANAMEX project, Phoenix-area origination and destination traffic, as well as considered additional increases due to the natural bypass potential of the project.
245	Ch. 4	MSAT Information Status	4-74	Air Quality	The DEIS fails to discuss studies conducted in support of Joint Air Toxics Assessment Project (JATAP), which included air toxic measurements, numerical modeling, exposure modeling and risk assessment for the metropolitan Phoenix area. The DEIS should have included a discussion on these studies and should have be obtained from the *Phoenix, Arizona Air Toxics Assessment – Final Comprehensive Report* dated September 2011 and available at: http://www.epa.gov/ttnamti1/files/2003/2004csatam/CSATAMJATAPFR30Sep11.pdf
246	Ch. 4	MSAT Information Status	4-74	Air Quality	The DEIS fails to discuss the "Mobile Source Air Toxics (MSATs) at Three Schools Next to US 95 in Las Vegas, Nevada" (May 2010). This report was prepared for the Nevada Department of Transportation and provides a discussion on the: 1) indoor and outdoor concentrations of MSATs to which students are exposed at the three schools near US 95; 2) the influence of US 95 vehicle traffic on MSAT concentrations at the three schools, both before and after the November 2007 freeway expansion; and 3) the effectiveness and MSAT removal efficiencies of HVAC/filtration systems before and after modified air filtration systems were installed at each school. The DEIS should have included a discussion of this study as it provides a potential mitigation strategy for reducing MSAT exposure at schools.
	Ch. 4	No-Action Alternative	4-76	Air Quality	The DEIS states "MSATs emissions for the entire regional Study Area would decline regardless of whether the proposed action were constructed." Does this statement consider increases to heavy-truck traffic associated with trucks bypassing the Phoenix downtown area as well as those from the CANAMEX project, and from Phoenix-area origination and destination traffic? Therefore, in accordance with FWHA guidance the MSAT analysis presented in the DEIS should have used MOVES2010, which is the current EPA/FHWA approved model, and should have included the projected increases in heavy truck traffic.
	Ch. 4	No-Action Alternative	4-76	Conformity	Neither the DEIS or the supporting technical report provides the conformity determination (i.e., the conformity analysis demonstrating the project conforms).
	NOISE				
	Ch. 4	General Comment	-	Noise	The DEIS discussion is incomplete or lacking in the following areas: • Provides no discussion with regard to potential noise impacts due to ongoing maintenance activities (i.e., re-striping, re-surfacing, landscaping maintenance, etc.); • Provides no clear discussion of cumulative impacts including reasonably foreseeable development; and • It is unclear what vehicle traffic mix was used for the noise modeling

Code	Issue	Response
244	**Air Quality**	The Mexico to Canada route (commonly referred to as the CANAMEX route) is described in detail on page 3-64 of the Draft Environmental Impact Statement. The locally preferred route includes Interstate 8 and State Route 85 to bypass the Phoenix metropolitan area. State Route 85 is currently being reconstructed as a four-lane, divided highway with limited-access control, and Interstate 8 is a four-lane, divided Interstate freeway with full access control. Existing signs at each terminus designate the route as a truck bypass of metropolitan Phoenix. This route would continue to be available for interstate and interregional travel. Trucks crossing from Mexico to Arizona are restricted to the commercial zones within 25 miles of the border. The Federal Motor Carrier Safety Administration is administering a United States-Mexico cross-border, long-haul trucking pilot program. The program tests and demonstrates the ability of Mexico-based motor carriers to operate safely in the United States beyond the municipalities and commercial zones along the United States-Mexico border (see <fmcsa.dot.gov/intl-programs/trucking/trucking-program.aspx>). Petróleos Mexicanos (better known as Pemex), the Mexican state-owned petroleum company, has guaranteed 15 parts per million in its sulfur diesel fuel in the border region (see <http://transportpolicy.net/index.php?title=Mexico:_Fuels:_Diesel_and_Gasoline>). All air quality analyses included projected truck traffic Provided by the Maricopa Association of Governments.
245	**Air Quality**	Summary information about the findings of the Joint Air Toxics Assessment Project study is provided as background information in the Draft and Final Environmental Impact Statements, but the study itself is not relevant to the type of analysis done pursuant to the Federal Highway Administration's mobile source air toxics guidance, which is an emissions analysis. Monitored ambient concentrations of mobile source air toxics (the focus of the Joint Air Toxics Assessment Project) do not inform this type of analysis. While monitoring data can be useful for defining current conditions in the affected environment (to the extent that the monitoring data are current), they don't tell us anything about future conditions, or the impacts of the project itself, which is why an emissions analysis was performed. The mobile source air toxic analysis presented beginning on page 4-77 of the Final Environmental Impact Statement is an estimated inventory of mobile source air toxic emissions for the entire Study Area for 2025 and 2035. This approach was used because the inventory estimate accounts for changes in traffic and emissions on all roadways affected by a proposed project, and would, therefore, be a more reliable predictor of changes in exposure to mobile source air toxics.
246	**Air Quality**	The National Near Roadway Mobile Source Air Toxic Study is discussed on page 4-74 of the Draft Environmental Impact Statement, but not in great detail. As stated in the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, environmental impact statements should be analytic rather than encyclopedic [40 Code of Federal Regulations Part 1502.2(a)]. The mobile source air toxics emissions information presented in the Draft and Final Environmental Impact Statements demonstrates mobile source air toxics emissions at the study area level would be much lower in the future. The U.S. Environmental Protection Agency's MOVES model also predicts lower mobile source air toxics emissions in the future. Therefore, there is no basis for the assumption that mitigation would be needed.

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	Ch. 4	Table 4-34	4-72	Air Quality	ADOT's Environmental Planning Group Draft Report Air Quality Assessment South Mountain Freeway SR 202L dated March 1, 2013, which is the basis for the modeled impact results presented in the DEIS, does not account for increases in heavy duty diesel vehicles from the CANAMEX project and/or Phoenix-area origination and destination traffic, as "Average daily traffic volumes are projected to range from approximately 60,000 to over 200,000; heavy-truck traffic is expected to account for approximately 5–7% of the volume (MAG, 2010b)." The potential increases to heavy-truck traffic could result in significant increases to criteria pollutant and MSAT emissions, and vehicles originating from outside of the United States may not have the same level of emission controls or diesel fuel standards. In addition, it is unclear whether the potential increases to heavy-truck traffic were considered based on the natural bypass potential of the project. The DEIS should have accounted for all increases in heavy-duty diesel vehicle traffic from the CANAMEX project, Phoenix-area origination and destination traffic, as well as considered additional increases due to the natural bypass potential of the project.
	Ch. 4	MSAT Information Status	4-74	Air Quality	The DEIS fails to discuss studies conducted in support of Joint Air Toxics Assessment Project (JATAP), which included air toxic measurements, numerical modeling, exposure modeling and risk assessment for the metropolitan Phoenix area. The DEIS should have included a discussion on these studies and should have be obtained from the *Phoenix, Arizona Air Toxics Assessment – Final Comprehensive Report* dated September 2011 and available at: http://www.epa.gov/ttnamti1/files/20032004csatam/CSATAMIATAPFR30Sep11.pdf
	Ch. 4	MSAT Information Status	4-74	Air Quality	The DEIS fails to discuss the "Mobile Source Air Toxics (MSATs) at Three Schools Next to US 95 in Las Vegas, Nevada" (May 2010). This report was prepared for the Nevada Department of Transportation and provides a discussion on the: 1) indoor and outdoor concentrations of MSATs to which students are exposed at the three schools near US 95; 2) the influence of US 95 vehicle traffic on MSAT concentrations at the three schools, both before and after the November 2007 freeway expansion; and 3) the effectiveness and MSAT removal efficiencies of HVAC/filtration systems before and after modified air filtration systems were installed at each school. The DEIS should have included a discussion of this study as it provides a potential mitigation strategy for reducing MSAT exposure at schools.
247	Ch. 4	No-Action Alternative	4-76	Air Quality	The DEIS states "MSATs emissions for the entire regional Study Area would decline regardless of whether the proposed action were constructed." Does this statement consider increases to heavy-truck traffic associated with trucks bypassing the Phoenix downtown area as well as those from the CANAMEX project, and from Phoenix-area origination and destination traffic? Therefore, in accordance with FWHA guidance the MSAT analysis presented in the DEIS should have used MOVES2010, which is the current EPA/FHWA approved model, and should have included the projected increases in heavy truck traffic.
248	Ch. 4	No-Action Alternative	4-76	Conformity	Neither the DEIS or the supporting technical report provides the conformity determination (i.e., the conformity analysis demonstrating the project conforms).
	NOISE				
249	Ch. 4	General Comment	-	Noise	The DEIS discussion is incomplete or lacking in the following areas: • Provides no discussion with regard to potential noise impacts due to ongoing maintenance activities (i.e., re-striping, re-surfacing, landscaping maintenance, etc.); • Provides no clear discussion of cumulative impacts including reasonably foreseeable development; and • It is unclear what vehicle traffic mix was used for the noise modeling.

Code	Issue	Response
247	**Trucks**	Vehicle traffic mix projections were provided by the Maricopa Association of Governments and are consistent with the regional conformity analyses; they are discussed in greater detail in the air quality technical report prepared for the project. As noted on page 4-70 of the Draft Environmental Impact Statement, MOBILE6.2 was used to project emissions at a regional level consistent with 40 Code of Federal Regulations Part 93.111(c), since the mobile source air toxics analysis for the proposed action started before or during the grace period for using the MOVES2010 emissions model. However, the mobile source air toxics analysis presented on page 4-70 of the Draft Environmental Impact Statement was updated on page 4-77 of the Final Environmental Impact Statement using the MOVES2010 model.
248	**Air Quality**	As stated on page 4-76 of the Draft Environmental Impact Statement, the proposed action is contained within the currently approved *Regional Transportation Plan* and the Maricopa Association of Government's Fiscal Year 2011–2015 TIP contains several references to the South Mountain Freeway project. Therefore, the proposed action would conform to the approved transportation plan and transportation improvement program. The carbon monoxide and particulate analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones.
249	**Noise**	Analysis of noise impacts associated with maintenance activities are not required by Arizona Department of Transportation and Federal Highway Administration policy. Cumulative noise impacts are addressed on page 4-176 of the Draft Environmental Impact Statement. Vehicle traffic mix projections were provided by the Maricopa Association of Governments and are consistent with the regional conformity analyses; they are discussed in greater detail in the noise technical report prepared for the project.

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250	Ch. 4	Noise Criteria	4-30	Noise	The DEIS notes that "To further clarify the process of noise analysis and the evaluation of noise abatement, ADOT adopted a Noise Abatement Policy (NAP), last updated in 2007" (4-80). However, the most recently issued ADOT Noise Abatement Policy is dated July 13, 2011, which superseded the 2007 version cited in the DEIS. It does not appear that the DEIS utilized the most recent ADOT Noise Abatement Policy in the noise analysis.
251	Ch. 4	Noise Criteria	4-80	Noise	The DEIS includes an incomplete review of the regulations regarding noise. The only regulations analyzed in the DEIS for noise impacts in any detail are those dealing with the Federal Highway Administration Noise Abatement Criteria (found in 23 CFR 772), and the ADOT Noise Abatement Plan dated 2007 (which isn't even the most up-to-date version). The following additional laws and guidelines could impact the project: • Noise Control Act of 1972, as amended (PL 92-574, 42 USC 4901 et seq.); • The Quiet Communities Act of 1978 (42 USC 4913) promoting the development of state and local noise control programs; • U.S. Department of Transportation Federal Transit Administration (FTA) has published a guideline that specifically addresses issues of community noise (FTA-VA-90-1003-06); • Occupational Safety and Health Administration (OSHA) Occupational Noise Exposure, Hearing Conservation Amendment (Federal Register 48[46]:9738-9785); • U.S. Department of Housing and Urban Development (24 CFR 51.101(a)(8)); and • County, city, or local noise ordinances applicable to the project.
252	Ch. 4	Table 4-40 – Noise Analysis Results, Western and Eastern Sections	4-84	Noise	It appears that not all sensitive receptors that could be impacted by noise from the project were identified and impacts predicted for, only the ones closest to the project were analyzed. For example, multiple schools located within approximately 0.5 mi of the project or alternatives that could be impacted were not evaluated, such as the following: • Kyrene de la Estrella; • Kyrene del Milenio; • Kyrene de la Sierra; • Desert Vista High School; • Keystone Montessori; • Horizon Community Learning Center; • St. John Bosco Interparish Catholic School; • Betty Fairfax High School; • Cheatham Elementary School; • Country Gardens Charter School; • Summit School of Ahwatukee; and • Sunridge Elementary School.
253	Ch. 4	Construction Noise Inset	4-89	Noise	Both the DEIS and the accompanying Noise Report use as a proxy for noise-related construction impacts from the project "measurements" from "a freeway construction project in Arizona that assessed the collective impact of construction noise" (p. 4-89 in the DEIS and p. 3-17 of the Noise Report) However, the specific freeway construction project was not mentioned; therefore, the comparability of these measurements to the proposed project is questionable and cannot be ascertained from the data provided.
254	Ch. 4	Mitigation for Vibration-related Impacts Inset	4-115	Topography, Geology, and Soils	Vibration from blasting is qualitatively discussed in the Topography, Geology, and Soils section of the DEIS; however, vibration from non-blasting construction activities and from operational impacts is not discussed anywhere within the DEIS. Procedures for screening and analyzing for vibrational impacts from construction and highway operation are provided in the U.S. Department of Transportation Federal Transit Administration "Transit Noise and Vibration Impact Assessment" (2006).
	WATER RESOURCES				
255	4	Water Resources	4-93	Surface Water	The DEIS correctly identifies that there are impaired waters within the project area (page 4-93). However, the importance of this designation is not fully carried through the analysis. ADOT's Statewide Stormwater Permit (Permit No. AZS000018-2008) has specific monitoring criteria associated with impaired waters and specific mitigation criteria that shall be implemented for impaired waters. These

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Code	Issue	Response
250	Noise	The noise analysis has been updated for the Final Environmental Impact Statement using most recent Federal Highway Administration and Arizona Department of Transportation policy and traffic projections provided by the Maricopa Association of Governments in August 2013. This updated analysis begins on page 4-88 of the Final Environmental Impact Statement. No substantial differences between the analyses presented in the Draft and the Final Environmental Impact Statements resulted.
251	Noise	As stated in the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, environmental impact statements should be analytic rather than encyclopedic [40 Code of Federal Regulations Part 1502.2(a)]. Those noise regulations of direct consequence to the proposed action were discussed.
252	Noise	As stated on page 4-82 of the Draft Environmental Impact Statement, over 220 sensitive receivers were evaluated from a traffic noise perspective. All of the receivers represent noise sensitive land uses in proximity to the proposed project. These receivers were closer to the proposed action than the schools listed; therefore, these receivers would have higher noise levels than the schools more distant from the proposed action. Analysis of noise impacts is conducted in accordance with Arizona Department of Transportation and Federal Highway Administration policy.
253	Noise	The measurements were collected during the construction of State Route 202L (Red Mountain Freeway) near Mesa Drive. This information has been added to the text box on page 4-98 of the Final Environmental Impact Statement.
254	Noise	There are no federal requirements directed specifically to highway traffic induced vibration. All studies the highway agencies have done to assess the impact of operational traffic induced vibrations have shown that both measured and predicted vibration levels are less than any known criteria for structural damage to buildings.
255	Water Resources	The specific water quality constituents that cause the impairment change from year to year as the Arizona Department of Environmental Quality and U.S. Environmental Protection Agency assess and evaluate the water quality standards; therefore, the specific contaminants from the Section 303(d) list are not noted in the Draft Environmental Impact Statement. The primary constituent that causes impairment (total dissolved solids) is discussed on page 4-93 of the Draft Environmental Impact Statement. Specific best management practices would not be known until final design when the stormwater pollution prevention plan would be developed. The Flood Control District of Maricopa County has shared drainage systems with the municipalities and stormwater discharges that have the potential to reach the Salt and Gila rivers; therefore, the Flood Control District of Maricopa County has established and implemented monitoring requirements to comply with Arizona Pollutant Discharge Elimination System regulations, as discussed beginning on page 4-93 of the Draft Environmental Impact Statement. Discussion of Arizona Pollutant Discharge Elimination System requirements and the Arizona Department of Transportation's permit requirements through individual permits begins on page 4-94 of the Draft Environmental Impact Statement.

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				specific criteria are not discussed. The specific water quality constituents are not identified that cause the impairment of these waters. This lack of disclosure prevents full analysis of the expected impact to these impaired waters due to both construction and operation of the proposed freeway. The analysis concludes that "Implementation of BMPs associated with any of the action alternatives would reduce water quality impacts on the receiving waters of the Salt and Gila rivers. Both construction and operational impacts may be mitigated through the use of BMPs." (page 4-101) This conclusion is not supported by the existing disclosure. Without disclosure of 1) the types of impairment on the Salt and Gila Rivers, 2) the specific monitoring/mitigation required under the ADOT Statewide permit, and 3) analysis of the types of contaminants to be discharged from the project, the conclusion as stated is arbitrary and unsupported. Specific to the impaired waters, the analysis also concludes that "Increased pollutant loading from freeway operation might further impair listed reaches of the Salt River and might need measures in addition to existing permit controls to achieve or maintain water quality standards in accordance with CWA Section 303(d)." (page 4-97) This analysis is incomplete. It would be reasonable to extend the analysis to disclose a) what measures might be needed, and b) whether those measures would be effective. Without disclosure of 1) the type of impairment, 2) the types of contaminants, and 3) the prescribed mitigation measures and their effectiveness, disclosure of impacts to the impaired waters is partial and limited.
256 4	Water Resources	4-93	Surface Water	The impaired waters should be identified on at least one of the maps included in the Water Resources section. Instead they appear in the Waters of the U.S. section later in the DEIS.
257 4	Secondary and Cumulative Impacts	4-173	Surface Water	The analysis indicates in several places that along the Eastern route, surface water discharge would be routed onto lands owned by the Gila River Community, and that this currently occurs. "The drainage design features of the E1 Alternative would be such that drainage patterns from the South Mountains toward the Gila River would not be altered. Currently, drainage flows generally from the north to the south, passing under Pecos Road through a series of culverts following natural drainages/ washes. The E1 Alternative would include small drainage basins and channels on the northern side of the freeway to treat the water quality and meter and direct drainage flows under the freeway and onto Community land in the same manner as they are currently." (4-98) This passage highlights a general lack in the Cumulative Impacts section of the EIS. The fundamental first step in assessing cumulative impacts is to define what other Reasonably Foreseeable Actions overlap the project in both time and space. No list of Reasonably Foreseeable Actions is provided in the DEIS. Lacking this fundamental background information results in an inadequate framework for assessing cumulative impacts. From the analysis of cumulative impacts of water resources, the reasonably foreseeable actions considered appear to be fairly generic. Specifically, the potential for development along the south side of the Eastern alignment, on the Gila River Indian Community, ought to have been explicitly assessed for its likelihood of occurring. Potential development in this area has a high likelihood of changing the location of stormwater discharges and the impact of those stormwater discharges. The future discharge of stormwater is stated as being identical to that occurring at present. This is a valid method of identifying any direct impacts from the project. It is not, however, a valid method of identifying any cumulative impacts from the project, as there may be reasonably foreseeable development south of Pecos Road that would alter conditions from the current situation.
258 4	Water Resources	4-100	Groundwater	Analysis of impacts as required under NEPA and other laws has several fundamental components: 1) The "best available scientific and technical information" shall be used (CEQ) 2) The analysis is not arbitrary (Administrative Procedures Act) 3) Resources are interrelated and the direct impacts on one resource may engender indirect impacts on other resources; these indirect impacts must be assessed (CEQ)

Code	Issue	Response
256	**Waters of the US**	A reference to the figure on which the impaired waters are shown has been added to the discussion on page 4-101 of the Final Environmental Impact Statement. The sentence, "Several reaches of the Salt and Gila rivers are on the Section 303(d) list, including that portion of the Salt River in the Study Area" has been modified to read: "Several reaches of the Salt and Gila rivers are on the Section 303(d) list, including that portion of the Salt River in the Study Area (see Figure 4-36 on page 4-116)."
257	**Secondary and Cumulative Impacts**	As noted on page 4-171 of the Draft Environmental Impact Statement, the type of activities that could contribute to cumulative impacts included general development patterns. Development on the Gila River Indian Community is a tribal function and requires no approval from other jurisdictions or notice to other jurisdictions regarding pending development. As a result, development along the Gila River Indian Community boundary is speculative. It is, however, difficult to conceive of a development project on the Gila River Indian Community that would cause upstream impacts to the level described in the comment. As noted in the comment, according to 46 *Federal Register* 18026 (March 23, 1981), an environmental impact statement must discuss reasonably foreseeable actions. These are actions that are likely to occur or probable, rather than those that are merely possible. The Federal Highway Administration and Arizona Department of Transportation have committed to continue coordination with the Arizona Game and Fish Department, Gila River Indian Community Department of Environmental Quality, and U.S. Fish and Wildlife Service regarding wildlife concerns as a result of the freeway (see *Mitigation*, beginning on page 4-126 of the Draft Environmental Impact Statement and on page 4-138 of the Final Environmental Impact Statement).
258		Specific comments are addressed below.

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259	4	Water Resources	4-100	Groundwater

The disclosure of impacts on water availability is insufficient with respect to these three fundamental requirements: 1) the analysis does not make use of the best available information, 2) application of the analysis is applied in an arbitrary manner, and 3) interrelated indirect impacts are insufficiently analyzed. Each of these three components is addressed individually below.

The analysis of water availability does not use the "best available scientific and technical information."

Concerns were raised to ADOT through the scoping process about the destruction of supply wells located along the Eastern alternative (Pecos Road). ADOT appears to be aware of these concerns, as an attempt is made to directly address them on page 4-100 of the DEIS. This page specifically analyzes wells used for water supply for the Foothills golf courses. The analysis included on page 4-100 makes use of information that is both outdated and erroneous. This leads to an insufficient analysis that does not make use of the "best available scientific and technical information". There are three major concerns:

1. The sole information utilized (a report from 1996) is seriously out-of-date. A 17-year period in a rapidly growing community like the Ahwatukee Foothills Village has resulted in the use of a report that is no longer either reliable or appropriate to use.

2. Based on information in the 1996 report, ADOT identifies that the Foothills Community Association has multiple sources of water available other than the supply wells to be lost: effluent, well water, and municipal water supplied by the City of Phoenix. Because ADOT used outdated information, the analysis does not disclose to the reader that effluent is entirely unavailable within the area. The wastewater treatment plant referenced in the DEIS was removed by the City of Phoenix in the late 1990s. This key information that--effluent is completely unavailable--was reportedly made available to ADOT. It was not, however, used in the analysis of water supply availability. Using outdated information has led to the use of an erroneous assumption—that effluent is available for use. This disclosure does not reflect the "best available scientific and technical information."

3. The analysis of water replacement on page 4-100 is flawed in another way. The analysis states: "According to comments received, several wells have been drilled in the area and have either produced small amounts of water or no water." The difficulty this presents is summarized as such: "It is understood that finding a suitable location for a new well in this area may be difficult." Most of the analysis is dedicated to the process that would be undertaken to drill a new well, despite the difficulty that would be encountered in doing so. This difficulty is dismissed by indicating there are at least two other sources of water: effluent and municipal water. As indicated above, effluent is not a viable water source.

The statement that drilling a new well "...may be difficult" seriously downplays the importance of the wells that will be lost, the unique hydrogeology of this area, and the rarity of how productive these particular wells are. The relative difficulty in finding water north from Pecos Road is illustrated in Figure 1 below, which illustrates data from 27 wells between roughly 40th Street and Desert Foothills Parkway (Source: ADWR Well Registry, https://gisweb.azwater.gov/waterresourcedata/WellRegistry.aspx, accessed 6/22/13). The wells to be lost are the most productive in the community. Farther north from Pecos Road most wells appear to be completed in bedrock rather than alluvium, as reflected by the much lower (or non-existent) pumping rates. This well information is readily available, and in fact was used by ADOT (page 4-96) solely for illustrative purposes. It was not, however, used in order to prepare a full disclosure of the impacts when these unique supply wells along Pecos Road are lost. Again, the analysis does not use the "best available scientific and technical information."

It should be noted that other independent studies regarding the difficulty of siting new wells in the area were also made available to ADOT (i.e., Brown and Caldwell, 1995), but do not appear to have been used.

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Code	Issue	Response
259	**Water Resources**	Page 4-100 of the Draft Environmental Impact Statement states that finding a suitable location for a new well in this area may be difficult. Productivity of the well in bedrock formations is primarily based on intercepting fractures, and that can be very difficult to do. The Arizona Department of Transportation is aware of the difficult conditions that exist in replacing wells in this area. The Arizona Department of Transportation is also aware of the productivity of the well in question. The comment is correct that wastewater effluent is not available as a replacement source and is not being used. The City of Phoenix did operate a wastewater reclamation facility in this area, but it was removed from service and demolished. The City of Phoenix still owns the property, but all facilities have been removed from the site. Thus, only two water sources are available for irrigation and lake supply for the Foothills Community Association: the well that would be acquired and potable water from the City of Phoenix. In this Final Environmental Impact Statement, the discussion on page 4-100 of the Draft Environmental Impact Statement has been modified in the Final Environmental Impact Statement to reflect that reclaimed wastewater would not be available; however, the conclusion on page 4-100 is still appropriate. As stated on pages 4-100 of the Draft Environmental Impact Statement, "In the event that well replacement were to be impossible, the Arizona Department of Transportation would still replace the water that would be lost through the acquisition." Depending on whether an action alternative were to become the Selected Alternative, it may be possible to keep certain wells in their current location, but move the well controls and associated piping to outside of the right-of-way. Such an analysis would be performed later in the design process. If a well were adversely affected by construction activities, the well might need to be abandoned or the well owner would be compensated by drilling a new well according to State regulations/standards (see text box on page 4-100 of the Draft Environmental Impact Statement). The number of wells potentially affected would be consistent with that of a project the magnitude of the proposed action, and the well replacement program as outlined by State law has been regularly implemented by the Arizona Department of Transportation to effectively mitigate well impacts associated with its projects throughout the region.

Code	Comment Document

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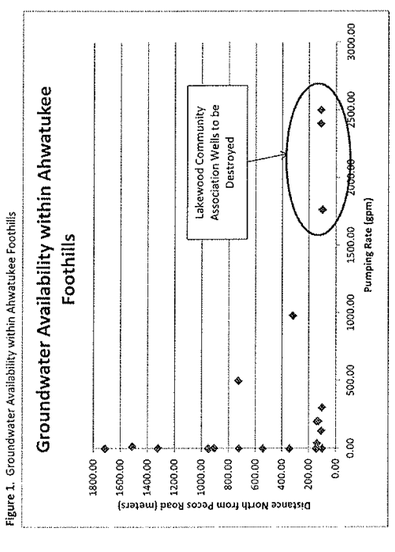
Figure 1. Groundwater Availability within Ahwatukee Foothills



4	Water Resources	4-100	Groundwater

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The analysis of water availability is applied in an arbitrary manner, and is not complete.

In addition to being technically flawed by the use of outdated information and by not fully assessing available information, the analysis presented by ADOT has been applied in an arbitrary manner. The detailed analysis regarding water availability (page 4-100) focused solely on the Foothills Community Association and the potential loss of their wells. The DEIS does not analyze nearby entities that would experience the same impacts, or entities anywhere else along the potential freeway route. One specific example is the Lakewood Community Association. As shown in Figure 1, the supply wells currently used by the Lakewood community would be even more difficult to replace given their large pumping capacity. The DEIS arbitrarily discloses impacts to one entity (Foothills Community Association) and not the other (Lakewood Community Association), no more than a few miles away. Further, no other impacts to domestic wells or supply wells are disclosed anywhere along any of the alternative routes, despite the potential for significant impacts to be present as demonstrated by the Foothills Community Association wells.

With respect to the total number of wells to be impacted (Table 4-41), this type of tabulation is not a useful or sufficient analysis. A thorough analysis would, at the least, identify the number of domestic or exempt wells, the number of supply or non-exempt wells, the presence of monitoring wells, and the ownership of major supply wells.

Code	Issue	Response
260		Comment noted.
261	**Water Resources**	Because of the public concern expressed during the environmental impact statement process, page 4-100 of the Draft Environmental Impact Statement focuses on the Foothills Community Association to provide more details on the well acquisition, condition assessment, and replacement process used by the Arizona Department of Transportation. The Arizona Department of Transportation understands, and states on page 4-100 of the Draft Environmental Impact Statement, that finding a suitable location for a new well in this area may be difficult. Depending on whether an action alternative were to become the Selected Alternative, it may be possible to keep certain wells in their current location, but move the well controls and associated piping to outside of the right-of-way. Such an analysis would be performed later in the design process. Table 4-41, on page 4-98 of the Draft Environmental Impact Statement, discloses the number of wells that may be acquired by each action alternative and, as noted on page 4-98 of the Draft Environmental Impact Statement, some of these wells are abandoned wells. This information was updated in the Final Environmental Impact Statement on page 4-106. The comment suggests that the wells that would be adversely affected should be further classified as domestic, supply, or monitoring, and well ownership should be noted. This additional level of detail would not assist the environmental impact statement decision-making process.

Code	Comment Document
262	SWCA Comments on ADOT South Mountain Freeway Draft EIS (April 2013) Prepared for PARC et al. 4 | Water Resources | 4-100 | Groundwater | The analysis of water availability fails to take into account significant indirect effects. Analysis of impacts under NEPA does not require that speculative impacts be assessed, but it does require that reasonably foreseeable impacts be addressed, and in particular indirect impacts that may affect another resource. The DEIS fails to disclose significant adverse indirect impacts resulting from the loss of these supply wells. ADOT states that there are three sources of water: effluent, groundwater, and municipal water. The best available scientific and technical information indicates that two of these sources—effluent and groundwater—are either completely unavailable or their availability is going to be challenging. That leaves only one source of water: municipal water from the City of Phoenix. The DEIS correctly states that City of Phoenix water is significantly more expensive than groundwater. It does not, however, fully investigate the impact of this cost. There are two reasonably foreseeable outcomes if only City of Phoenix water is available: 1) The golf courses within the Foothills community become economically infeasible. There are several analogs that suggest this is a reasonable effect. One course in the Ahwatukee area has recently closed because of financial difficulties. One other course already has seasonal shutdowns due to water expenses. State law restricts increases of association fees, making associations relatively unresponsive to large increases in costs. That increased costs of water would have a negative effect is not speculative. The economic fallout from the loss of a golf course—not only to the course owner and operator but to the many homeowners with home values that would be impacted—is reasonably foreseeable and should have been disclosed as an indirect environmental impact of losing supply wells. 2) The lakes within the Lakewood community would likely also become economically infeasible, for the same reasons. These are large lakes that require significant amounts of water. The costs of supplying municipal water to these lakes would be prohibitive, and the association would not be able to raise fees to respond (in Arizona HOA fee increases are statutorily capped at a maximum of 5% per annum). These lakes are the centerpiece of the Lakewood community. The loss of these lakes would have a significant negative impact on homeowners in the area, including to neighborhood property values, recreational opportunities, and aesthetic values. The loss of these lakes is reasonably foreseeable and should have been disclosed as an indirect environmental impact of losing supply wells.
262	4 | Secondary and Cumulative Impacts | 4-173 | Water Availability | Based on the above concerns, the assessment of cumulative impacts of water availability is lacking. The DEIS states: "Ongoing planned and permitted residential, commercial, and industrial development in the region would likely continue to place a demand on water availability. The proposed action would have little cumulative effect on water availability." (emphasis added) Given the outcomes of attempting to replace water lost to both Foothills Community Association and Lakewood Community Association, there would be stresses placed on other aspects of the water delivery system within the City of Phoenix. This has not been analyzed properly as either a direct, indirect, or cumulative impact.
263	4 | Water Resources | 4-97 | Groundwater | A comment typical throughout the document, but specific to groundwater resources is the use of outdated information. Specifically, groundwater levels are shown from 1992, almost 20 years in the past. If new information is not available, it is the responsibility of the agency to either obtain that information, or state clearly why that cannot be done. (CEQ Regs 1502.22) Curiously, elsewhere in the document: "Topography, Geology, and Soils" more up-to-date groundwater levels are presented.
264	4 | Water Resources | 4-97 | Groundwater | The analysis of water quality is insufficient. While existing background water quality (page 4-97) is of interest, the more important concern is the potential for the proposed freeway route to impact known areas of contamination. This is not disclosed in the assessment of water resources. There are several basic and readily available data sources that should have been consulted for this analysis. At a

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Code	Issue	Response
262	**Water Resources**	The comment is correct that wastewater effluent is not available as a replacement source and is not being used. The City of Phoenix did operate a wastewater reclamation facility in this area, but it was removed from service and demolished. The City of Phoenix still owns the property, but all facilities have been removed from the site. Thus, only two water sources are available for irrigation and lake supply for the Foothills Community Association: the well that would be acquired and potable water from the City of Phoenix. In the Final Environmental Impact Statement, the discussion on page 4-100 of the Draft Environmental Impact Statement has been modified to reflect that reclaimed wastewater would not be available (see page 4-108 of the Final Environmental Impact Statement); however, the conclusion on page 4-100 is still appropriate. As stated on page 4-100 of the Draft Environmental Impact Statement, "In the event that well replacement were to be impossible, Arizona Department of Transportation would still replace the water that would be lost through the acquisition." Page 4-100 of the Draft Environmental Impact Statement states that finding a suitable location for a new well in this area may be difficult. Productivity of the well in bedrock formations is primarily based on intercepting fractures, and that can be very difficult to do. The Arizona Department of Transportation is aware of the difficult conditions that exist in replacing wells in this area. The procedure identified on page 4-100 of the Draft Environmental Impact Statement defines the procedure that the Arizona Department of Transportation would use to replace adversely affected wells, and also identifies the general costs the Arizona Department of Transportation would incur to replace the lost water sources. As noted in this discussion, if it were necessary to provide replacement water instead of a new well, the Arizona Department of Transportation would, in negotiations with the well owner, include the difference between the costs of pumping the well and the costs of the new replacement water source. Depending on whether an action alternative were the Selected Alternative, it may be possible to keep certain wells in their current location, but move the well controls and associated piping to outside of the right-of-way. Such an analysis would be performed later in the design process.
263	**Water Resources**	As noted on page 4-97 of the Draft Environmental Impact Statement, although groundwater level data in Ahwatukee Foothills Village were shown from 1972 to 1992, this information was gathered from the U.S. Geological Survey in 2009. Groundwater data in other areas may indeed be more current; however, this additional level of detail would not assist the environmental impact statement decision-making process.
264	**Hazardous Materials**	Both the Van Buren Tank Farm and the West Van Buren Water Quality Assurance Revolving Fund site were identified and considered during development of the Draft Environmental Impact Statement (see pages 4-97 and 4-153 of the Draft Environmental Impact Statement and the Draft Initial Site Assessment prepared for the proposed project). These sites are primarily groundwater-impact sites, and groundwater is found at a depth of over 60 feet below the footprint of the Preferred Alternative. Given the separation distance between the adversely affected medium (groundwater) and the construction zone (near-surface in these locations), the project team determined that these sites would not pose a risk to construction or to the general public once the facility were completed. This assessment has been clarified in the Final Environmental Impact Statement on page 4-165.

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Code					Comment Document
265	4	Waters of the U.S.	4-112	Waters of the U.S.	minimum: 1) known Leaking Underground Storage Tank (LUST) sites, 2) known State (WQARF) or Federal (CERCLA) superfund sites, and 3) known or suspected landfills, either historic or active (the location along the Salt River makes this a particularly important item to assess in the DEIS). The DEIS states: "The general and special conditions of the Section 404 Individual Permit would minimize impacts on jurisdictional waters to the extent practicable. ADEQ would issue Section 401 Individual certification for compliance with water quality prior to Section 404 permit issuance." The issuance of the Section 401 Individual certification in light of the impaired nature of the Salt and Gila River should have been discussed.
		SOCIOECONOMICS			
266	1	Context of the purpose and need	1-1, 1-5	Socioeconomics	Purpose and Need (Chapter 1) states that demand for travel is based on capacity, transportation demand, and social and economic needs. Chapter 1 further states that MAG's regional travel demand model is used to forecast travel demand and that one of the inputs used includes socioeconomic data based on population and economic forecasts. Data used throughout the DEIS for projected population estimates are not consistent with Arizona Department of Administration estimates (see below). Population project estimates used throughout the DEIS are higher than the state range of estimates. Therefore, inputs into the travel demand model are likely skewing the model output, which is the foundation of two of the three elements of the project purpose and need.
266	1	Purpose and Need	1-11	Socioeconomics	in the DEIS, projected growth estimates Maricopa County population to be 6.5 million by 2035 (citing MAG 2009b), however 2012 population projections estimated for Maricopa County by the Arizona Department of Administration (ADOA) estimate population in the county to be 5.2 million (low), 5.7 million (medium), or up to 6.2 million (high). http://www.workforce.az.gov/population-projections.aspx Therefore the DEIS is using a population estimate for the County that is not consistent with the state's estimates. The DEIS estimates are 1.3 million to 500,000 more than state recognized projections. The ADOA estimates are intended "provide reliable unbiased projections of future population growth and a single state repository for current population references enabling sound planning and decision making by government and private entities." No indication is provided as to why a new system for projections is used and why it is so inconsistent with the ADOA estimates.
267	1	Purpose and Need	1-11	Socioeconomics	DEIS states that 50% of the 6.5 million in population growth is expected to occur in areas that would be immediately served by the proposed action. This freeway is intended to be part of a regional transportation system intended to improve regional connectivity, regional capacity, etc. (see DEIS page 1-10). Therefore statement about service area is irrelevant to the purpose and need.
	1, 3, 4	Study Area		Socioeconomics	Study Area is not well defined. Chapter 1 states that it is limited to southern Phoenix metropolitan area (page 1-1), while Chapter 3 further defines the study area in a figure caption (Figure 3-1). Chapter 3 defines the study area as the southwestern portion of Maricopa County, defined by a gap in the freeway network, limited by South Mountain and GRIC. No discussion is included of why there is a gap in the transportation network here, and why this is the only gap area. Why couldn't the study area and therefore alternatives include a connection south of the Gila River Indian Community (i.e., in Pinal County), or along Riggs Road or Queen Creek Road within the GRIC? This study area is further used in Chapter 4 when discussing social and economic conditions and impacts. As above, the South Mountain freeway is a regional freeway serving broader regional needs; therefore, for the purpose of the socioeconomic analysis, the study area is too restrictive. There is no reason the study area can't be different for socioeconomics than for other resources.
	4	Regional Demographic context	4-20	Socioeconomics	Regarding population growth, see comment above. Projections are higher and potentially inflated with no explanation as to why a different source is used and why the estimates are different.
	4	Population and Employment	4-20	Socioeconomics	It would be more appropriate to use a range of projection estimates as provided by ADOA. Using ADOA estimates for Maricopa County for 2035, population will increase 50–75% (not 85%) between 2005 and 2035. Projections on the ADOA website are from 2012 while projections in the DEIS are from 2009 or earlier (MAG 2009b).
	4	Population and	4-20	Socioeconomics	Per CEQ regulations, agencies are required to use the best available data in the analysis and in the decision making process. Data

Code	Issue	Response
265	**Water Resources**	According to 33 Code of Federal Regulations 323.3, a permit is required for discharges of dredged or fill material into waters of the United States. As noted on page 4-110 of the Draft Environmental Impact Statement, as design proceeds, the Arizona Department of Transportation would prepare and submit an application to the U.S. Army Corps of Engineers for a permit under Section 404 of the Clean Water Act. Steps are outlined beginning on page 4-110 of the Draft Environmental Impact Statement. Minimization of impacts would be achieved and unavoidable impacts would be mitigated to the extent reasonable and practicable. These steps are outlined beginning on page 4-110 of the Draft Environmental Impact Statement.
266	**Purpose and Need**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future.
267	**Purpose and Need**	The Draft Environmental Impact Statement does not state that there would be 6.5 million in population growth. In 2005, there were already 3.7 million people in Maricopa County, so the increase between 2005 and 2035 would be 2.8 million people, and 44 percent of that growth would occur in the area served by the proposed freeway. This information supports the definition of the Study Area and the need for a major transportation system in the southwestern portion of the Phoenix metropolitan area.

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Code	Comment Document				
					minimum: 1) known Leaking Underground Storage Tank (LUST) sites, 2) known State (WQARF) or Federal (CERCLA) superfund sites, and 3) known or suspected landfills, either historic or active (the location along the Salt River makes this a particularly important item to assess in the DEIS).
	4	Waters of the U.S.	4-112	Waters of the U.S.	The DEIS states: "The general and special conditions of the Section 404 Individual Permit would minimize impacts on jurisdictional waters to the extent practicable. ADEQ would issue Section 401 Individual certification for compliance with water quality prior to Section 404 permit issuance." The issuance of the Section 401 individual certification in light of the impaired nature of the Salt and Gila River should have been discussed.
	SOCIOECONOMICS				
	1	Context of the purpose and need	1-1, 1-5	Socioeconomics	Purpose and Need (Chapter 1) states that demand for travel is based on capacity, transportation demand, and social and economic needs. Chapter 1 further states that MAG's regional travel demand model is used to forecast travel demand and that one of the inputs used includes socioeconomic data based on population and economic forecasts. Data used throughout the DEIS for projected population estimates are not consistent with Arizona Department of Administration estimates (see below). Population project estimates used throughout the DEIS are higher than the state range of estimates. Therefore, inputs into the travel demand model are likely skewing the model output, which is the foundation of two of the three elements of the project purpose and need.
	1	Purpose and Need	1-11	Socioeconomics	In the DEIS, projected growth estimates Maricopa County population to be 6.5 million by 2035 (citing MAG 2009b), however 2012 population projections estimated for Maricopa County by the Arizona Department of Administration (ADOA) estimate population in the county to be 5.2 million (low), 5.7 million (medium), or up to 6.2 million (high). http://www.workforce.az.gov/population-projections.aspx Therefore the DEIS is using a population estimate for the County that is not consistent with the state's estimates. The DEIS estimates are 1.3 million to 300,000 *more* than state estimates. The ADOA estimates are intended "provide reliable unbiased projections of future population growth and a single state repository for current population references enabling sound planning and decision making by government and private entities." No indication is provided as to why a new system for projections is used and why it is so inconsistent with the ADOA estimates.
	1	Purpose and Need	1-11	Socioeconomics	DEIS states that 50% of the 6.5 million in population growth is expected to occur in areas that would be immediately served by the proposed action. This freeway is intended to be part of a regional transportation system intended to improve regional connectivity, regional capacity, etc. (see DEIS page 1-10). Therefore statement about service area is irrelevant to the purpose and need.
268	1, 3, 4	Study Area		Socioeconomics	Study Area is not well defined. Chapter 1 states that it is limited to southern Phoenix metropolitan area (page 1-1), while Chapter 3 further defines the study area as the southwestern portion of Maricopa County, defined by a gap in the freeway network, limited by South Mountain and GRIC. No discussion is included of why there is a gap in the transportation network here, and why this is the only gap area. Why couldn't the study area and therefore alternatives include a connection south of the Gila River Indian Community (i.e., in Pinal County), or along Riggs Road or Queen Creek Road within the GRIC? This study area is further used in Chapter 4 when discussing social and economic conditions and impacts. As above, the South Mountain freeway is a regional freeway serving broader regional needs; therefore, for the purpose of the socioeconomic analysis, the study area is too restrictive. There is no reason the study area can't be different for socioeconomics than for other resources.
269	4	Regional Demographic context	4-20	Socioeconomics	Regarding population growth, see comment above. Projections are higher and potentially inflated with no explanation as to why a different source is used and why the estimates are different.
269	4	Population and Employment	4-20	Socioeconomics	It would be more appropriate to use a range of projection estimates as provided by ADOA. Using ADOA estimates for Maricopa County for 2035, population will increase 50–75% (not 85%) between 2005 and 2035. Projections on the ADOA website are from 2012 while projections in the DEIS are from 2009 or earlier (MAG 2009b).
269	4	Population and	4-20	Socioeconomics	Per CEQ regulations, agencies are required to use the best available data in the analysis and in the decision making process. Data

Code	Issue	Response
268	**Study Area**	The parameters for reference to the Study Area are defined in Chapter 1, *Purpose and Need*, of the Draft and Final Environmental Impact Statements as the area defining the transportation problem. As presented in the chapter, transportation models were used to determine where the characteristics of the transportation problem would diminish and generally, it is at these locations where the definition of the Study Area took shape. This effort was coordinated with stakeholder agencies, including the U.S. Environmental Protection Agency. The comment references the term, *Study Area*, in terms of the analytical requirements associated with impact analyses. Each element of the environment has independent, unique (while sometimes overlapping) geographic limits for impact analyses. These limits are established by technical expertise, knowledge, the application of recognized and accepted analytical methods and assumptions, and characteristics unique to the proposed action. Methodology reports were prepared for all elements and shared with agency peers and internal team members to validate methods and limits of study prior to conducting analyses, and results were validated by peers. During impact analyses, limits were adjusted, as appropriate, based on changes in project design as well as in-field observations. Impact analyses results were the subject of the application of scientific-community–recognized techniques with the appropriate amount of presentation in accordance with the efficiency and decision-making provisions of the National Environmental Policy Act. Chapter 2, *Gila River Indian Community Coordination*, of the Draft and Final Environmental Impact Statements text goes to great lengths to discuss limitations of study on Gila River Indian Community land. Chapter 3, *Alternatives*, of the Draft and Final Environmental Impact Statements provides substantial discussion on why alternatives on Riggs or Queen Creek roads were eliminated from further study. Any alternative on Gila River Indian Community land must consider tribal sovereignty. Tribal sovereignty is based in the inherent authority of Native American tribes to govern themselves. While this notion of sovereignty is manifested in many areas, generally Native American land is held in trust by the United States. Native American communities have the authority to regulate land uses and activities on their lands. States have very limited authority over activities within tribal land (see page 2-1 of the Final Environmental Impact Statement). From a practical standpoint, this means that the Arizona Department of Transportation and Federal Highway Administration do not have the authority to survey tribal land, make land use (including transportation) determinations directly affecting tribal land, or condemn tribal land for public benefit through an eminent domain process.
269	**Purpose and Need**	The analyses in the Draft Environmental Impact Statement used socioeconomic and traffic projections at the regional analysis zone and traffic analysis zone levels. At the time of publication of the Draft Environmental Impact Statement, Census 2010-based socioeconomic data at the regional analysis zone and traffic analysis zone levels had not been adopted by the Maricopa Association of Governments and were not available to the project team. Therefore, the data used in the Draft Environmental Impact Statement were the most appropriate information available. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a

(Response 269 continues on next page)

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Code		Comment Document			
270	4	Employment	4-21	Socioeconomics	throughout the section is out of date (see comments above).
271	4	Community Character	4-21	Socioeconomics	Last paragraph states growth in the region has essentially halted since the 2007 recession; however ADOA indicates some small growth every year (1.1–1.8%) between now and 2035. Statement in the DEIS about growth is not accurate.
272	4	Community Character/General	4-21	Socioeconomics	Pecos Road is a significant recreational bicycle route; no discussion is included about what construction of the highway would do to recreational use of this road.
	4	Community Character/General	4-21	Socioeconomics	Social Conditions often include a discussion of recreation opportunities and changes to those in terms of community character, or sense of place. No discussion is included in the DEIS that addresses changes in recreation opportunities or changes to recreationist experiences; Section 4(f) impacts are discussed in Chapter 5 (trail, parkland, etc.) and impacts to these resources from a Section 4(f) perspective, but no discussion of the impacts from a social perspective is discussed. This should have been included in the social conditions or as a separate section of the DEIS.
	4	Environmental Consequences (all alternatives)		Socioeconomics	Impacts discussion in Chapter 4 is limited to long-term impacts to arterials (reduction in traffic). Only a brief mention of the short-term impacts of construction is made at the end of Chapter 4, however this discussion should have been carried into the resource analysis to paint a complete picture. Construction will result in traffic delays, traffic re-routes (intentional and casual) noise, air emissions, etc. The statement is made (DEIS page 4-21) that there would be no adverse impacts to access to schools, however if construction impacts are considered (which they have to be), this statement is not true for short-term impacts. The statement is similarly not true for the long term. Under any of the action alternatives, the removal of the traffic interchange at 32nd Street would, for example, significantly curtail access to at least four nearby schools. Kyrene de los Lagos Elementary School, Desert Vista High School, Kyrene Akimel A-a Middle School, and Kyrene de la Estrella Elementary School.
273	4	Environmental Justice	4-30, 4-36	Socioeconomics	The unit of analysis for the affected environment (census block-level, census block group) for Environmental Justice is appropriate. Affected Environment, Affected Populations identified the presence of minority and low-income populations throughout the study area. However, we disagree with the area of potential adverse environmental impacts being limited to the right-of-way footprint only. The ROW footprint for impacts is appropriate for displacements (direct impacts) only. Environmental justice populations can experience indirect adverse impacts such as adverse changes in air quality, noise levels, visual impacts, hazardous materials, property value, etc. Impacts to Environmental Justice populations are understated/underestimated in this DEIS as impact discussion is limited to direct impacts. Undue hardship is not defined when the analysis states "impacts would be temporary and would not cause undue hardship." The idea behind impacts being disproportionate, especially as it relates to low-income populations, is that they are often unable to relocate to avoid an adverse environmental impact—this is particularly true on tribal lands such as the GRIC, where individual residences may frequently be linked to a family's personal allotment of land. Therefore, although everyone in the ROW (including non-environmental justice populations) would be affected, if there are environmental justice populations—which the DEIS says there are—then the effects are disproportionate on those populations.
	4	Environmental Justice	4-36	Socioeconomics	It is difficult for the reader to fully assess environmental justice impacts because air and noise are not analyzed in terms of general attenuation distance. Similarly, for property value impacts, no discussion is included to understand if there would be property value changes, if they would be negative, generally how far out those impacts would be experienced, and if EJ populations would be impacted. Generally, there is no discussion of how far away from the freeway impacts would be experienced, and therefore no discussion of potential environmental-justice impacts from air and noise, property value, etc.
	4	Displacements and Relocations	4-40	Socioeconomics	Assessment of real estate values uses home values from 2006, 7 years ago. This data represents values prior to the 2007+ recession and is not the most recent, best available data. The housing market is quite different than it was in 2006; more recent data should have been employed in the analysis.
	4	Economic Impacts	4-46+	Socioeconomics	There is no discussion of current housing inventory in the Study Area (not just the footprint/ROW), or of property values; impacts at all, despite being a topic of concern over the long course of the project; property value as a public concern is expressed multiple times in Chapter 6 of the DEIS. ADOT's 2001 assessment of the impact of freeways on property values from the expansion of the Superstition Freeway/US60 did find that there were economic benefits to property values from increased access and to multifamily residential, but that there were also

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269 (cont.)		lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future. The Maricopa Association of Governments' control total for Maricopa County is consistent with the "ADOA—Medium Series."
270	**Purpose and Need**	The reference in the Draft Environmental Impact Statement was to the Study Area, not to Maricopa County or to the state of Arizona. Therefore, the Arizona Department of Administration numbers do not apply. The Maricopa Association of Governments approved new population, employment, housing, and traffic projections in June 2013. The new data are presented in the Final Environmental Impact Statement beginning on page 1-11. The purpose and need and analysis of alternatives were updated and reevaluated using these new socioeconomic projections and corresponding projections related to regional traffic. While new projections based on the 2010 Census showed a lower anticipated population and vehicle miles traveled in 2035 than the previous projections, the conclusions reached in the Draft Environmental Impact Statement were validated in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). The traffic analysis demonstrated that the proposed project is needed today and will continue to be needed into the future.
271	**Design**	The main line of the E1 Alternative would not have a bicycle route as part of the design. Continuous east–west riding would be possible in the neighborhoods adjoining the alternative and along Chandler Boulevard.
272	**Section 4(f) and Section 6(f)**	The proposed action would not have impacts on recreational opportunities or cause any changes to recreational experiences. With the exception of the Maricopa Trail, the affected trails are planned (future) facilities. Impacts on proposed trails are discussed in the Draft Environmental Impact Statement Section 4(f) section. Because the proposed action would be constructed as an elevated span that would clear the existing Maricopa Trail segment, no impact from a social perspective was determined to be likely. The social conditions section of the Draft Environmental Impact Statement addresses issues regarding community character and access; specific parkland impacts are addressed in the Draft Environmental Impact Statement Chapter 5, *Section 4(f) Evaluation*.
273	**Traffic**	The impacts noted in the comment are primarily temporary construction impacts. These are covered in the section, *Temporary Construction Impacts*, beginning on page 4-161 of the Draft Environmental Impact Statement. The determination to not include an interchange at 32nd Street was made in coordination with the City of Phoenix (see Figure 3-8 on page 3-15 of the Draft Environmental Impact Statement). The interchange was eliminated based on undesirable residential displacements, proximity to nearby schools, and cost. In 2006, the City of Phoenix conducted a traffic circulation study to evaluate the impacts of the proposed freeway on the local street system, including the shift of access to Foothills Reserve and Calabrea from Pecos Road to Chandler Boulevard. The City study found no adverse effects on the local street system from the freeway (see Appendix 3-1 in the Final Environmental Impact Statement).

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		Employment			
	4	Community Character	4-21	Socioeconomics	throughout the section is out of date (see comments above).
	4	Community Character/General	4-21	Socioeconomics	Last paragraph states growth in the region has essentially halted since the 2007 recession; however ADOA indicates some small growth every year (1.1–1.6%) between now and 2035. Statement in the DEIS about growth is not accurate.
	4	Community Character/General	4-21	Socioeconomics	Pecos Road is a significant recreational bicycle route; no discussion is included about what construction of the highway would do to recreational use of this road.
	4	Community Character/General	4-21	Socioeconomics	Social Conditions often include a discussion of recreation opportunities and changes to those in terms of community character; or sense of place. No discussion is included in the DEIS that addresses changes in recreation opportunities or changes to recreationist experiences; Section 4(f) impacts are discussed in Chapter 5 (trail, parkland, etc.) and impacts to these resources from a Section 4(f) perspective, but no discussion of the impacts from a social perspective is discussed. This should have been included in the social conditions or as a separate section of the DEIS.
	4	Environmental Consequences (all alternatives)		Socioeconomics	Impacts discussion in Chapter 4 is limited to long-term impacts to arterials (reduction in traffic). Only a brief mention of the short-term impacts of construction is made at the end of Chapter 4, however this discussion should have been carried into the resource analysis to paint a complete picture. Construction will result in traffic delays, traffic re-routes (intentional and casual) noise, air emissions, etc. The statement is made (DEIS page 4-21) that there would be no adverse impacts to access to schools, however if construction impacts are considered (which they have to be), this statement is not true for short-term impacts. The statement is similarly not true for the long term. Under any of the action alternatives, the removal of the traffic interchange at 32nd Street would, for example, significantly curtail access to at least four nearby schools: Kyrene de los Lagos Elementary School, Desert Vista High School, Kyrene Akimel A-al Middle School, and Kyrene de la Estrella Elementary School.
274	4	Environmental Justice	4-30, 4-36	Socioeconomics	The unit of analysis for the affected environment (census block-level, census block group) for Environmental Justice is appropriate. Affected Environment, Affected Populations identified the presence of minority and low-income populations throughout the study area. However, we disagree with the area of potential adverse environmental impacts being limited to the right-of-way footprint only. The ROW footprint for impacts is appropriate for displacements (direct impacts) only. Environmental justice populations can experience indirect adverse impacts such as adverse changes in air quality, noise levels, visual impacts, hazardous materials, property value, etc. Impacts to Environmental Justice populations are understated/underestimated in this DEIS as impact discussion is limited to direct impacts. Undue hardship is not defined when the analysis states "impacts would be temporary and would not cause undue hardship." The idea behind impacts being disproportionate, especially as it relates to low-income populations, is that they are often unable to relocate to avoid an adverse environmental impact—this is particularly true on tribal lands such as the GRIC, where individual residences may frequently be linked to a family's personal allotment of land. Therefore, although everyone in the ROW (including non-environmental justice populations) would be affected, if there are environmental justice populations—which the DEIS says there are—then the effects are disproportionate on those populations.
275	4	Environmental Justice	4-36	Socioeconomics	It is difficult for the reader to fully assess environmental justice impacts because air and noise are not analyzed in terms of general attenuation distance. Similarly, for property value impacts, no discussion is included to understand if there would be property value changes, if they would be negative, generally how far out those impacts would be experienced, and if EJ populations would be impacted. Generally, there is no discussion of how far away from the freeway impacts would be experienced, and therefore no discussion of potential environmental-justice impacts from air and noise, property value, etc.
276	4	Displacements and Relocations	4-40	Socioeconomics	Assessment of real estate values uses home values from 2006, 7 years ago. This data represents values prior to the 2007+ recession and is not the most recent, best available data. The housing market is quite different than it was in 2006; more recent data should have been employed in the analysis.
276	4	Economic Impacts	4-46+	Socioeconomics	There is no discussion of current housing inventory in the Study Area (not just the footprint/ROW), or of property values impacts at all, despite being a topic of concern over the long course of the project; property value as a public concern is expressed multiple times in Chapter 6 of the DEIS. ADOT's 2001 assessment of the impacts of freeways on property values from the expansion of the Superstition Freeway/US60 did find that there were economic benefits to property values from increased access and to multifamily residential, but that there were also

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274	**Environmental Justice and Title VI**	Impacts related to air quality, noise, visual resources, and hazardous materials are considered in the Draft Environmental Impact Statement for all populations, including environmental justice populations (see Draft Environmental Impact Statement page 4-58 [air quality], page 4-79 [noise], page 4-155 [visual resources], and page 4-152 [hazardous materials], respectively). The section entitled *Title VI and Environmental Justice*, beginning on page 4-29 in the Draft Environmental Impact Statement, presents acceptable methods, data, and assumptions to assess the potential for disproportionately high and adverse effects from the proposed action on environmental justice populations and disparate impacts to populations protected under Title VI. Based upon the content of the section, no such effects would result from the action alternatives. In light of comments received on the Draft Environmental Impact Statement, the above-referenced conclusions were confirmed in the preparation of the Final Environmental Impact Statement. To provide further clarity, the discussions of environmental justice and Title VI were separated and additional text explaining the relationship of environmental justice and Title VI to various environmental elements was added throughout Chapter 4, *Affected Environment*, *Environmental Consequences, and Mitigation*, as exemplified by the inserted text on page 4-29 of the Final Environmental Impact Statement. Land acquisition and relocation assistance services for the project shall be available to all individuals without discrimination in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act). The Uniform Act provides uniform, fair, and equitable treatment of people whose property is impacted or who are displaced as a result of the project, including those with special needs. Advisory assistance services and compensation practices are described in detail in the Arizona Department of Transportation's *Right-of-way Procedures Manual*, located at <azdot.gov/business/RightofWay_Properties/booklets-and-manuals>. For further discussion, see page 4-51 of the Final Environmental Impact Statement and Appendix 4-1. There would be no direct impacts on Gila River Indian Community land, nor would there be any adverse impacts that would require relocations from the Gila River Indian Community or allotment land.
275	**Neighborhoods/ Communities**	A review of the literature reveals few detailed and comprehensive analyses of the relationship between the transportation infrastructure and residential property values (Transportation Research Record: Journal of the Transportation Research Board, No. 2174, Transportation Research Board of the National Academies, Washington, D.C., 2010, pages 138–47; "Impact of Highways on Property Values: Case Study of the Superstition Freeway Corridor"). A recent study by the California Department of Transportation concluded that freeway facilities did not substantially affect sales prices in residential areas adjacent to the facility. The study concluded that it is the visibility of the freeway that may influence selling price and not distance or noise. As a result, the researchers generally concluded that the more the visibility of a new freeway is reduced, the less it would determine the sales price of homes sold in the area.
276	**Neighborhoods/ Communities**	The availability and valuation assessment of residential properties has been updated in the Final Environmental Impact Statement (see page 4-47).

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4	Economic Impacts	4-46+	Socioeconomics	negative impacts to property values on single-family residential housing (ADOT 2003). Impacts were based on distance to the freeway as well as a variety of other factors. The DEIS should have included a discussion of property values, both current in the study area (not just the right-of-way) as well as differentiating between impacts during construction and during operation.
				Property tax discussion is limited to direct loss of revenue through direct loss of properties (displaced, only in the ROW). No assessment is included of potential reductions in property tax revenue from changes in home prices in the study area if the project is constructed.

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277	**Neighborhoods/ Communities**	A review of the literature reveals few detailed and comprehensive analyses of the relationship between the transportation infrastructure and residential property values (Transportation Research Record: Journal of the Transportation Research Board, No. 2174, Transportation Research Board of the National Academies, Washington, D.C., 2010, pages 138–47; "Impact of Highways on Property Values: Case Study of the Superstition Freeway Corridor"). A recent study by the California Department of Transportation concluded that freeway facilities did not substantially affect sales prices in residential areas adjacent to the facility. The study concluded that it is the visibility of the freeway that may influence selling price and not distance or noise. As a result, the researchers generally concluded that the more the visibility of a new freeway is reduced, the less it would determine the sales price of homes sold in the area.

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REPORTS

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South Mountain Freeway 202 DEIS Comments
by Rick Haddow

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South Mountain Freeway 202 DEIS
Comments Prepared for PARC et al.
By: Rick Haddow

From approximately 2006 through 2012, I worked for the Arizona Department of Transportation ("ADOT") as a District Environmental Coordinator. As a District Environmental Coordinator for ADOT, I was responsible for, in part, overseeing environmental planning and compliance with regard to ADOT construction projects and related public outreach. Prior to working with ADOT, I was with the Maricopa County Health Department, Division of Environmental Services for approximately 18 years. While with the County I, in part, designed and implemented the ambient air monitoring system network to determine attainment status for criteria pollutants throughout the County – including the area impacted by the proposed South Mountain/Loop 202 Freeway. I have also worked, and continue to work, as an environmental consultant. As set forth in my CV, which is attached hereto, I have significant experience in assessing environmental impacts and the mitigation thereof, as well as in air and water monitoring, modeling, and permitting.

278 I recently reviewed the ADOT Draft Environmental Impact Statement for the South Mountain/ Loop 202 Freeway ("DEIS") and was shocked at what was presented. The DEIS is mostly standard boiler plate information as copied from regulatory documents. The use of data, the methodology employed, and the conclusions presented in the DEIS are absolutely without technical merit and do not comply with the fundamental concepts and purpose of an environmental impact statement. The DEIS does not protect or properly inform the citizens of the level of risk to public health by building the freeway. Following are some of my comments based on my thirty years of experience in the environmental field.

279 The DEIS utilizes faulty wind speed data and methodology in doing its modeling. Wind speed is an essential part of the air shed modeling that ADOT used to determine, in part, regional stability – which relates to inversion layers and local weather patterns vis-à-vis projected freeway pollution. For example, the DEIS inputs are based on times that are not concurrent with pollution building hours. The DEIS also fails to correlate the morning traffic hours 0500 to 1100 during the build up of tail pipe emissions during an air shed inversion. The ability to determine CO and Particulate concentrations needs accurate wind data measurements during periods expected to have high pollutant concentrations.

280 The South Mountain Transportation Corridor Study ("SMTC") – a scoping document/component of the DEIS – confirms that South Mountain greatly influences the local air shed movement. According to the SMTC, down slopes bring cooler air in the evenings. The SMTC and the DEIS, however, fail to indicate that this process intensifies the morning desert inversion, exacerbating pollutant concentrations. Air quality will worsen by the influence of the mountain and any build option. The mountain creates its own small air shed, which is not evaluated by the DEIS. All reporting data uses valley wide components for stated results.

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278	**Environmental Impact Statement Process**	The study used state-of-the-practice, scientific community methods and similarly accepted methods. Methods, assumptions, and data were developed early in the environmental impact statement process and peer reviewed by the Federal Highway Administration, the Arizona Department of Transportation, and other federal, State, and local agencies. Peer reviewers concluded that the methods, assumptions, and data are appropriate. The Draft Environmental Impact Statement has sufficient technical merit, does comply with "fundamental concepts and purpose of an environmental impact statement," and does appropriately and properly inform the public. The Arizona Department of Transportation and Federal Highway Administration, in cooperation with the U.S. Army Corps of Engineers, the U.S. Bureau of Indian Affairs, and the Western Area Power Administration, prepared the Draft and Final Environmental Impact Statements and Section 4(f) Evaluation in accordance with the National Environmental Policy Act of 1969 [42 United States Code § 4332(2)(c)], Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 United States Code § 303, as amended), and Section 404 of the Clean Water Act of 1977 (33 United States Code § 1251). All of these agencies are experienced in the review of National Environmental Policy Act documents and have found the logical sequence of decision making to be sound and in line with National Environmental Policy Act requirements. The Draft Environmental Impact Statement and Section 4(f) Evaluation 1) satisfies Federal Highway Administration and Arizona Department of Transportation's environmental analysis requirements; 2) provides a comparison of the social, economic, and environmental impacts that may result from implementation of the proposed action—construction and operation of a major transportation facility; and 3) identifies measures to avoid, reduce, or otherwise mitigate adverse impacts.
279	**Air Quality**	The air quality assessment for the proposed freeway analyzed impacts from carbon monoxide and particulate matter (PM_{10}) and followed U.S. Environmental Protection Agency guidelines. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones. For mobile source air toxics, the analysis showed that for the Study Area, constructing the freeway would have a marginal effect on annual emissions in 2025 and 2035 (less than a 1 percent difference in total annual emissions between the Preferred Alternative and No-Action Alternative). With the Preferred Alternative in 2035, modeled mobile source air toxics emissions would decrease by 57 percent to more than 90 percent, depending on the pollutant, despite a 47 percent increase in vehicle miles traveled in the Study Area compared with 2012 conditions. The air quality analyses were updated for the Final Environmental Impact Statement, including a quantitative particulate matter (PM_{10}) analysis, and are more fully described beginning on page 4-68 of the Final Environmental Impact Statement. Modeling methodology and results were reviewed by the Federal Highway Administration, Arizona Department of Transportation, and Maricopa Association of Governments.

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281	The sampling and stability data relied on by the SMTC and the DEIS is inaccurate. ADOT relies on air data taken at the Phoenix airport in the middle of the Valley without terrain conditions that proximate the region impacted by the South Mountain Freeway. Even based on the airport data, however, ADOT finds E and F stability 57% of the time. That is, according to ADOT "air shed mixing poorest diffusion condition." The actual 202 stability would be much worse, compounding Phoenix airport conditions by stronger temperature inversions because of the mountain's location and size. More pollutants from the freeway next to the ground will be trapped more quickly with significantly higher expected pollutant concentrations in the Ahwatukee community. ADOT DEIS did not use MCAQD DELTA Temperature instruments for calculating inversion conditions to determine accurate pollutant concentration projections. ADOT DEIS technical documents clearly show that Maricopa County Air Quality delta T systems data was not used for actual ground level measurements of temperature inversions. Without this data of actual inversion strength, which shows how quickly pollutant concentrations will increase, any modeling cannot accurately reflect the population exposure to those pollutants. Stability and Air Quality modeling conducted by ADOT as set forth in the DEIS provides no useful data and must not be used to determine potential air pollution concentrations of the South Mountain 202 freeway.
282	ADOT used Aircraft Communications Addressing and Reporting System (ACARS) for vertical temperatures and wind profiles. This method does not correlate to ground level inversion strength for population exposure and is not a scientific method or remotely reasonable to conclude accurate results. Data used does not have any quality assurance or quality control measurements. This means the equipment used does not have proven repeatability to produce the same temperature or wind speed for any given measurement. Moreover, no standard heights were used for correlating air shed temperatures. For example, one data point is measured at 2000 feet the next is at 3000 feet separated by miles and not at the same time of day. These random numbers were used by ADOT in a model without identifying the program. Any results derived from the ACARS data are incomplete, not relevant, and mislead the community with technical jargon trying to show justification of expected air quality concentrations for each build and no build situation. Not only is the data not taken from the freeway project area, the data is randomly gathered at different heights, locations, and times. If a temperature sensor or wind speed and direction system cannot produce the same temperature/direction/speed each time for the same given test, the data is not valid and must not be used for modeling. As indicated previously, the data used in the DEIS is not valid without any quality assurance and quality control data to support measurements.
281	ADOT incorrectly uses ambient delta temperatures for determining air quality inversions. Page 18 of the DEIS Technical Report of the air quality section shows ambient delta temperature differences between air quality monitoring stations separated by many miles and different elevations. This spatial distance is not how to determine inversion strength. The DEIS report author produces figures, graphs and explanation of their findings of inversions found and expected in the future. This clearly shows that ADOT does not

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279 (cont.)		The U.S. Environmental Protection Agency-recommended wind speed of 1 meter per second was used in the modeling. Traffic volumes during the evening peak hour were used in the modeling to represent worst-case conditions. During the time that Maricopa County was in nonattainment for carbon monoxide, it was as a result of exceedances of the 8-hour standard associated with evening traffic.
280	Air Quality	The South Mountains may redirect airflow, but they do not stop airflow.
281	Air Quality	At the request of (then) Arizona State Senator John Huppenthal, short-term monitoring of meteorological conditions at Pecos Road and 24th and 40th streets was conducted during 2006 and 2007. Results of this sampling and data from various Maricopa County Air Quality Department monitoring sites were included in the technical report for informational purposes only.

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	understand air quality modeling and misrepresents the danger to the citizens from Loop 202 Freeway pollution.
281	Delta temperature is used vertically with two temperature sensors comparing the difference of temperature between them. Standard Delta temperature systems used for air quality modeling and forecasting daily air quality by County and State officials has one temperature sensor at three meters and the other at ten meters, directly above each other. An inversion is when the air at the lower sensor is cooler than the upper sensor regardless of the ambient temperature. Inversion strength is only a few degrees, with five degrees being a very strong inversion. The facts, figures, and explanation of the DEIS technical documents using delta temperature clearly show the report has no merit. Those in the atmospheric measurement business understand that the DEIS author does not understand the meaning of delta temperature, how it is obtained, used or its ability for meaningful input into air quality models. An example of this lack of understanding can be found on page 29 of the ADOT Technical Report, Air Quality section, which states that, "[t]he difference in the hourly temperatures at the two locations were again plotted to provide an indication of the atmosphere's stability; the results are represented in figure 15. Positive numbers indicate that the temperatures at SMPP were warmer than at Pecos road location and represent inversion conditions during that hour." Inversion measurements to determine pollution concentrations are never conducted as ADOT purports. What is worse is that those measurements made it into their air quality prediction models, falsely reporting results to the public as good science.
281	Notwithstanding that this NEPA process has taken over 12 years, ADOT has not conducted any studies on atmospheric and/or ambient quality/conditions in the Ahwatukee area. As a result, there is no valid baseline data to input into air quality models that predict how bad the pollution in the area will be. Sites listed for reference to determine air quality for the citizens are nowhere near the impacted area and should not be used to determine air quality north of the Pecos Road alignment. Similarly, there are no temperature soundings for accurate air shed profiling. There are no air toxics measurements taken to understand the current components of the ambient air quality, and there are no wind speed and direction instruments installed as necessary to apply good science for modeling. These wind speed and direction monitors should have been installed north of the Pecos Road alignment east and west throughout the Ahwatukee community and near South Mountain to show how the Ahwatukee air shed does not remove tail pipe emissions from the freeway, but actually washes pollutants to the west in the mornings, shifting north near noon, with winds lastly northeasterly. This normal wintertime pattern known to all Arizona air quality technical persons is not shown or reflected in the ADOT DEIS.
283	In my opinion, wintertime inversions with multiple days of air stagnation will cause exceedances of the ambient air quality standards for the criteria pollutants for any build option inside the Ahwatukee area.
284	My independent research and data review of other local air quality databases with more accurate and relevant measurements (i.e. hourly wind speed and direction, actual

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282	Air Quality	The Aircraft Communications Addressing and Reporting System data were not used for modeling; they were included for informational purposes only.
283	Air Quality	Phoenix is in nonattainment for particulate matter (PM_{10}) and ozone. Exceedances of ozone attributable to the proposed freeway are unlikely, and the analysis of particulate matter (PM_{10}) impacts also suggests the same for particulate matter (PM_{10}). See page 4-76 of the Final Environmental Impact Statement for the results of the particulate matter (PM_{10}) analysis.
284	Air Quality	Identification of data sources used in the comment would have been helpful. The comment would need to provide citations and references for the information provided for further comment response. The air quality assessment for impacts from carbon monoxide followed the U.S. Environmental Protection Agency guidelines in *Guideline for Modeling Carbon Monoxide from Roadway Intersections* (A-OAQPS, 1992). Inputs to the model were based on U.S. Environmental Protection Agency-recommended values or were selected to provide a conservative estimate of impacts. Modeling methodology and results were reviewed by the Federal Highway Administration, Arizona Department of Transportation, and Maricopa Association of Governments. Although the qualitative particulate matter (PM_{10}) hot-spot analysis performed in the Draft Environmental Impact Statement met 40 Code of Federal Regulations § 93.111(c), the Arizona Department of Transportation and Federal Highway Administration have updated the qualitative analysis to a particulate matter (PM_{10}) quantitative analysis for the Final Environmental Impact Statement to ensure that a state-of-the-art analysis is completed for the proposed action. The quantitative project-level particulate matter (PM_{10}) hot-spot analysis prepared for the proposed project is summarized in the prologue to the Final Environmental Impact Statement (page xiii) and is more fully described beginning on page 4-68 of the Final Environmental Impact Statement. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones. A particulate matter ($PM_{2.5}$) analysis is not required since the area is in attainment for the particulate matter ($PM_{2.5}$) National Ambient Air Quality Standard.

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	inversion strength and air stagnation durations, and many other components of air modeling) shows that the Ahwatukee/Foothills area north of the proposed freeway alignment will exceed both particulate matter (PM) and Carbon Monoxide (CO) standards within 100 meters (micro scale siting) from the edge of roadway of the South Mountain Freeway during adverse weather and meteorological conditions. Valley-wide pollutant concentrations will be high, and any build option will compound and intensify trapped pollution between the freeway and the mountain.
284	Ahwatukee residents 100 to 500 meters (middle scale siting) away from the freeway alignment will most likely experience unhealthy exposures near or at the air quality standards for particulate matter (PM). Diesel Particulate Matter, the fine PM 2.5 µm will be carried further into the community and based on the DEIS list of the components of diesel particulate matter, will present serious health concerns.
285	The data used to support the DEIS does not have quality assurance or quality control and is not valid. All air quality data used must meet quality assurance measurements of precision and accuracy to be valid. Quality control measurements using different testing systems than quality assurance must meet standards (test concentrations). Incorrectly applying slope and intercept calculations to data can potentially reduce air quality measurements into database. Improper testing of air quality instruments will invalidate data. Not meeting the testing frequency requirements for either QA or QC will invalidate data.
	Particulate and gaseous samplers and meteorological systems require routine maintenance, failure to maintain equipment as required will invalidate collected air quality data. The DEIS does not ensure data measurements used are valid, traceability of measurement protocols are missing and should make all reports suspect of erroneous results.
286	Page 67 of the technical report on the air quality section states that "the selection of each of the metrological conditions was based on EPA-454-/R 92-005, guidelines for modeling carbon monoxide from roadway intersections." This is not how you would determine the air quality impact of an eight lane freeway. It appears that the DEIS was completed by contractors without experience in the industry and randomly attached meaningless data, facts and figures that do not support the stated ADOT conclusions. ADOT review of submitted air quality technical data and conclusions are without merit, proper review of methodology and applied science. This report provides no real analysis of the stated purpose of the DEIS.
287	The DEIS component addressing the US Army Corps of Engineers section 404 of the clean water act, and the 401 certification by ADEQ is in jeopardy. EPA has found that ADOT has routinely failed to comply with contracts with FHWA, USACOE, ADEQ and USFS to maintain, limit or control sediment discharges into jurisdictional waters of the US. The Gila and Salt rivers are waters of the US inside this planned project. EPA actions have created an environmental program inside of ADOT. This environmental program has failed to implement the most basic construction mitigations. Statewide highway

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285	**Air Quality**	Ambient levels of the criteria pollutants reported were obtained from the Maricopa County Air Quality Department, which follows U.S. Environmental Protection Agency quality assurance/quality control procedures.
286	**Air Quality**	The air quality assessment for impacts from carbon monoxide followed the U.S. Environmental Protection Agency guidelines in Guideline for Modeling Carbon Monoxide from Roadway Intersections (A-OAQPS, 1992). This is accepted methodology. See <epa.gov/ttn/scram/dispersion_prefrec.htm#cal3qhc>.
287	**Water Resources, Waters of the United States**	Controlling and treating runoff is a normal function of the Arizona Department of Transportation projects. No evidence is offered to substantiate such statements. The U.S. Army Corps of Engineers, as a cooperating agency, has participated and contributed in each step of the environmental process. The agency has found the logical sequence of decision making to be sound and in line with National Environmental Policy Act requirements. The Arizona Department of Environmental Quality has also contributed to the process. Both agencies as referenced in the comment have oversight roles in project permitting as established in the Clean Water Act (Sections 401, 402, and 404). Extensive mitigation in accordance with the permitting requirements can be found in the *Water Resources* and *Waters of the United States* sections of Chapter 4 of the Final Environmental Impact Statement. The Arizona Department of Transportation is fully obligated and committed to implementation and adherence to those mitigation strategies.

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	construction along hillsides have created large and numerous rills (deep cuts down hillsides). These rills, wash sediment into our waterways, polluting the ecosystem. ADOT management down plays environmental stewardship, by stating "we have always done it this way". ADEQ, Army Corps and FHWA do not conduct any inspections. Internal ADOT environmental staff does not influence ADOT management; ADOT management is self environmental regulating without fear of ADEQ, FHWA or other construction partners. FHWA does not provide funding for continued maintenance of hillside erosion after construction. Statewide ADOT does not provide its maintenance highway workers funding to mitigate sediment discharges from hillside rills and failed sediment control features of the original construction best management practices. ADOT has failed to protect the environment in nearly all completed construction sites with the same terrain of the South Mountain 202. It is expected that ADOT will not honor their own Statewide Individual Stormwater permit, allowing sediment discharges during and after construction of the freeway.
288	Tail pipe emissions and other transportation discharges including: material lost from untarpped or improperly tarpped trucks, fluids/chemicals leaking from container vehicles can dry and become reintrained into the atmosphere potentially harming residents closest to freeway.
	Tribal lands do contribute to the local air shed loading of particulate matter. The entire area south of the planned freeway is unstable land used and never maintained for dust control. No enforcement ability by Federal, State or County for the impact to the Ahwatukee residents, this additional particulate will be in addition to particulate generated by vehicle emissions.
289	PM10 blown onto the freeway from the Tribal lands to the south will be reintrained into the atmosphere, allowing PM10 normally not reaching the Ahwatukee areas to be re broadcasted into the air and carried into the neighborhood.
	A hazardous materials accident would trap the community or create panic to shelter in place with gaseous plume and fire exposure. Most winds will carry hazardous materials and smoke into the area north of the freeway. Potentially trapping people between the plume and their ability to exit safety without traveling through the plume of toxic gases.
290	Visibility will be significantly reduced for all residents looking south, southeast and southwest. Observations of local freeways from local area hill tops inside metro Phoenix clearly shows the dark particulate/tail pipe emissions above valley freeways. This planned freeway will be no different. Heavy particulate and tailpipe emissions will obscure current scenic views.

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288	**Air Quality**	Paved road dust was considered in the quantitative, project-level, particulate matter (PM_{10}) hot-spot analysis prepared for the proposed project. The results of the analysis are summarized in the prologue to the Final Environmental Impact Statement (page xiii) and are more fully described beginning on page 4-68 of the Final Environmental Impact Statement. The carbon monoxide and particulate matter (PM_{10}) analyses demonstrated that the proposed freeway would not contribute to any new localized violations, increase the frequency or severity of any existing violation, or delay timely attainment of the National Ambient Air Quality Standards or any required interim emissions reductions or other milestones.
289	**Air Quality**	According to the 2013 Arizona Department of Transportation *Air Quality Assessment South Mountain Freeway 202L Draft Report*, review of wind data from the Gila River Indian Community monitoring site at St. Johns suggests that during the morning hours and associated with mountain-drainage air flows and stable atmospheric conditions, wind flows are from the southeast and follow the Gila River channel to the north. Locations to the east of St. Johns experience flow from the east to the lower elevations along the Gila River. During the warmer hours' improved mixing, flows typically follow the river channel and come from the north and northwest. Likewise, during a 1-month-long meteorological monitoring period (November 20, 2006, through December 21, 2006) at Pecos Road and 40th Street and a second 1-month-long monitoring period at Pecos Road and 24th and 40th streets (April 19, 2007, through May 21, 2007), winds during the morning hours typically were from the northeast. During the warmer hours, and with improved mixing, winds typically were from the west.
290	**Air Quality**	Impacts on visibility are primarily related to extremely small aerosols from multiple sources. As noted in the text box on page 4-69 of the Final Environmental Impact Statement, in the Phoenix metropolitan area, about 34 percent of particulate ($PM_{2.5}$) emissions are attributed to on-road mobile sources, which contributes to the brown cloud and visibility issues; however, reductions in on-road mobile source emissions through emission controls have produced visibility improvements. The Arizona Department of Environmental Quality monitors visibility in the Phoenix metropolitan area.

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Curriculum Vitae

Richard B. Haddow
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2006 to January 2012 Arizona Department of Transportation: Globe District Environmental Coordinator

2003 to Present Haddow Environmental Research Organization: Air Quality Expert Witness, EPA Qualified Researcher, AZ State Licensed Investigator, qualifying party.

1985 to 2003 Maricopa County Health Department / Environmental Services: Quality Assurance Manager, Public Health Engineer, Environmental Health Supervisor, Open Burning/Asbestos Manager, Environmental Investigator Supervisor

Knowledge Skills and Abilities (KSA) Technical

Represent the ADOT Globe District Engineer for all environmental programs while providing technical assistance and expertise to local governments. Represented Maricopa County Environmental Services to the MAG Committee, Air Quality Technical Advisory Committee.

Conducted statistical analysis with air quality modeling, meteorological modeling and travel demand modeling to determine air quality equipment siting criteria to meet Maricopa County EPA grant objectives.

Managed and maintained multiple complex databases for air quality modeling. Conducted research studies using demographic and land use data to address the impacts of alternative highway designs.

Conducted stakeholder groups and community workshops on environmental rule making. Forecasted carbon monoxide, particulate and ozone advisories to the public and media. Worked with and for attorneys to collect information and provide testimony as an expert witness. Provided testimony in support of industrial clients against claims that they were in violation of environmental laws. Testified as an expert witness for the Attorney General's Office for Superfund Investigations.

Areas of expert subject matter include: air quality modeling, law enforcement, air pollution chemistry, air monitoring instrumentation and siting, analytical chemistry, air toxics, meteorological monitoring and forecasting, environmental compliance, regulatory analyses, audits, permitting, emissions inventories, environmental data analysis, quality assurance, quality control, soil and water sampling, technical report writing, data acquisition instrumentation calibrations (as well as repair and maintenance), standards testing and traceability.

Conducted environmental investigations.

Earned more than ten semi-annual certifications as an ADEQ visible emissions evaluator EPA Method 9.

Performed technical review of air, soil, water and meteorological data, performance and system auditing, database management, air monitoring and site assessment and selection. Adhered to the Code of Federal Regulations for NAAQS (National Ambient Air Quality Standards).

Experienced in the arenas of water programs, data validation, air pollution training, air pollution prevention, hazardous air pollutants, water supply field inspection, hazardous materials and waste management.

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Evaluated permit applications to determine the potential impact to communities surrounding industrial facilities in the event of a release (Off Site Consequence Analysis). Prepared complex reports, findings and conclusions and presented to executive management.
Conducted stakeholder group meetings and community workshops to explain complex environmental programs. Worked with neighbors to resolve complex issues that had potential to directly impact their quality of life.

Knowledge Skills and Abilities (KSA) Professional Experience
Represent the ADOT Globe District Engineer for COGs, MPOs and tribal transportation groups. Maricopa County Environmental Services: Worked with groups by means of committee/task force to resolve complex rule making and air quality planning by applying political consensus. Wrote, operated and managed Federal grants with signature authority, as well as multiple ongoing complex programs. Designed, built and maintained an ambient air monitoring program with use of ISTEA funds ($1.2M) to ensure future state transportation monies. Preparation and dissemination of complex models, findings, and conclusions to executive management. Conducted environmental seminars and training programs that simplified the understanding of a highly technical analysis.

Evaluated permit applications for process engineering such as Title V permits and Non Title V permits, including mobile sources. Held regulatory authority over permit holders to ensure compliance within the sand and gravel industry as well as mining and earthmoving operations. Managed multiple ongoing environmental programs. Applied AP-42 emission factors as related to hot asphalt mixing facilities, Portland cement plants, and sand and gravel processing. Reviewed and commented on air quality permit applications to Arizona Department of Environmental Quality (ADEQ) and non-attainment counties. Wrote, implemented and maintained dust control programs. Managed and trained air quality permit investigators. Conducted environmental seminars and training programs for regulated industry groups and regulators. Conducted and managed storm water pollution prevention planning programs (SWPPP).

Operated and managed an ambient air monitoring program in accordance with the USEPA objectives for criteria pollutants: Particulates (PM-10μm & 2.5μm), carbon monoxide, ozone, sulfur dioxide, nitrogen dioxide and lead. Monitored air toxics, hazardous air pollutants, and visibility including enhanced ozone monitoring (PSD). Conducted technical research for the assessment of air quality (modeling). Performed analysis of statistical data to evaluate attainment status of pollutants. Operated and managed the quality assurance program to ensure data met or exceeded ambient air monitoring protocols, methods and traceability of standards. Managed federal and state performance audits. Performed field environmental monitoring and investigations for special studies. Managed a team of air quality assurance technicians, chemists, and electronic technicians. Managed the chemistry laboratory operations. Designed, installed, managed and maintained the network for ambient air monitoring stations in Maricopa County, Arizona. Conducted joint special studies for ozone, particulates, carbon monoxide and visibility with USEPA, ADEQ, and the USDA Forest Service. Managed the database for ambient air quality and quality assurance in the USEPA AIRS database. Designed and managed the gaseous and particulate standards program for QA/QC. Author of the first approved by USEPA for Quality Assurance and Operating Procedures Manual for Field and Office Activities of Maricopa County, Arizona.

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Worked closely with Federal Highway Administration (NEPA), US Army Corps of Engineers 404 Permits, US Fish and Wildlife, Arizona Department of Game and Fish, Arizona Historical Preservation Office, Bureau of Land Management (Arizona) and ADEQ 401water quality cert., ADOT Individual (MS4) permit to ensure compliance of mitigation measures statewide.

Education
Quality assurance ambient air monitoring, CARB Sacramento, Ca 1985
Bachelor of Science, AZ State Univ., MBA course completed 1993.
Environmental Investigations, Western States Projects 1994.
Regulatory Framework for Toxic and Hazardous Substances, Department of Manufacturing and Industrial Technology, Arizona State University, College of Engineering and Applied Sciences 1995.

Military Service
US Navy, Advanced Electronics, Qualified in Nuclear Submarines 1978-1984,
Honorable Discharge

Licenses and Certifications
State of Arizona Private Investigation Business License # 1003813
Qualified US Environmental Protection Agency Researcher
Erosion Control Coordinator, Arizona General Contractors Association
Chemical-terrorism Vulnerability Information User - Certificate

Community Services
Pinal County Sheriff's Office Criminal Investigation Bureau Volunteer/Crime Victim Advocate
Chair, Pinal County Local Emergency Planning Committee (PC LEPC)

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REPORTS

Seven

Comments on the SMF DEIS
Re: Cultural Resources Impacts
by Samantha Skenedore, Of Counsel: The Shanker Law Firm, PLC.

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COMMENTS ON THE SOUTH MOUNTAIN FREEWAY
DRAFT ENVIRONMENTAL IMPACT STATEMENT
ISSUED APRIL 2013
REGARDING IMPACTS TO CULTURAL RESOURCES
July 22, 2013

Prepared by Samantha C. Skenandore
Of-Counsel, The Shanker Law Firm, PLC

292 The Federal Highways Administration (the "FHWA") and the Arizona Department of Transportation ("ADOT") prepared and issued a Draft Environmental Impact Statement and Section 4(f) Evaluation (the "DEIS") of the Freeway project pursuant to 42 U.S.C. §4332(2)(c), 49 U.S.C. §303 and 33 U.S.C. §1251 in April 2013. The DEIS particularly addresses the preferred alternative (the "E1 Alternative") for building a major highway known as the South Mountain Loop which will destroy and desecrate a mountain range held sacred by Native Americans from various tribes.[1] The FHWA and ADOT issued the DEIS and selected the E1 Alternative despite the fact that the E1 Alternative will (1) cause irreversible damage to the sacred and historically significant South Mountain,[2] and (2) have a profound negative impact on the religious, cultural and spiritual well-being of Native Americans. Portions of South Mountain lie within the exterior boundaries of a federally-recognized tribe – the Gila River Indian Community (the "GRIC").[3] The GRIC and other tribes have attached a significant traditional, cultural and religious value upon South Mountain and adjacent areas.

293 The FHWA and the ADOT failed to adequately consult with the tribes. This failure is carried over into the DEIS which, as a result, draws flawed conclusions. The FHWA and ADOT should re-initiate the Section 106 process with reasonable and good faith efforts to consult all tribes and amend any and all technical studies identifying, assessing, evaluating and mitigating adverse impacts to cultural resources with tribal input.

294 In addition, the FHWA and ADOT should seek a review by the National Advisory Council on Historic Preservation to conduct a case analysis of the Section 106 deficiencies and strictly adhere to the Council's recommendations for corrective actions. *See* 36 C.F.R. §800.9. The aforementioned recommendations are based on the following:

I. The FHWA and ADOT is non-compliant with Section 106 ("Section 106") of the National Historic Preservation Act of 1966, as amended (16 U.S.C. § 470).

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[1] *See* ADOT, with concurrence from the FHWA, identified the E1 Alternative as its Preferred Alternative in the Eastern Section (the "E1 Alternative"). *See* ADOT, South Mountain Study Team, *Summary*, P. 38, website available at http://www.azdot.gov/Highways/Valley_Freeways/Loop_202/South_Mountain/PDF/south-mountain-loop-202-docs/EIS/summary/Summary.pdf (viewed July 18, 2013).
[2] The FHWA and ADOT determined that the South Mountain qualified as a Traditional Cultural Property. *See* ADOT, South Mountain Study Team, Summary, Table S-3, p. S-17 available at http://www.azdot.gov/Highways/Valley_Freeways/Loop_202/South_Mountain/PDF/south-mountain-loop-202-docs/EIS/summary/Summary.pdf (viewed July 18, 2013).
[3] For more information on the Gila River Indian Community, please see the official page available at: http://www.gilariver.org/ (viewed July 18, 2013).

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292	**Cultural Resources**	The religious and cultural importance of the South is acknowledged in the Draft Environmental Impact Statement in several locations, notably pages 4-132 and 5-26 as well as in the Summary of the Draft Environmental Impact Statement. The description in the Draft Environmental Impact Statement is based on input received from the Gila River Indian Community and its members and other Indian Nations and their members. The Draft Environmental Impact Statement, after consultation and coordination efforts, accommodates and preserves (to the fullest extent possible from the available alternatives) access to the South Mountains for religious practices. A very small portion of the mountain would be impacted by the proposed freeway (less than 0.03 percent of the total area). Although the Draft Environmental Impact Statement describes the impact on the South Mountains as adverse, Native Americans would not be kept from practicing their beliefs, access to the mountain would be maintained, and mitigation measures would be implemented based on input from members of the Gila River Indian Community. Since the beginning of the environmental impact statement process, the Federal Highway Administration and Arizona Department of Transportation have been carrying out cultural resource studies and engaging in an ongoing, open dialogue with the Gila River Indian Community Tribal Historic Preservation Office regarding the identification and evaluation of places of religious and cultural importance, including the South Mountains, to the Gila River Indian Community that may be adversely affected by the proposed freeway. Information describing the outreach and collaboration can be found in Chapter 2 and in text beginning on pages 4-140 and 5-26 of the Final Environmental Impact Statement. Mitigation measures were suggested in a letter from the Lieutenant Governor of the Gila River Indian Community to the Administrator, Arizona Division, Federal Highway Administration, dated June 23, 2010 (see page A372 of Appendix 2-1 of the Final Environmental Impact Statement). In this letter, the Gila River Indian Community submitted a proposal to address partial measures for the mitigation of adverse effect from the Pecos Road Alignment of the South Mountain Freeway. The Gila River Indian Community's proposal found the engineering solutions acceptable, but stated that implementation and construction of the proposed freeway would require further consultation. In committing to the evaluation of the South Mountains Traditional Cultural Property, the Arizona Department of Transportation and Federal Highway Administration also committed to the Gila River Indian Community's participation in ongoing engineering design refinements and acknowledged the importance of all plants and animals in the traditional culture of the Akimel O'odham and Pee Posh of the Gila River Indian Community. To clarify, use of the mountains for the purposes of the proposed freeway represents two-tenths of one percent of the total mountain range. Since 1988, and as part of this environmental impact statement process, several measures have been undertaken and will be undertaken to further reduce effects on the mountains. These measures, including narrowing the design footprint, acquiring replacement land immediately adjacent to the mountains, and the provision of highway crossings, are outlined in text beginning on page 5-23 of the Draft Environmental Impact Statement.

(Responses continue on next page)

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295	Section 106 of the National Historic Preservation Act of 1966, 16 U.S. C. § 470, requires federal agencies, here the FHWA, to take into account the effects of their actions on historic properties listed on or eligible for inclusion in the National Register of Historic Places (the "NRHP")[4] and allow the Advisory Council on Historic Preservation (the "ACHP") a reasonable opportunity to comment. The ACHP promulgated regulations of the historic preservation review process entitled "Protection of Historic Properties" in 36 C.F.R. Part 800. The Section 106 process is designed to properly identify, assess and mitigate adverse actions on cultural resources. The process requires the lead federal agency to identify historic properties and determine if such properties are eligible for listing in the NRHP. To be determined eligible for listing in the NRHP, properties must be a place of significance in American history, architecture, archaeology, engineering or culture and meet at least one or more of the following criteria:
296	**Criterion A**. [A]ssociated with events that have made a significant contribution to the broad patterns of our history; or **Criterion B**. [A]ssociated with the lives of persons significant in our past; or **Criterion C**. [E]mbody the distinctive characteristics of a type, period or method of construction or that represent the work of a master, or that possess high artistic values or that represent a significant distinguishable entity whose components may lack individual distinction; or **Criterion D**. [Y]ielded, or may be likely to yield, information important in prehistory or history. They also must possess integrity of location, design, settings, materials, workmanship, feeling and/or association. Properties may be of local, state or national importance.[5]
297	During the development of the Freeway project, the GRIC underwent the process to obtain a Tribal Historic Preservation Officer (THPO) to assist in identifying and nominating historic properties on GRIC's tribal lands[6] for the purposes of Section

[4] Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources. *See*: http://www.nps.gov/nr/ (viewed on July 19, 2013).
[5] See *Id.* and National Park Service, National Register Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties 1990, *available at* www.cr.nps.gov/nr/publications/bulletins/nrb38/htm. Criteria for eligibility for being on the National Register are: "associated with events that have made a significant contribution to the broad patterns of our history; are associated with the lives of persons significant in our past; embody the distinctiveness of a type, period, or method of construction, or…represent the work of a master, or…possess high artistic values, or…represent a significant and distinguishable entity whose components may lack individual distinction; or have yielded, or may be likely to yield, information important in prehistory or history." 36 C.F.R. § 60.4.
[6] Tribal lands means "all lands within the exterior boundaries of any Indian reservation; and …all dependent Indian communities" (16 U.S.C. § 470w(14)).

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Code	Issue	Response
293	**Cultural Resources**	Section 106 of the National Historic Preservation Act requires a government-to-government relationship between the Federal Government and Indian tribes as described beginning on page 4-140 of the Final Environmental Impact Statement. Section 106 requires that federal agencies take into account the effects of their undertakings on historic properties. This process requires consultation with tribal authorities. Consultation has occurred with Gila River Indian Community government officials, the Tribal Historic Preservation Officer, the Cultural Resource Management Program, many different tribal authorities, and the State Historic Preservation Office. The consultation has resulted in concurrence from the Gila River Indian Community Tribal Historic Preservation Office and the State Historic Preservation Office on National Register of Historic Places eligibility recommendations (including traditional cultural properties), project effects, and proposed mitigation and measures to minimize harm. This consultation has been ongoing and will continue until any commitments in a record of decision are completed.
294	**Cultural Resources**	The cultural and religious places of importance, like the South Mountains, are acknowledged in the Draft Environmental Impact Statement in several locations, notably pages 4-132 and 5-26. The proposed project would accommodate and preserve (to the fullest extent possible from the available alternatives) access to the South Mountains for religious practices. Section 106 of the National Historic Preservation Act requires a government-to-government relationship between the Federal Government and Indian tribes as described beginning on page 4-140 of the Final Environmental Impact Statement. Section 106 requires that federal agencies take into account the effects of their undertakings on historic properties. This process requires consultation with tribal authorities. Consultation has occurred with Gila River Indian Community government officials, the Tribal Historic Preservation Officer, the Cultural Resource Management Program, many different tribal authorities, and the State Historic Preservation Office. The consultation has resulted in concurrence from the Gila River Indian Community Tribal Historic Preservation Office and the State Historic Preservation Office on National Register of Historic Places eligibility recommendations (including traditional cultural properties), project effects, and proposed mitigation and measures to minimize harm. This consultation has been ongoing and will continue until any commitments in a record of decision are completed. As noted in Table 4-48, which begins on page 4-133 of the Draft Environmental Impact Statement, the Advisory Council on Historic Preservation has been consulted during the Section 106 process.
295	**Cultural Resources**	The Section 106 process of the National Historic Preservation Act is discussed on page 4-128 of the Draft Environmental Impact Statement.
296	**Cultural Resources**	Eligibility criteria for inclusion in the National Register of Historic Places are discussed on page 4-128 of the Draft Environmental Impact Statement.
297	**Cultural Resources**	The Gila River Indian Community's Tribal Historic Preservation Officer is discussed on page 4-128 of the Draft Environmental Impact Statement.

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	106.[7] The South Mountain has been approved as a traditional cultural property under criteria A and B.
298	The South Mountain, known in the Pima language as the "Muhadag Do'ag"[8] and in the Maricopa language as "Avikwaxos" consists of the Ma Ha Tauk, Gila, and Guadalupe Mountain Ranges. The mountain range abuts the northern territory of the GRIC and is the immediate landscape of the northern boundary of the GRIC reservation. A portion of main ridge north and main ridge south of the South Mountain is on GRIC land and serves as the 'Community's main, direct physical link to the South Mountains.' The South Mountain is a prominent figure in oral traditions of both the Akimel O'Odham (Pima) and the Pee Posh (Maricopa).
299	GRIC tribal members and the tribal government hold the South Mountain sacred and see it as central to its creation story. *See* Gila River Indian Community Resolution No. GR-41-07, A Resolution Designating the South Mountain Range (Muhadag, Avikwaxos) as a Sacred Place and Traditional Cultural Property of the Gila River Indian Community. The E1 Alternative would desecrate the South Mountain by cutting through it, resulting in a devastating negative disparate impact culturally, spiritually, and religiously upon GRIC tribal members.
298	On January 6, 1982, the Gila River Indian Community Tribal Council adopted an ordinance declaring "…as a matter of Community policy and legislative determination, that the public interests of the Pima-Maricopa people and the interests of all other persons living within the jurisdiction of the Gila River Indian Community require that the Community adopt a means whereby all sites, location, structures, and objects of sacred, historical or scientific interest or nature will be protected from desecration, destruction, theft, or other interference." *See* Gila River Indian Community Resolution No. GR-01-82.
	In 1989, the Gila River Indian Community Tribal Council adopted a resolution to preserve the lands of their Hohokam ancestors, by approving the "Policy Statement of the Four Southern Tribes (Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, Tohono O'odham Nation, and the Gila River Indian Community) which outlines the Four Tribes' intent to protect, promote, and preserve cultural affinity to the HuHuKam." See Gila River Indian Community Resolution No. GR-15-89.
	Most importantly to the present review, the Gila River Indian Community Tribal Council adopted a tribal resolution affirming that the South Mountain is "a sacred

[7] In the absence of a Tribal Historic Preservation Officer ("THPO"), the State Historic Preservation Officer assumes the duties of Section 106 review. Since the onset of the project in July 2001 (see DEIS, Table 2-1, Chapter 2), the GRIC successfully created its own Tribal Historic Preservation Office and employed a THPO.
[8] The DEIS neglects to address the accurate meaning of Muhadag Do'ag, the site which is also known as the South Mountain, South Mountain Range and/or Salt River Mountains (Range) based on the prominent and valid oral history of the GRIC. Do'ag means mountain and Muhadag means greasy.

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Code	Issue	Response
298	**Cultural Resources**	The cultural and religious places of importance, like the South Mountains, are acknowledged in the Draft Environmental Impact Statement in several locations, notably pages 4-132 and 5-26 of the Draft Environmental Impact Statement.
299	**Cultural Resources**	The cultural and religious places of importance, like the South Mountains, are acknowledged in the Draft Environmental Impact Statement in several locations, notably pages 4-132 and 5-26. The description in the Draft Environmental Impact Statement is based on input received from the Gila River Indian Community and its members and other Indian Nations and their members. The Draft Environmental Impact Statement, after consultation and coordination efforts, accommodates and preserves (to the fullest extent possible from the available alternatives) access to the South Mountains for religious practices. Although the Draft Environmental Impact Statement describes the impacts on the South Mountains as adverse, this would not prohibit Native Americans from continuing to practice their beliefs because only a small fraction of the mountain would be affected, replacement lands would be provided, and access to the mountain would be maintained, and mitigation would be implemented based on input by Native Americans. Several action alternatives were subject to the alternatives development and screening process; not just the E1 Alternative and alternatives located on the Community (Figure 3-6 on page 3-10 of the Draft Environmental Impact Statement illustrates a representation of such alternatives). Ultimately the other alternatives were eliminated from further study in the screening process and the Gila River Indian Community decided not to give permission to study alternatives on its land (see Draft and Final Environmental Impact Statement page 3-25). In June 2013, the Maricopa Association of Governments approved new socioeconomic projections for Maricopa County. The purpose and need and analysis of alternatives were updated and reevaluated using these new population, employment, and housing projections and corresponding projections related to regional traffic. The conclusions reached in the Draft Environmental Impact Statement were reconfirmed in the Final Environmental Impact Statement (see Chapter 3, *Alternatives*). Therefore, the Arizona Department of Transportation, with concurrence from the Federal Highway Administration, identified the E1 Alternative as the eastern section of the Preferred Alternative (which includes the W59 Alternative in the western section of the Study Area). In reaching its determination, the Arizona Department of Transportation sought to balance its responsibilities to address regional mobility needs while being fiscally responsible and sensitive to local communities.

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298	place/traditional cultural property …that…must be kept inviolate thereby recording the sacredness and significance of South Mountain to the people of the GRIC and its tribal government." *See* Gila River Indian Community Resolution No. GR-41-07 (April 2007). The resolution further states that the GRIC "strongly opposes any alteration of the South Mountain Range for any purpose"…and that any alteration "…would be a violation of the cultural and religious beliefs of the Gila River Indian Community and would have a negative cumulative effect on the continuing lifeways of the people of the Gila River Indian Community." *Id.* The O'odham concept of creation is not something in the past but is an ongoing process - one that GRIC members are intrinsically a part of and are obligated to participate in. Members from the Four Southern Tribes fulfill this duty through perennial ceremonies and rituals designed to preserve and stabilize the earth. Failure to fulfill those obligations is believed to result in great harm to the earth and the people who depend on it. Ceremonies are efforts undertaken for specific purposes in accordance with instructions handed down from generation to generation, and when generations of O'odham people are gathered together in the same time and place to carry out ceremony, this is the embodiment of culture. Rituals are performed in prescribed locations that are unique and specific sites possess different spiritual properties and significance. The O'odham are aware that the plants and animals that exist on the South Mountain range possess a kind of healing that cannot be found anywhere else in their current boundaries. O'odham traditionalists and elders of the Four Southern Tribes use portions of the South Mountain for periodic ceremonies and rituals. These are people who are keepers of the tribal peoples' heritage and culture who possess an essential role believed to sustain the tribal people as a whole. These people are responsible for passing on ceremonies and songs that have been performed for ages. Many O'odham songs are place-specific and refer to a certain mountain or bend in a river, as a way of respecting that place's centrality to O'odham culture and well-being. O'odham traditionalists also are people who follow the way of living from the earth: picking and harvesting traditional foods like many kinds of cactus fruits, foraging for wild plants to use as traditional medicines, and teaching and guiding the young in the cultural and spiritual ways.
300	Due to the fact that the South Mountain range is used and venerated by O'odham tribes and the Freeway project is a large-scale transportation project impacting a large sacred site footprint, strict adherence to Section 106 should have preceded the preparation and issuance of a DEIS. The Freeway project is noncompliant with Section 106 for the reasons set forth below:
300	**a. The DEIS clearly shows that the FHWA and ADOT failed to make reasonable and good faith efforts to consult all federally recognized**

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Code	Issue	Response
299 (cont.)		After determining that no prudent and feasible alternatives existed to avoid the South Mountains Traditional Cultural Property, efforts were undertaken to minimize harm. These measures are documented, beginning on page 5-27 of the Draft and Final Environmental Impact Statements. Some of these measures included avoidance of specific sites and providing multiuse crossings and fencing that would limit access by freeway users, but allow Gila River Indian Community members to continue to gain access to the site. In addition, the Federal Highway Administration and Arizona Department of Transportation committed to provide funds for the Gila River Indian Community to conduct a full evaluation of the South Mountains Traditional Cultural Property (see page 4-160 of the Final Environmental Impact Statement). Documentation of these efforts are in a letter from the Lieutenant Governor of the Gila River Indian Community to the Administrator, Arizona Division, Federal Highway Administration, dated June 23, 2010 (see page A372 of Appendix 2-1 of the Final Environmental Impact Statement). In this letter, the Gila River Indian Community submitted a proposal for the "Evaluation of Traditional Cultural Property and Adverse Effects of Transportation Corridor Development posed by the proposed construction of the current Pecos Alignment of the South Mountain Freeway." In committing to the evaluation of the South Mountains Traditional Cultural Property, the Federal Highway Administration and Arizona Department of Transportation also committed to the Gila River Indian Community's participation in ongoing engineering design refinements and acknowledged the significance of all plants and animals in the traditional culture of the Akimel O'odham and Pee Posh of the Gila River Indian Community.
300	**Cultural Resources**	Strict adherence to Section 106 of the National Historic Preservation Act not only preceded the preparation and issuance of a Draft Environmental Impact Statement, but is ongoing and will continue. The Draft and Final Environmental Impact Statements comply with Section 106 of the National Historic Preservation Act. The Section 106 process is documented in Table 4-47 beginning on page 4-145 of the Final Environmental Impact Statement.

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301	**Indian tribes that may attach religious and cultural significance to the Area of Potential Effects *See Id.* at §800.3(f)(2).**[9] The DEIS appears to suggest that FHWA and ADOT properly noticed, hosted, held and/or facilitated numerous meetings with the GRIC and perhaps, other tribes.[10] Table 2-1 in the DEIS illustrates that the project initiated in July of 2001, however, no subsequent record of meetings with any other tribe (other than the GRIC) is demonstrated in the table until March 18, 2011.[11] In other words, no other tribes appear to have been consulting parties nor were they present at the onset of the project. The only reference to solicitation of tribal input other than the GRIC did not occur until March 18, 2011. The GRIC was the only tribe at the table throughout the majority of the project for *over ten (10) years*. The DEIS fails to demonstrate any reasonable and good faith effort to bring all interested and impacted tribes to the table. Further Table 4-48 demonstrates that only one tribe, the Hopi Tribe, concurred on the Section 106 consultations. According to the DEIS, one other tribe, the Yavapai-Prescott Indian Tribe, deferred its participation to the Southern Tribes and all other tribes, including the GRIC, neither responded nor concurred with the Section 106 findings. The data speaks for itself. The tribes have been left almost entirely out of a project that has been under development since 2001. The tribes, however, are on record for openly and voluntarily asserting the significant cultural, traditional and religious attachment to the sacred site. Table 4-48 in the DEIS demonstrates that nearly each federally-recognized tribe associated with the Freeway project has opted to either refrain from responding to the FHWA and ADOT or has, in some rare instances, deferred its position to the Southern Tribes. The record, again, reflects an abundant failure on behalf of the FHWA and ADOT to gain meaningful consultation with the affected tribes, having performed outreach to only to the GRIC, one of the Four Southern Tribes. The Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, and Tohono O'odham Nation have not been consulted as stakeholders despite the fact that FHWA and ADOT are on record as having been directed to do so by at least one other government - the Yavapai-Prescott Indian Tribe. The record further shows that the majority of the tribes affected by the undertaking were not consulted early in the project's planning process via the initial scoping process, and were consequently not consulted about the technical reports, consultants and cultural expertise necessary to promulgate accurate findings.

[9] 36 C.F.R. § 800.3(f)(2)states, "Involving Indian tribes and Native Hawaiian organizations. The agency official shall make a reasonable and good faith effort to identify any Indian tribes or Native Hawaiian organizations that might attach religious and cultural significance to historic properties in the area of potential effects and invite them to be consulting parties. Such Indian tribe or Native Hawaiian organization that requests in writing to be a consulting party shall be one."
[10] *See* South Mountain Freeway (Loop 202) Draft Environmental Impact Statement and Section 4(f) Evaluation, April 2013, Chapter 2-4.
[11] *See Id.*, Chapter 2-4, Table 2-2 (2013).

Code	Issue	Response
301	**Cultural Resources**	As noted in Table 4-47, which begins on page 4-145 of the Final Environmental Impact Statement, the Ak-Chin Indian Community, the Gila River Indian Community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, the Tohono O'odham Nation, the Yavapai-Apache Tribe, and the Yavapai-Prescott Indian Tribe were included in the initial Section 106 consultation in 2003. At that time, Yavapai-Prescott Indian Tribe deferred to the Four Southern tribes in a response dated September 10, 2003. Hopi concurred, but did not defer at this time. As more information regarding the project was known (and of aboriginal lands), all of the tribes with aboriginal lands within the project (including the Yavapai-Prescott Indian Tribe) were consulted in 2005, 2006, 2012, and 2013. In August 2005, both the Salt River Pima-Maricopa Indian Community and the Tohono O'odham Nation agreed to be a concurring party to the programmatic agreement. A response from Salt River Pima-Maricopa Indian Community dated August 14, 2012, cited an existing consultation management agreement in place between the Four Southern Tribes and stated that the Four Southern Tribes are in consensus that Gila River Indian Community would take the lead in providing comments for the project. As noted in Table 4-47, which begins on page 4-145, and also on page 4-150 of the Final Environmental Impact Statement, all tribes were contacted early in the study and have been consulted on many aspects of the study, including the cultural resource-related reports produced over the course of the study. Consultation with Native America tribes has been extensive and demonstrates a reasonable and good faith effort to include all interested Native American tribes in the process to take their concerns seriously in the planning effort.

Code	Comment Document
302	**b. The FHWA and ADOT did not have authority to delegate its statutory obligations under Section 106 to conduct consultation and conduct community and public outreach.** *See* 36 C.F.R. §800.8
303	Section 106 states that, "**[f]ederal agencies** are encouraged to coordinate compliance with section 106 and the procedures in this part with any steps taken to meet the requirements of the National Environmental Policy Act (NEPA). Agencies should consider their Section 106 responsibilities as early as possible in the NEPA process, and plan their public participation, analysis, and review in such a way that they can meet the purposes and requirements of both statutes in a timely and efficient manner (emphasis added)." *Id.* at §800.8(1). Further, Section 106 requires that the agency official shall, "(i) Identify consulting parties…; (ii) Identify historic properties and assess the effects of the undertaking on such properties…; (iii) Consult regarding the effects of the undertaking on historic properties with SHPO/THPO, Indian tribes and Native Hawaiian organizations that might attach religious and cultural significance to the affected historic properties, other consulting parties, and the Council, where appropriate, during NEPA scoping, environmental analysis, and the preparation of NEPA documents; (iv) Involve the public in accordance with the agency's published NEPA procedures; and (v) Develop in consultation with identified consulting parties alternatives and proposed measures that might avoid, minimize or mitigate any adverse effects of the undertaking on historic properties and describe them in the EA or DEIS (emphasis added)." *Id.* at §800.8(2). Nowhere in the regulations is the federal agency permitted to delegate these duties, whether through a Programmatic Agreement, or otherwise.
304	In the instant case, FHWA and ADOT simply delegated its responsibility to consult with the tribal community to the GRIC tribal government. The DEIS appears to suggest that numerous meetings regarding the Freeway project were noticed, hosted and facilitated by the FHWA and ADOT. The DEIS does not clarify whether the GRIC tribal government entities, or any sub-entities thereof actually noticed, hosted and facilitated such meetings. While Section 106 allows for procedural variances when, like in the present case, a DEIS is drafted under the National Environmental Policy Act (the "NEPA"), 42 U.S.C. 4321 et seq., Section 106 does not procedurally allow FHWA or ADOT to delegate the Section 106 initiation and consultation measures to any other entity. *See* 36 C.F.R. §800.8. In other words, FHWA is required to directly initiate and consult tribes and consulting parties. The DEIS record reflects that the FHWA regularly consulted federal and state agencies, however, neglected reasonable and good faith efforts to consult tribes other than the GRIC. The record also shows that FHWA, ADOT and the designated GRIC government entities failed to properly notify and/or consult with GRIC members.

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Code	Issue	Response
302	**Cultural Resources**	The Arizona Department of Transportation and Federal Highway Administration did not delegate statutory obligations.
303		Comment noted.
304	**Cultural Resources**	This comment seems to be confusing National Historic Preservation Act Section 106 consultation, project scoping, and Federal Highway Administration/ Arizona Department of Transportation/Gila River Indian Community coordination and planning meetings. Section 106 of the National Historic Preservation Act requires a government-to-government relationship between the Federal Government and Indian tribes as described beginning on page 4-140 of the Final Environmental Impact Statement. Section 106 requires that federal agencies take into account the effects of their undertakings on historic properties. This process requires consultation with tribal authorities. Consultation has occurred with Gila River Indian Community government officials, the Tribal Historic Preservation Officer, the Cultural Resource Management Program, many different tribal authorities, and the State Historic Preservation Office. The consultation has resulted in concurrence from the Gila River Indian Community Tribal Historic Preservation Office and the State Historic Preservation Office on National Register of Historic Places eligibility recommendations (including traditional cultural properties), project effects, and proposed mitigation and measures to minimize harm. This consultation has been ongoing and will continue until any commitments in a record of decision are completed. As noted in Table 4-47, which begins on page 4-145 of the Final Environmental Impact Statement, the Ak-Chin Indian Community, the Gila River Indian Community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, the Tohono O'odham Nation, the Yavapai-Apache Tribe, and the Yavapai-Prescott Indian Tribe were included in the initial Section 106 consultation in 2003. At that time, Yavapai-Prescott Indian Tribe deferred to the Four Southern tribes in a response dated September 10, 2003. Hopi concurred, but did not defer at this time. As more information regarding the project was known (and of aboriginal lands), all of the tribes with aboriginal lands within the project (including the Yavapai-Prescott Indian Tribe) were consulted in 2005, 2006, 2012, and 2013. In August 2005, both the Salt River Pima-Maricopa Indian Community and the Tohono O'odham Nation agreed to be a concurring party to the programmatic agreement. A response from Salt River Pima-Maricopa Indian Community dated August 14, 2012, cited an existing consultation management agreement in place between the Four Southern Tribes and stated that the Four Southern Tribes are in consensus that Gila River Indian Community would take the lead in providing comments for the project.

Code	Comment Document
305	The DEIS indicates that FHWA and ADOT utilized the GRIC and its sub-entities such as the Transportation Technical Team (the "TTT")[12] to provide notice, host and facilitate numerous meetings on its behalf. *See* Table 2-1. Section 106, particularly §800.8, does not permit the GRIC to act on FHWA and ADOT's behalf to carry out procedural requirements of the project. Many meetings referenced in the DEIS appeared to be "tribal meetings" that included guest presentations by the FHWA and/or ADOT to the Gila River community members. Tables 2-1 and 2-2 in the DEIS appears to comingle the facts of any particular meeting in terms of meeting the agency's responsibilities under Section 106, particularly, §800.8.
306	c. **Because FHWA and ADOT failed to consult all federally recognized Indian tribes with reasonable and good faith efforts, the identification of historic properties, assessment of adverse effects, and resolution of adverse effects are inaccurate, incomplete and erroneous.**
307	Not only is the South Mountain itself sacred, there are also numerous sites with highly significant meaning and purpose to the GRIC on or near South Mountain and within the Area of Potential Effects of the Freeway project.[13] There are many ancestral burial and archeological sites and ancient shrines throughout the project area and beyond.[14] Further, the Colorado River Indian Tribes,[15] Salt River Pima-Maricopa Indian Community,[16] the Ak-Chin Indian Community,[17] the Tohono O'odham Nation,[18] and the Pascua Yaqui Tribe[19] have expressed and attached traditional, cultural and religious significance to South Mountain.[20]

[12] *See Id.* Chapter 2, page 2-3. *See also* Table 2-2 crediting various meetings with the TTT.
[13] For example, tribes associate cultural, traditional and religious significance with the Red Mountain, South Back Mountain, and Sandi Muck Mountain.
[14] For an illustration on archaeological sites, please view YouTube, *South Mountain Freeway Protest*, https://www.youtube.com/watch?v=IMws03pJ0iE (viewed July 18, 2013).
[15] *See* the official website of the Colorado River Indian Tribes also known as the "CRIT", available at: http://www.crit-nsn.gov/ (viewed July 8, 2013).
[16] *See* the official website of the Salt River Pima-Maricopa Indian Community available at: http://www.srpmic-nsn.gov/ (viewed July 18, 2013).
[17] *See* the official website of the Ak-Chin Indian Community, http://www.ak-chin.nsn.us/ (viewed July 18, 2013).
[18] *See* the official website of the Tohono O'odham Nation, http://www.tonation-nsn.gov/default.aspx (viewed July 18, 2013).
[19] *See* the official website of the Pascua Yaqui Tribe, http://www.pascuayaqui-nsn.gov/ (viewed July 18, 2013).
[20] The DEIS states "archaeological sites and places considered culturally important by Native American groups would be affected by any of the build alternatives. The Gila River Indian Community (GRIC) and the Salt River Pima-Maricopa Indian Community have both passed Tribal Resolutions designating the South Mountains as a TCP [Traditional Cultural Property] and the Colorado River Indian tribes have said that they also consider the South Mountains a TCP." *See* South Mountain Transportation Corridor Draft Technical Report Summary Cultural Resources p. 4 (August 28, 2008) available at http://www.azdot.gov/southmountainfreeway/PDF/082808_SMCAT_CulturalResources_Summary_Final.pdf) (viewed July 18, 2013).

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Code	Issue	Response
305	**Cultural Resources**	Public involvement with the Gila River Indian Community was conducted as requested by the tribal government. Prior to October 2005, early efforts to involve the Gila River Indian Community included attending tribal meetings and monthly meetings with Gila River Indian Community Departments (see discussion beginning on page 2-8 of the Draft Environmental Impact Statement). On October 14, 2005, the Gila River Indian Community requested that all project-related communications take place at a government-to-government level (see letter on page A152 of Appendix 1-1). This request was honored by the Arizona Department of Transportation and Federal Highway Administration. All public involvement efforts were implemented by the Gila River Indian Community's public involvement officer. As stated on page 2-8 of the Draft Environmental Impact Statement, the meetings in 2010 between the Gila River Indian Community's Transportation Technical Team, Arizona Department of Transportation, and the Federal Highway Administration were held in response to a request received from the Governor of the Gila River Indian Community and were not a part of the agency or public scoping process. The information provided to the Transportation Technical Team was used by the Team and the Public Information Office in the Gila River Indian Community's outreach effort prior to the February 2012 coordinated referendum. The referendum and the outreach effort were tribal actions and, other than providing requested information to the Gila River Indian Community, the Arizona Department of Transportation and Federal Highway Administration did not participate in these actions.
306	**Cultural Resources**	Section 106 of the National Historic Preservation Act requires a government-to-government relationship between the Federal Government and Indian tribes as described beginning on page 4-140 of the Final Environmental Impact Statement. Section 106 requires that federal agencies take into account the effects of their undertakings on historic properties. This process requires consultation with tribal authorities. Consultation has occurred with Gila River Indian Community government officials, the Tribal Historic Preservation Officer, the Cultural Resource Management Program, many different tribal authorities, and the State Historic Preservation Office. The consultation has resulted in concurrence from the Gila River Indian Community Tribal Historic Preservation Office and the State Historic Preservation Office on National Register of Historic Places eligibility recommendations (including traditional cultural properties), project effects, and proposed mitigation and measures to minimize harm. This consultation has been ongoing and will continue until any commitments in a record of decision are completed. As noted in Table 4-47, which begins on page 4-145 of the Final Environmental Impact Statement, the Ak-Chin Indian Community, the Gila River Indian Community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, the Tohono O'odham Nation, the Yavapai-Apache Tribe, and the Yavapai-Prescott Indian Tribe were included in the initial Section 106 consultation in 2003. At that time, Yavapai-Prescott Indian Tribe deferred to the Four Southern tribes in a response dated September 10, 2003. Hopi concurred, but did not defer at this time. As more information regarding the project was known (and of aboriginal lands), all of the tribes with aboriginal lands within the project (including the Yavapai-Prescott Indian Tribe and the Colorado River Indian Tribes) were consulted in 2005, 2006, 2012, and 2013. In August 2005, both the Salt River Pima-Maricopa Indian Community and the Tohono O'odham Nation agreed to be a concurring party to the programmatic agreement. A response from Salt River Pima-Maricopa Indian Community dated August 14, 2012, cited an existing consultation management agreement in place between the Four Southern Tribes and stated that the Four Southern Tribes are in

(Response 306 continues on next page)

Code	Comment Document

Code	Issue	Response
306 (cont.)		consensus that Gila River Indian Community would take the lead in providing comments for the project. Since the beginning of the environmental impact statement process for the proposed freeway, the Federal Highway Administration and Arizona Department of Transportation have been carrying out cultural resources studies and engaging in an ongoing, open dialogue with the Gila River Indian Community, its Tribal Historic Preservation Officer and Cultural Resource Management Program, regarding the identification and evaluation of places of religious and cultural importance to the tribe that may be adversely affected by the proposed freeway. The Gila River Indian Community's own Cultural Resource Management Program performed the cultural field investigations and developed recommendations for mitigation for project impacts. As a result of these discussions and of studies conducted by the Gila River Indian Community's Cultural Resource Management Program, the Gila River Indian Community has identified traditional cultural properties that are eligible for listing in the National Register of Historic Places and that could be affected by construction of the proposed South Mountain Freeway. The traditional cultural properties identified are culturally important to other Native American tribes as well.
307	**Cultural Resources**	As noted in Table 4-47, which begins on page 4-145 of the Final Environmental Impact Statement, the Ak-Chin Indian Community, the Gila River Indian Community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, the Tohono O'odham Nation, the Yavapai-Apache Tribe, and the Yavapai-Prescott Indian Tribe were included in the initial Section 106 consultation in 2003. At that time, Yavapai-Prescott Indian Tribe deferred to the Four Southern tribes in a response dated September 10, 2003. Hopi concurred, but did not defer at this time. As more information regarding the project was known (and of aboriginal lands), all of the tribes with aboriginal lands within the project (including the Yavapai-Prescott Indian Tribe and the Colorado River Indian Tribes) were consulted in 2005, 2006, 2012, and 2013. In August 2005, both the Salt River Pima-Maricopa Indian Community and the Tohono O'odham Nation agreed to be a concurring party to the programmatic agreement. A response from Salt River Pima-Maricopa Indian Community dated August 14, 2012, cited an existing consultation management agreement in place between the Four Southern Tribes and stated that the Four Southern Tribes are in consensus that Gila River Indian Community would take the lead in providing comments for the project. Since the beginning of the environmental impact statement process for the proposed freeway, the Federal Highway Administration and Arizona Department of Transportation have been carrying out cultural resources studies and engaging in an ongoing, open dialogue with the Gila River Indian Community, its Tribal Historic Preservation Officer and Cultural Resource Management Program, regarding the identification and evaluation of places of religious and cultural importance to the tribe that may be adversely affected by the proposed freeway. Such places are referred to as traditional cultural properties. The Gila River Indian Community's own Cultural Resource Management Program performed the cultural field investigations and developed recommendations for mitigation for project impacts. As a result of these discussions and of studies conducted by the Gila River Indian Community's Cultural Resource Management Program, the Gila River Indian Community has identified traditional cultural properties that are eligible for listing in the National Register of Historic Places and that could be affected by construction of the proposed freeway. In certain cases, listing these properties on the National Register of Historic Places may offer them protection under Section 4(f) of the Department of Transportation Act. The traditional cultural properties identified are culturally important to other Native American tribes as well and as noted in Table 4-47, which begins on page 4-145 of the Final Environmental Impact Statement, these tribes were included in Section 106 consultation.