Appendix L

RESPONSES TO COMMENTS

Part 2 of 2

IN1 – Charlie Atherton

20140218-0034 FERC PDF (Unofficial) 02/18/2014

CP 13-25-000
CP 13-27-000

LNG FERC Cameron 21314 comments

Feb 14, 2014

OFFICE OF THE SECRETARY
14 FEB 18 PM 12:06
FEDERAL ENERGY
REGULATORY
COMMISSION

The authorized with and depth of the Calcasieu River Waterway is only 400' wide and 40' deep. Cameron LNG ships are docked on the side of the channel at a 45% angle to the waterway.

The Coast Guard Waterway Suitability Assessment (WSA) for Cameron LNG is a critical part of this FERC process. FERC is not even allowed to proceed forward in the permitting process until a current, valid, WSA is verified and included.

We do not find that a current, valid, WSA under current Coast Guard Guidance exists and is not present in this EIS, nor is a Letter of Intent.

We believe this FERC approval process should be stopped immediately until a new, valid, Letter of Intent and current WSA is required and presented.

IN1-1

On page ES-6, under safety, we find the Coast Guard response a cover up of the fact that the original WSA was written in 2005 with very minimal coast guard guidance and does not fully address current navigation safety issues on the Calcasieu River Waterway. We believe that if Cameron LNG was subjected to the compliance of the currently required 2011 or later Coast Guard WSA standards that Cameron LNG would not be approved by the Coast Guard or FERC to operate.

The original WSA that is being used as the WSA approval for this Cameron LNG project was written by Lt. Commander Mccadden on April 7, 2005 simply says that a LNG ship 200,000 cubic meters or less can make it up the channel from the Gulf of Mexico and back out to sea safely.

Mccaddens'WSA states;
I request that the FERC require Cameron LNG to complete a Waterway Suitability Assessment in accordance with the **forthcoming** Navigation and Vessel Inspection Circular "Guidance on Assessing the Suitability of a Waterway for Liquefied Natural Gas Marine Traffic" **once finalized**.
This security assessment should be completed and subject to review and validation by the Coast Guard before operations begin at the Cameron LNG terminal.

We have not found where Mccaddens' request was ever acted on or is included in this record.

14 FEB 18 PM 12:06
FILED
OFFICE OF THE SECRETARY

IN1-1: As discussed in the Environmental Assessment (EA) issued on March 29, 2005 for the Cameron LNG Berthing Amendment Project (CP02-378-002), Cameron LNG received a Coast Guard Letter of Recommendation (LOR) for the original project on March 30, 2004; however, the Coast Guard withdrew this LOR on March 21, 2005 after receiving Cameron LNG's proposal to modify the berth. The letter referenced in this comment was issued on April 27, 2005 by the Coast Guard requesting Cameron LNG complete a Waterway Suitability Assessment (WSA) in accordance with the then forthcoming Navigation and Vessel Inspection Circular (NVIC) – Guidance on Assessing the Suitability of a Waterway for Liquefied Natural Gas Marine Traffic (NVIC 05-05), later published on June 14, 2005. Cameron provided a WSA to the Coast Guard, Marine Safety Unit Lake Charles on December 11, 2005 (as discussed in FERC's EA for the Cameron LNG Terminal Expansion Project [Docket CP06-422]). On April 19, 2006, the Coast Guard issued a new LOR that stated, based on the review of Cameron LNG's WSA, the Calcasieu River was considered suitable for the type and frequency of LNG marine traffic associated with the Cameron LNG project. Since 2006, Cameron LNG has filed several applications to modify its Terminal, and in each case, the Coast Guard has stated that the modifications did not require additional Coast Guard review. Similarly, for the proposed Cameron Liquefaction Project, the Coast Guard stated in a letter dated March 16, 2012, that it would not require revisions to the current WSA for the Cameron LNG Terminal nor would another LOR be required for the terminal because no additional LNG carrier traffic or revision to the routes were requested. We have also further consulted with the Coast Guard on this issue. The Coast Guard has indicated that it does not intend to have Cameron LNG prepare an additional WSA, and the decision regarding no need for another LOR for the proposed Terminal Expansion stands.

IN1 – Charlie Atherton

20140218-0034 FERC PDF (Unofficial) 02/18/2014

IN1-1 (con't)

Mccaddens' WSA does not address navigation safety issues officially raised by Citgo and other stakeholders in the Calcasieu River Harbor Safety Committee, including other large LNG and crude oil ships going upriver passing the Cameron LNG docks.

The information I have shows the Coast Guard Safety Standards referenced in this EIS were not even written until January 24 of 2011.

IN1-2

On page 1-7 under public review and comment it states
We received comments from Mr. Charlie Atherton in regard to safety at the existing Cameron LNG Terminal.

IN1-3

I filed a FOIA request with the Coast Guard and FERC for a copy of the WSA used in this FERC permitting process and have never received a copy.

IN1-4

I did not find a copy of the WSA being used in this EIS attached or a Coast Guard Letter of Intent attached.

IN1-5

We do not find our safety concerns responsibly addressed.

IN1-6

We believe that it is important to note that the Cameron LNG facility has only had one or two LNG ships ever at their docks and this permit is for about 200 ships. The navigation negative safety impact on existing channel users is totally unknown, especially with new high volume LNG ship traffic projected to navigate past loaded LNG ships at the Cameron LNG docks.

We believe this FERC Cameron LNG permitting process should require a new WSA that takes into account of all the existing and projected crude ship and new LNG traffic going upriver passing loaded LNG ships docked on the side of this narrow waterway.

Charlie Atherton
1220 West
Sulphur, La
70663

IN1-2: Comment acknowledged.

IN1-3: We reviewed our files and don't have an outstanding Freedom of Information Act request from Mr. Atherton at FERC.

IN1-4: See response to Comment IN1-1.

IN1-5: Safety is addressed in section 4.12. Although the commenter has not specified which safety issues he is concerned about, his overall concerns are focused on issues under Coast Guard jurisdiction. As stated in section 4.12.7: "In a letter dated March 16, 2012, the Coast Guard stated that an LOI or a revision to the WSA was not required. However, the Coast Guard specified that applicable amendments to the Operations Manual, Emergency Manual, and Facility Security Plan must be made that capture changes to the operations associated with the Terminal Expansion Project. As required by 33 CFR 105 and 127, Cameron LNG would amend these documents and submit them to the Coast Guard prior to operation of the facility as an export terminal."

IN1-6: See response to Comment IN1-1.

IN1 – Charlie Atherton

20140218-0034 FERC PDF (Unofficial) 02/18/2014

Charlie Atherton

From: Charlie Atherton <charlieatherton@suddenlink.net>
Sent: Tuesday, March 19, 2013 11:55 PM
To: joe.hill@mail.house.gov
Subject: FW: FOIA request for Cameron LNG

-----Original Message-----
From: Charlie Atherton [mailto:charlieatherton@suddenlink.net]
Sent: Wednesday, December 05, 2012 9:54 PM
To: gertrude.johnson@ferc.gov; danny.laffoon@ferc.gov
Cc: 'amanda.c.ackerson@uscg.mil '
Subject: FW: FOIA request for Cameron LNG

Gertrude,
Just FYI as FERC is not supposed to move forward on this project without a real WSA following the latest rules and regulations of the Coast Guard.
I should have received my FOIA requested information a few days after my request.
Since I still have not received the requested information I have to assume the Coast Guard realizes they are in violation of their own rules and guidance because a real, proper, follow the latest rules and regulations to protect the public WSA has never actually been done, ever, and they don't know what to do about it.
I cannot stress the importance and seriousness of the Cameron / Sempra LNG ships being docked at a forty five degree angles on the side of the narrow, highly navigated Calcasieu Ship Channel.
Charlie

NOTE: The upcoming request by Trunkline LNG (upstream) to also liquefy LNG may not qualify for their WSA because Trunkline LNG ships have to pass Cameron / Sempra LNG ships docked on the side of the very narrow Calcasieu Ship Channel.

-----Original Message-----
From: amanda.c.ackerson@uscg.mil [mailto:amanda.c.ackerson@uscg.mil]
Sent: Wednesday, December 05, 2012 9:29 AM
To: charlieatherton@suddenlink.net
Cc: Moore, Sean LT
Subject: RE: FOIA request for Cameron LNG

Mr. Atherton,

Your request has been forwarded to the Office of Data Analysis (CG-INV) for processing and direct response to you under FOIA Number 2012-3602. For the current status of your request, please contact Ms. Thelma Flood of CG-INV at 202-372-1284.

Regards,

Amanda C. Ackerson
Management and Policy Analyst
U.S. Coast Guard (CG-611)

20140218-0034 FERC PDF (Unofficial) 02/18/2014

Office of Information Management
2100 SECOND STREET SW STOP 7101
WASHINGTON DC 20593-7101
Phone: 202-475-3522
Fax: 202-475-3929

-----Original Message-----
From: Moore, Sean LT
Sent: Tuesday, December 04, 2012 1:03 PM
To: HQS-PF-fldr-CG-611 EFOIA
Subject: FW: FOIA request for Cameron LNG

Hello,

The requestor has not heard anything back from his request, can you please advise?

Sincerely,

LT Sean Moore
Senior Investigation Officer
Marine Safety Unit Lake Charles, LA
337-491-7811
sean.d.moore@uscg.mil

-----Original Message-----
From: charlieatherton@suddenlink.net [mailto:charlieatherton@suddenlink.net]

Sent: Tuesday, November 20, 2012 11:32 PM
To: Moore, Sean LT
Cc: Watson, Will CDR; Fediw, William LTJG; gertrude.johnson@ferc.gov; danny.laffoon@ferc.gov
Subject: RE: FOIA request for Cameron LNG

Good Morning Sean,
What is the status of my FOIA request?
FOIA request normally only takes days not months.
Thank you for your help in expediting my request.
Charlie Atherton

-----Original Message-----
From: Sean.D.Moore@uscg.mil [mailto:Sean.D.Moore@uscg.mil]
Sent: Monday, October 01, 2012 11:01 AM
To: charlieatherton@suddenlink.net
Cc: Watson, Will CDR; Fediw, William LTJG
Subject: FOIA request for Cameron LNG

IN1 – Charlie Atherton

20140218-0034 FERC PDF (Unofficial) 02/18/2014

Good morning Mr. Atherton,

Pursuant to your Freedom of Information Act request received on 06 September, 2012, we have forwarded your request to the Commandant at the address below along with requested information.

The file(s) requested may contain computer records which are required by Commandant Instruction M5260.3, to be released by Coast Guard headquarters.

Commandant (CG-611)
U.S. Coast Guard Headquarters
Attn: FOIA/PA Officer
2100 Second St., S.W.
Washington, D.C. 20593-0001

http://www.uscg.mil/foia/

EFOIA@uscg.mil

Also you can pursue your FOIA request concerning the FERC documents at the Federal Energy Regulatory Commission online at http://www.ferc.gov/ specifically, http://www.ferc.gov/legal/ceii-foia.asp

If you have any future questions in this matter, please contact me, or the FOIA office at the above e-mail.

Sincerely,

LT Sean Moore
Senior Investigation Officer
Marine Safety Unit Lake Charles, LA
337-491-7881
sean.d.moore@uscg.mil

3

IN1 – Charlie Atherton

20140218-0034 FERC PDF (Unofficial) 02/18/2014

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
U. S. Coast Guard
Marine Safety Unit

125 West Broad Street
Lake Charles, LA 70601
Phone (337) 491-7800
Fax. (337) 491-7840

11000
April 27, 2005

OFFICE OF THE SECRETARY
2005 MAY 12 P 4:
FEDERAL ENERGY REGULATORY COMMISSION

ORIGINAL

CP02-378-002

Federal Energy Regulatory Commission
Attention: Hugh Thomas
888 First Street, N.E., Room 62-45
Washington, DC 20426

WATERWAY SUITABILITY ASSESSMENT FOR CAMERON LNG

This office has completed an assessment with regard to the suitability of the Calcasieu River as related to the amendment and proposed modifications Cameron LNG filed with the FERC on December 9, 2004 (Docket No. CP02-378-002). The Coast Guard initiated meetings on March 29 and April 13, 2005 to assess waterway issues that surfaced during FERC scoping. The assessment was conducted as a collaborative effort that included representatives from the Coast Guard, Cameron LNG, and a Calcasieu River Waterway Harbor Safety Committee sponsored workgroup comprised of various port stakeholders including personnel from the Lake Charles Pilots, Lake Charles Harbor & Terminal District, Trunkline LNG, Cheniere LNG, British Gas, Citgo and Conoco Phillips.

As a result of this assessment, I consider the Calcasieu River, from the entrance approach to the proposed Cameron LNG facility, as suitable for LNG marine traffic for vessels not larger than a nominal size of 200,000 cubic meters. Another assessment will be required if and when the time comes when Sempra or another applicant wishes to consider the suitability of the waterway for ships greater than 200,000 cubic meters.

This suitability assessment did not consider the security issues associated with the project. Accordingly and as a participating agency, I request that the FERC require Cameron LNG to complete a Waterway Suitability Assessment in accordance with the forthcoming Navigation and Vessel Inspection Circular "Guidance on Assessing the Suitability of a Waterway for Liquefied Natural Gas Marine Traffic" once finalized. This security assessment should be completed and subject to review and validation by the Coast Guard before operations begin at the Cameron LNG terminal.

If you have any questions regarding this assessment or the Waterway Suitability Assessment, please contact me at (337) 491-7801.

Sincerely,

M. J. MCCADDEN
Lieutenant Commander
U.S. Coast Guard
By direction of the Captain of the Port

Copy: CG MSO Port Arthur
Eighth Coast Guard District (m)
Cameron LNG

IN1-7 NOTE: Mr. Atherton's letter included four attachments that are not directly related to the proposed Project. Those attachments can be viewed at the FERC website, www.ferc.gov, Docket No. CP13-25-000, Accession No. 20120218-0034.

IN2 – Charlie Atherton

Public comments due March 3, 2014, Reference: 2/27/2014
DEIS on Cameron LNG, LLC's and Cameron Interstate Pipeline, LLC's Liquefaction Project
(Docket Nos. CP13-25-000 and CP13-27-000)
Issued January 10, 2014

To: Danny Laffoon, (FERC Project Manager)
To: Commandant, US Coast Guard Admiral Robert J. Papp, Jr.

Cc: Lake Charles American Press
Joe Keefe
Homeland Security Secretary Jeh Johnson
FERC Acting Chairman Cheryl A. LaFleur
Kimberly D. Bose, Secretary

From: Charlie Atherton, 122 Vine St., Sulphur, La. 70663 charlieatherton@suddenlink.net

This cover letter is a continuation of our public comments to voice our urgent concern that the United States Coast Guard (USCG) has been derelict in their duty and responsibility to the general public and to the current and new users of the Calcasieu River Waterway (CRW) by continuing to fast track the Cameron LNG permitting process by not following the intent of current USCG regulations or the FERC permitting process by requiring a current, valid, Waterway Suitability Assessment (WSA) to be performed by Cameron LNG and an actual copy of the WSA attached to this FERC EIS for public comment.

We are requesting a current, valid, Waterway Suitability Assessment (WSA) to be performed and an actual copy of the WSA attached to this FERC EIS for public comment.

IN2-1 **The original WSA that was written 5/12/2005 when no finalized WSA Guidance existed, stated:**

I (M. J. MCCADDEN Lieutenant Commander U.S. Coast Guard By direction of the Captain of the Port) **request that the FERC require Cameron LNG to complete a Waterway Suitability Assessment in accordance with the forthcoming Navigation and Vessel Inspection Circular "Guidance on Assessing the Suitability of a Waterway for Liquefied Natural Gas Marine Traffic" once finalized.**
This security assessment should be completed and subject to review and validation by the Coast Guard before operations begin at the Cameron LNG terminal.

To our knowledge this request was never done and therefore a valid WSA does not exist.
It is important to note that Cameron LNG has never been in operation.
The proposed new 200 ships a year tied up at the Cameron LNG docks at an unsafe 45 degree angle on the side of the narrow channel makes navigation unsafe for the current and proposed future LNG and crude oil ships navigating past the docked LNG ships. Trunkline LNG, Magnolia LNG, and other LNG interest have currently applied for permits to allow for hundreds

1

IN2-1: See our response to comment IN1-1.

There are currently five harbor tugs providing berth and escorting service for the Lake Charles area. The Lake Charles Pilots have stated that the current fleet of tugs would not be able to safely support the transit of any additional LNG vessels without causing significant delays in the movement of traffic throughout the remaining portions of the waterway. However, Cameron LNG has three additional tugs that are dedicated to serving the Terminal. As a result, the effects of the Project on harbor tug availability and response time on the traffic capacity of the Calcasieu Ship Channel can be considered negligible.

of LNG ships to have to pass docked Cameron LNG ships as well as numerous existing Conoco and Citgo crude tankers.

This situation requires very significant tractor tug escorts and pilotage costs to be incurred by ships navigating the CRW past docked Cameron LNG ships. This is a cost and safety issue that would not be incurred if the Cameron docks had been located safely off of the channel at a 90 degree angle like other docks. No existing dock in the world docks ships at a 45 degree angle, within feet of passing ship traffic. Who will pay the cost for this new tractor tug escort once Cameron LNG docks are in actual use? Why did the Lake Charles River Pilots design this dock in this unique design?

We believe the original FERC Sempra Cameron LNG ship navigation simulations in the original permit application, if analyzed, show negative effects.

The concern over the original USCG 2005 WSA being fast tracked and existing and proposed ship traffic and navigation safety, and increased cost of attempted navigation mitigation caused solely by the Cameron LNG docks location and design, caused the Calcasieu River Waterway Harbor Safety Committee (CRWHSC) and Citgo Petroleum Corporation to perform a total of 44 full mission bridge allision simulations that were conducted by Oceanic-CMS Center of Marine Simulations, St. John, NL, in 2006.
These (third million dollars cost?) simulations showed negative ship navigation results that demonstrated 24 failures, 2 marginal, and 2 inconclusive.

IN2-1 (con't)

These full bridge simulation results were ignored by the US Coast Guard even though the majority of current users of the channel objected to the location and design of the Cameron LNG docks. This is a very serious issue for the crude oil ships going to Citgo and Conoco and can cause the refineries to reduce production or to shut down.
The USCG has been derelict in their duty by not stopping these unsafe docks from being built.
Once the USCG realized the criminal seriousness of the location and design of the docks the USCG pushed the USCG responsibility on to the Lake Charles River Pilots by instructing the pilots to mitigate the navigation safety issue by creating expensive standards of care requiring expensive tractor tug escorts (that will not prevent a disaster) causing current and new users of the Calcasieu River Waterway to spend millions of dollars of additional money trying to pass the Cameron LNG docks. The USCG does not care that shippers will have to spend millions of dollars on additional pilotage and tractor tug costs and have expensive ship delays because the USCG did not do its job. The USCG refuses to require that Cameron LNG pay for all the additional cost and ship delays caused by the bad location and design of the Cameron LNG docks. The USCG should not allow new docks to be built when it is known from the start that the docks will have a severe negative safety and financial impact on the public welfare. Trying to mitigate the safety issue with money, when full bridge simulations show the safety issue will not be mitigated every time is derelict of duty.
Sempra Cameron LNG was allowed to construct their 45 degree angle docks on the side of the narrow channel.

If the Cameron LNG docks location and design are safe, why are tractor escorts needed?
Tractor tug escorts were not needed before the docks were built.

IN2-1 (con't)

We believe the attached hard copies of these full bridge simulations are more than enough reason for the Coast Guard to require a new WSA be performed and included in this FERC EIS to comply with the intent of current CG Guidance and Regulation and the intent of the FERC permitting process to protect the public good.

In this FERC EIS the USCG only provided the below statement to FERC and did not attach the original WSA that was written 5/12/2005 when no finalized WSA Guidance existed. We believe the below referenced regulations have not been properly applied as to the intent of the law, may be outdated, may not have even been written until after 2005 and therefore not followed, because it appears that current CG LNG guidance would not allow for this unsafe dock design and location to be built today. The fact that the facility has never gone into operation to handle 200 ships a year is ignored as to say no problem exists with this facility now beginning to handling 200 ships a year.

The below statement simply states no LOR or revised WSA is required because no additional LNG carrier traffic or routes are requested for the Terminal Expansion. The fact that there have only been two LNG ships ever docked at this facility is totally ignored. The hundreds of projected new LNG ships having to navigate past the Cameron docked LNG ships going upriver is ignored.

This is the USCG Statement in the current FERC EIS up for these public comments:

1.2.3 U.S. Coast Guard

The Coast Guard is the federal agency responsible for determining the suitability of waterways for LNG marine traffic. The Coast Guard exercises regulatory authority over LNG facilities that affect the safety and security of port areas and navigable waterways under Executive Order 10173; the Magnuson Act (50 USC 191); the Ports and Waterways Safety Act of 1972, as amended (33 USC 1221, et seq.), and the Maritime Transportation Security Act of 2002 (46 USC 701). The Coast Guard is responsible for matters related to navigation safety, vessel engineering and safety standards, and all matters pertaining to the safety of facilities or equipment in or adjacent to navigable waters up to the last valve immediately before the receiving tanks. The Coast Guard also has authority for LNG facility security plan reviews, approval and compliance verification as provided in 33 CFR 105, and siting as it pertains to the management of vessel traffic in and around LNG facilities to a point 12 nautical miles seaward from the coastline (to the territorial seas).

As required by its regulations, the Coast Guard is responsible for issuing a Letter of Recommendation (LOR) as to the suitability of the waterway for LNG marine traffic following a Waterway Suitability Assessment (WSA). In a letter dated March 16, 2012, the Coast Guard stated it would not require revisions to the current WSA3 for the Cameron LNG Terminal nor would another LOR be required for the Cameron LNG Terminal because no additional LNG carrier traffic or routes are requested for the Terminal Expansion. However, the Coast Guard would require Cameron LNG to provide applicable amendments to its Operations Manual, Emergency Manual, and Facility Security Plan for the Terminal Expansion.

IN2 – Charlie Atherton

Unofficial FERC-Generated PDF of 20050516-0043 Received by FERC OSEC 05/12/2005 in Docket#: CP02-378-002

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
U.S. Coast Guard
Marine Safety Unit

25 West Broad Street
Lake Charles, LA 70601
Phone: (337) 491-7800
Fax: (337) 491-7840

11000
April 27, 2005

Federal Energy Regulatory Commission
Attention: Hugh Thomas
888 First Street, N.E., Room 62-45
Washington, DC 20426

ORIGINAL

CP02-378-002

WATERWAY SUITABILITY ASSESSMENT FOR CAMERON LNG

This office has completed an assessment with regard to the suitability of the Calcasieu River as related to the amendment and proposed modifications Cameron LNG filed with the FERC on December 9, 2004 (Docket No. CP02-378-002). The Coast Guard initiated meetings on March 29 and April 13, 2005 to assess waterway issues that surfaced during FERC scoping. The assessment was conducted as a collaborative effort that included representatives from the Coast Guard, Cameron LNG, and a Calcasieu River Waterway Harbor Safety Committee sponsored workgroup comprised of various port stakeholders including personnel from the Lake Charles Pilots, Lake Charles Harbor & Terminal District, Trunkline LNG, Cheniere LNG, British Gas, Citgo and Conoco Phillips.

As a result of this assessment, I consider the Calcasieu River, from the entrance approach to the proposed Cameron LNG facility, as suitable for LNG marine traffic for vessels not larger than a nominal size of 200,000 cubic meters. Another assessment will be required if and when the time comes when Sempra or another applicant wishes to consider the suitability of the waterway for ships greater than 200,000 cubic meters.

This suitability assessment did not consider the security issues associated with the project. Accordingly and as a participating agency, I request that the FERC require Cameron LNG to complete a Waterway Suitability Assessment in accordance with the forthcoming Navigation and Vessel Inspection Circular "Guidance on Assessing the Suitability of a Waterway for Liquefied Natural Gas Marine Traffic" once finalized. This security assessment should be completed and subject to review and validation by the Coast Guard before operations begin at the Cameron LNG terminal.

If you have any questions regarding this assessment or the Waterway Suitability Assessment, please contact me at (337) 491-7801.

Sincerely,

M. J. MCCADDEN
Lieutenant Commander
U.S. Coast Guard
By direction of the Captain of the Port

Copy: CG MSO Port Arthur
Eighth Coast Guard District (m)
Cameron LNG

This is the original WSA that was written when no finalized guidance existed.

Unofficial FERC-Generated PDF of 20050516—0043 Received by FERC OSEC 05/12/2005 in Docket#: CP02—378-002
U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
U.S. Coast Guard
Marine Safety Unit

U. S Coast Guard
25 West Broad Street

4

IN2 – Charlie Atherton

Lake Charles, LA 70601
Phone (337) 491-7800
Fax. (337) 4g1.7840

11000
April 27, 2005
ORIGINAL CPO2-378=002

Federal Energy Regulatory Commission
Attention: Hugh Thomas
888 First Street, N.E., Room 62-45
Washington, DC 20426

WATERWAY SUITABILITY ASSESSMENT FOR CAMERON LNG

This office has completed an assessment with regard to the suitability of the Calcasieu River as related to the amendment and proposed modifications Cameron LNG filed with the FERC on December 9, 2004 (Docket No. CPO2-378-002). The Coast Guard initiated meetings on March 29 and April 13, 2005 to assess waterway issues that surfaced during FERC scoping. The assessment was conducted as a collaborative effort that included representatives from the Coast Guard, Cameron I.NG. and a Calcasieu River Waterway Harbor Safety Committee sponsored workgroup comprised of various port stakeholders including personnel from the Lake Charles Pilots, Lake Charles Harbor & Terminal District, Trunkline LNG, Cheniere LNG, British Gas, Citgo and Conoco Phillips.

As a result of this assessment. I consider the Calcasieu River, **from the entrance approach to the proposed Cameron LNG facility**, as suitable for LNG marine traffic for vessels not larger than a nominal size of 200.000 cubic meters. Another assessment will be required if and when the time comes when Sempra or another applicant wishes to consider the suitability of the waterway for ships greater than 200,000 cubic meters.
This suitability assessment did not consider the security issues associated with the project. Accordingly and as a participating agency, **I request that the FERC require Cameron LNG to complete a Waterway Suitability Assessment in accordance with the forthcoming Navigation and Vessel Inspection Circular "Guidance on Assessing the Suitability of a Waterway for Liquefied Natural Gas Marine Traffic" once finalized.**
This security assessment should be completed and subject to review and validation by the Coast Guard before operations begin at the Cameron LNG terminal.

If you have any questions regarding this assessment or the Waterway Suitability Assessment, please contact me at (337) 491-7801.

Sincerely,
M. J. MCCADDEN
Lieutenant Commander
U.S. Coast Guard
By direction of the Captain of the Port

IN2 – Charlie Atherton

Copy: CG MSO Port Arthur Eighth Coast Guard District (in)
Cameron LNG

IN2-2

The Fall 2005 Coast Guard Proceedings magazine devoted to LNG and titled Enhancing Waterway Suitability Assessments does not accurately or honestly tell the story of what and how the Sempra Cameron LNG WSA was done. I was in the meeting on the front row, but not shown, when the HSC picture was taken.

These are my notes relative to the Proceedings article after the article came out:

In reality, it did not happen the way it was supposed to follow the intent of the law. In my opinion, all that can be said is that the Coast Guard went through the WSA motions. After the meeting, Mccadden personally told me that this was too politically hot an issue for him to intervene in and FERC was to approve the Sempra docks the day of the last local Coast Guard meeting or the next day.

Safety issues and "risks were identified" but the Coast Guard decided the risk could be "managed, mitigated, or reduced" if enough money and resources were thrown at the problem. Mccadden stated that money issues relative to new high additional cost to current and new shippers was of no concern to the Coast Guard and not up for discussion.

No where was there a discussion about the dock location or design or to require the Sempra Cameron LNG docks to be safely built further inland in a protected ship slip to the West, which would have eliminated all safety risk with navigation and the docks, and eliminated new additional shipping costs.

Picture shown is not of the WSA meetings in the article.

WSA meetings actually were held at the Coast Guard office and only selected people invited and allowed to speak, mostly LNG representatives. I understand now there was supposed to be three USCG meetings and I understand the third USCG meeting was canceled. I did not know of the first USCG meeting as only a few of the HSC members were invited to either meeting. I only attended the second meeting that I accidently found out about. What I write here was witnessed by me. No minutes were taken that I saw. I didn't see a sign in sheet. Charlie

6

IN2-2: Comment acknowledged. See response to Comment IN1-1.

IN2-3: NOTE: Mr. Atherton's letter included four attachments that are not directly related to the proposed Project. Those attachments can be viewed at the FERC website, www.ferc.gov, Docket No. CP13-25-000, Accession No. 20120218-0034.

20140218-0031 FERC PDF (Unofficial) 02/18/2014

FEDERAL ENERGY REGULATORY COMMISSION

DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE
CAMERON LIQUEFACTION PROJECT

FERC DOCKET NOS. CP13-25-000 AND CP13-27-000

COMMENT MEETING COMMENT FORM

Thursday February 13, 2014

Holiday Inn
330 Arena Road
Sulphur, LA 70665

FILED
OFFICE OF THE SECRETARY
14 FEB 18 PM 12:05
FEDERAL ENERGY
REGULATORY
COMMISSION

14 Feb 18

Comments can be: (1) left at the sign-in table, or (2) mailed to the address below.

Please send two copies, referenced to Docket Nos. CP13-25-000 and CP13-27-000, to the address below.

For Official Filing:

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE, Room 1A
Washington, DC 20426

COMMENTS: (*Please print; additional comment space is provided on the back of this sheet*)

Please see attached for comments

Commentor's Name and Mailing Address (***Please Print***)

Kristin Brooks
121 Audubon Ave
Sulphur, LA 70663

IN3 – Kristin Brooks

20140218-0031 FERC PDF (Unofficial) 02/18/2014

IN3-1 The development proposed by Cameron LNG will have a lasting impact on the students of Cameron parish. Currently the school board has been studying a partnership with SOWELA to teach 11th and 12th grade students classes on the local high school campuses that would transfer to an instrumentation or process plant degree. Students would graduate from high school with one and a half semesters of credits, needing only three more semesters from SOWELA before they would be eligible to enter the job market. The ability for Cameron parish students to have viable long-term job opportunities at home will help revitalize Cameron parish and provide students an achievable goal of success. Cameron LNG and Cameron parish schools look forward to long term partnership in furthering students' education.

Kristin Brooks
121 Audubon Ave
Sulphur, LA 70663

IN3-1 Comment acknowledged.

IN4 – Joe Ellender

20140218-0032 FERC PDF (Unofficial) 02/18/2014

ELLENDER REAL ESTATE

1521 Cypress Street
Sulphur, LA 70663
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Joe Ellender
Broker

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CP13-25-000
CP13-27-000

THURSDAY, FEBUARY 13, 2014

FEDRAL ENERGY REGULATORY COMMITTEE
RE: SEMPRA ENERGY/ CAMERON LNG EXPANSION:

IN RECENT YEARS, SEMPRA ENERGY AND CAMERON LNG HAVE BEEN A VERY POSITIVE AND CARING NEIGHBOR AND PARTNER IN BOTH CALCASIEU AND CAMERON PARISHES. NOT ONLY HAVE THEY PROVIDED NUMEROUS NEW OPPORTUNITIES TO OUR WORK FORCE AS WELL AS CONSTRUCTION JOBS, BUT ANTICIPATE LONG TERM EMPLOYMENT OPPORTUNITIES AS WELL. SEMPRA ENERGY AND CAMERON LNG ARE ALSO PARTNER'S IN EDUCATION FURTHERING THE EDUCATION AND OPPORTUNITIES TO OUR AREA'S YOUTH THRU THEIR NUMEROUS SCHOLARSHIPS AND ASSISTING IN THE FUNDING OF PROJECTS TO COUNTLESS ORGANIZATIONS.

IN4-1 ENVIROMENTALLY, SEMPRA HAS CONTINUED TO BE A RESPONSIBLE NEIGHBOR IN CREATING ACRES OF NEW MARSHLANDS FOR ANIMAL AND WATER-FOUL HABITATS THAT POSITIVELY IMPACTS OUR AREA TODAY AND WELL INTO THE FUTURE. FURTHER MORE, THE SEMPRA EMPLOYEES WORK TO DO THE RIGHT THINGS FOR THE ENVIROMENT BY THE RECYCLING OF PAPER AND PLASTIC PRODUCTS AT THE HACKBERRY FACILITY TODAY.

THIS PROPOSED LNG EXPANSION PROJECT IS IMPORTANT TO CALCASIEU AND CAMERON PARISHES NOT ONLY FOR THE SUCCESS OF OUR LOCAL AREAS BUT ALSO FOR THE ECONOMIC SUCCESS OF THE UNITED STATES. SUPPORTING THE LNG EXPANSION PROJECT WILL HELP TO DRIVE THE U.S. TO BECOME MORE DIVERSE IN THE GLOBAL ECONOMY AND HAS THE POTENTIAL FOR SEMPRA ENERGY AND CAMERON LNG TO BE THE EXPORTATION LEADERS OF LNG TO WORLD MARKETS!

PLEASE JOIN ME IN YOUR SUPPORT OF THIS LNG EXPANSION PROJECT FOR SEMPRA/ CAMERON LNG.

SINCERELY,

JOE ELLENDER - BROKER

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OFFICE OF THE SECRETARY
2014 FEB 18
14 FEB 18 PM 12:06
FEDERAL ENERGY
REGULATORY
COMMISSION

WWW.ELLENDERREALESTATE.COM

IN4-1 Comment acknowledged.

IP1 – Ragley Historical Society

20140220-0009 FERC PDF (Unofficial) 02/20/2014

ORIGINAL

Ragley Historical Society
377 Burnett Lp
Longville, LA 70652
725-3075, 725-3324

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COMMISSION

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FEDERAL ENERGY
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CP13-25

February 11, 2014

TO WHOM IT MAY CONCERN:

The community of Ragley feels so fortunate to have Sempra Energy a part of our growing community and is delighted to endorse the Cameron LNG's liquefaction project near Hackberry, Louisiana. The Ragley community is becoming the most heavily populated part of rural Beauregard Parish. The Ragley Historical Society, a non-profit organization, was formed to research and preserve the history of Ragley.

The Society has partnered with educators, cultural groups, and governmental community service groups to draw the community to a nucleus where all residents can interact. Some of the ways this has been accomplished follows: Farmer's Markets, Educational programs offered by the Ragley Library (held on the Ragley Historical Grounds), Arts and Craft Fairs, site for community functions, field trips by schools and tours are given to interested groups/individuals. In addition, Sempra Energy has been a wonderful asset to the Ragley community by helping sponsor the annual Ragley Heritage and Timber Festival. The event is growing by leaps and bounds, and Sempra Energy has a large part in making the festival successful. IP1-1

Sempra Energy has been a tremendous asset to the Ragley Historical Society and is strongly committed to community needs. It is evident by their continued support of us that Sempra is community minded and desires to aid organizations within the community. With the increased need for domestic natural gas production, the Ragley Historical Society endorses Sempra Energy's ambition to develop the liquefaction project. This project would have a tremendous economic impact by providing new jobs to the area and additional tax revenue.

We wish you the best of luck in your endeavor and look forward to a continued relationship with your company.

Sincerely,

Ronald Habetz, Chairman
Ragley Historical Society

IP1-1: Comment acknowledged.

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Tulane Environmental Law Clinic

March 3, 2014

By U.S. Post, eComment, and eFiling.
Ms. Kimberly D. Bose,
Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

RE: Comments on Draft Environment Impact Statement for Cameron LNG, LLC's and Cameron Interstate Pipeline, LLC's Liquefaction Project
Docket Nos. CP13-25 and CP13-27
Issued January 10, 2014

Sierra Club and Tulane Environmental Law Clinic on behalf of Sierra Club, Gulf Restoration Network, and RESTORE (the "Commenters") submit these comments concerning the Draft Environmental Impact Statement (the "draft EIS" or "DEIS") prepared by the Federal Energy Regulatory Commission ("FERC") for the Cameron LNG, LLC's and Cameron Interstate Pipeline, LLC (collectively, "Cameron") proposed Liquefaction Project (the "Project"). The Commenters reserve the right to rely on all public comments submitted, request a written response to comments, and request written notification *when* any action is taken on this draft EIS (such as a final EIS, supplemental EIS, programmatic EIS, etc.). These comments supplement and incorporate by reference the Commenters' Motion to Intervene, Protest, and Comment, dated January 16, 2013.

I. Introduction

IP2-1

FERC's Draft Environmental Impact Statement fails to take the hard look that the National Environmental Policy Act (NEPA) requires because, among other things, it is based on outdated, incomplete, and inaccurate information. Examples of these shortcomings are that FERC's draft: ***1)*** fails to consider a revised jurisdictional determination showing a greater number of wetlands acres in the proposed Project area than considered in the draft; ***2)*** includes inconsistent data on wetland acres impacted and lacks key information about proposed mitigation of such impacts; ***3)*** relies on outdated and inapplicable data and analyses for, among other things, shipping traffic impacts; ***4)*** fails to consider all practicable alternatives, including, for example, alternatives that do not destroy wetlands; ***5)*** does not give adequate consideration or support its

Tulane Environmental Law Clinic
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IP2-1: Our responses to the issues are provided below with the more specific comments.

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IP2-1 (con't)

conclusions on threatened, endangered, and other protected species found in the proposed Project area; and ***6)*** does not adequately consider indirect and cumulative impacts, such as upstream effects on increased natural gas production. FERC must revise its draft EIS to provide accurate, consistent and complete data and analyses by which it and other agencies relying on its information can take a hard look at the potential impacts of the proposed Project.

II. Background

The existing Cameron Terminal (the "Terminal") encompasses 118.6 acres and is about 2 miles north of the City of Hackberry on the west side of the Calcasieu Ship Channel. It was constructed to regasify and transport natural gas imported to the United States from foreign markets. The environmental reviews for the initial terminal proposal Terminal and for later project increasing sendout capacity were provided in FERC's final EIS August 2003 final EIS (the "2003 EIS") and in FERC's November 2006 environmental assessment (the "2006 EA"), respectively. FERC also issued an environmental assessment for exporting foreign-sourced LNG in August 2010 (the "2010 EA").

The existing Terminal includes the following major facilities:

- one ship unloading slip with two berths on the Calcasieu Ship Channel;
- three 160,000 m^3 Liquefied Natural Gas ("LNG") storage tanks;
- LNG sendout facilities, including 17 pumps, 10 submerged combustion vaporizers, and three boil-off gas (BOG) compressors;
- and ancillary utilities, buildings, and service facilities.

Additionally, Cameron owns and operates a 36-mile-long, 42-inch-diameter natural gas sendout pipeline (the "Pipeline") in conjunction with the Terminal.

The proposed Project would expand the current facility onto an additional connected 502-acre site between Louisiana State Highway 27 (LA-27) and the Calcasieu Ship Channel, about 2 miles north of the community of Hackberry, Louisiana. It would add the capability to export about 12 million tons of LNG per year. As a result, Cameron proposes to construct the following:

- one 160,000 m^3, full-containment LNG storage tank;
- refrigerant make-up and condensate product storage;
- a truck loading/unloading area;
- one marine work dock;
- modifications to the Terminal;
- 21 additional miles to the Pipeline;
- one 56,820-horsepower Holbrook Compressor Station; and
- ancillary facilities, such as access ramps and roads.

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In addition to liquefying natural gas and exporting LNG, the proposed expanded Terminal would continue to have the capability to regasify imported LNG. Based on language in Cameron's commercial agreements, at any point in time, Cameron would be able to operate the expanded terminal exclusively as a liquefaction/export facility or exclusively as an import/regasification facility, but not both concurrently. Moreover, the proposed Pipeline expansion would provide bi-directional flow along the Cameron Interstate Pipeline system to and from the expanded Terminal from five interstate pipeline interconnections. While the existing Terminal only can receive natural gas by LNG carriers, the proposed expansion would change ship traffic and associated destination and departure ports from import to export shipping.

Major environmental events and changes have occurred since the existing Terminal and Pipeline were proposed, reviewed, and constructed. For example, several major storms have battered and flooded the coastal area in and around Cameron Parish, including Hurricane Ivan in September 2004, Hurricane Rita in September 2005, and Hurricane Ike in September 2008. In addition, the Gulf of Mexico and its coastline have suffered under oil spills such as the BP/Horizon disaster in 2010. In another example of changed circumstances, the "dead-zone" in the Gulf of Mexico off the coast of Louisiana has increased over the past decade, and EPA has designated much of the Louisiana Gulf Coast impaired for dissolved oxygen.[1] Similarly, EPA has listed waters in Gulf Coast area near Cameron Parish impaired for mercury.[2] As a final example of changed environmental circumstances, several other LNG Terminals have been approved or are under review in or on the coast of the Gulf of Mexico, including facilities near the proposed Project area such as, Sabine Pass LNG, Freeport LNG, Lake Charles LNG, and Corpus Christi LNG.[3]

III. Legal Standards.

A. National Environmental Policy Act

NEPA requires federal agencies to consider and disclose the "environmental impacts" of proposed agency actions. 42 U.S.C. § 4332(C)(i). Agencies must "carefully consider [ ] detailed information concerning significant environmental impacts" and NEPA "guarantees that the relevant information will be made available" to the public. *Dep't of Transp. v. Public Citizen*, 541 U.S. 752, 768 (2004) (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989)). Federal regulations require agencies to "integrate the NEPA process with other

[1] Record of Decision for EPA Action on Louisiana's CWA 2012 § 303(d) List. Available at: http://www.epa.gov/region6/6xa/pdf/la_303d_2012_record_of_decision.pdf, attached as Exhibit 1.
[2] 2012 Waterbody Report for Sabine River Basin Coastal Bays and Gulf Waters. Available at: http://ofmpub.epa.gov/tmdl_waters10/attains_waterbody.control?p_au_id=LA110701_00&p_cycle=2012&p_state=LA&p_report_type= and attached as Exhibit 2.
[3] 2012 U.S. LNG Export and Re-Export Terminals Map. Available at: http://energy.gov/sites/prod/files/2013/04/f0/LNG%20Import%20%26%20Export%20Terminal%20Maps%2012-18-2012.pdf and attached as Exhibit 3.

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planning at the earliest possible time to insure that planning and decisions reflect environmental values." 40 C.F.R. § 1501.2.

NEPA is "a procedural statute that demands that the decision to go forward with a federal project which significantly affects the environment be an environmentally conscious one." *Holy Cross v. U.S. Army Corps of Engineers*, 455 F. Supp. 2d 532, 540 (E.D. La. 2006), quoting *Sabine River Auth. v. United States Dep't of Interior,* 951 F.2d 669, 676 (5th Cir.1992). In the Fifth Circuit, the following factors are generally considered by courts in evaluating an EIS: "(1) whether the agency, in good faith and objectively, has taken a hard look at the environmental consequence of the proposed action and alternatives, (2) whether the EIS contains detail sufficient to allow parties, besides the preparing agency, to understand and consider the relevant environmental influences, and (3) whether the alternatives are sufficient to permit a reasoned selection therefrom." *Holy Cross Neighborhood Ass'n v. U.S. Army Corps of Engineers* 2011 WL 4015694, *6 (E.D. La. 2011), citing *Sierra Club v. Froehlke,* 816 F.2d 205, 213 (5th Cir. 1987). An agency must consider environmental impacts in the context of current circumstances and information, not outdated data. *See Holy Cross,* 455 F. Supp. 2d at 545 ("In light of Hurricane Katrina, the underlying purpose of NEPA will not be served if the Corps moves forward with the [] Project according to a plan devised almost a decade ago. Without further study and planning, the project cannot be considered 'environmentally conscious.'"). An EIS must describe:

i. the environmental
ii. impact of the proposed action,
iii. any adverse environmental effects which cannot be avoided should the proposal be implemented,
iv. alternatives to the proposed action,
v. the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
vi. any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

42 U.S.C. § 4332(C). The alternatives analysis "is the heart of the environmental impact statement." 40 C.F.R. § 1502.14. An agency "must take care not to define the project purpose so narrowly as to prevent the consideration of a reasonable range of alternatives. *See, e.g.*, *Simmons v. U.S. Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997). If it did otherwise, it would lack "a clear basis for choice among options by the decisionmaker and the public." *See* 40 C.F.R. § 1502.14.

An EIS must also describe the direct and indirect effects and the cumulative impacts of a proposed action. 40 C.F.R §§ 1502.16, 1508.7, 1508.8; *N. Plains Resource Council v. Surface Transp. Bd.*, 668 F.3d 1067, 1072-73 (9th Cir. 2011). These terms are distinct from one another: Direct effects are "caused by the action and occur at the same time and place." 40 C.F.R. § 1508.8(a). Indirect effects are also "caused by the action" but:

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> are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effect on air and water and other natural systems, including ecosystems.

40 C.F.R. § 1508.8(b). Cumulative impacts, finally, are not causally related to the action. Instead, they are:

> the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.7. NEPA requires that where "several actions have a cumulative ... environmental effect, this consequence must be considered in an EIS." *City of Tenakee Springs v. Clough,* 915 F.2d 1308, 1312 (9th Cir.1990). The EIS must give each of these categories of effect fair emphasis.

Agencies may also prepare "programmatic" EISs, which address "a group of concerted actions to implement a specific policy or plan; [or] systematic and connected agency decisions allocating agency resources to implement a specific statutory program or executive directive." 40 C.F.R. § 1508.17(b)(3); *see also* 10 C.F.R. § 1021.330 (DOE regulations discussing programmatic EISs).

B. Endangered Species Act

The Endangered Species Act (ESA) directs that all agencies "shall seek to conserve endangered species." 16 U.S.C. § 1531(c)(1). Consistent with this mandate, FERC must ensure that its approval of Cameron's proposal "is not likely to jeopardize the continued existence of any endangered species . . . or result in the destruction or adverse modification of [critical] habitat of such species." 16 U.S.C. § 1536(a)(2).

To make this determination, FERC must first conduct a biological assessment, including the "results of an on-site inspection of the area affected," "[t]he views of recognized experts on the species at issue," a review of relevant literature, "[a]n analysis of the effects of the action on the species and habitat, including consideration of cumulative effects, and the results of any related studies," and "[a]n analysis of alternate actions considered by the Federal agency for the proposed action." *See* 50 C.F.R. § 402.12(f). If that assessment determines that impacts are possible, FERC must enter into formal consultation with the Fish and Wildlife Service ("FWS") and the National Marine Fisheries Service ("NMFS"), as appropriate, to avoid jeopardy to

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endangered species or adverse modification of critical habitat as a result of its approval of Cameron's proposal. 16 U.S.C. § 1536(a), (b).

C. Natural Gas Act

IP2-2

Section 3 of the Natural Gas Act requires FERC to determine whether the siting, construction, and operation of Cameron's proposed terminal facilities are "consistent with the public interest." 15 U.S.C. § 717b(a). FERC's review of Cameron's pipeline application requires an analogous public interest determination. *Id.* § 717f(c). FERC must consider environmental factors in the course of this public interest analysis. Accordingly, FERC cannot proceed with Cameron's application without fully evaluating the environmental impacts of Cameron's proposal. NEPA provides the congressionally mandated procedure for assessment of these impacts.

IP2-2: Comment acknowledged. FERC staff believes that its environmental review and EIS evaluated the potential environmental impacts of the proposed Project. As noted below, portions of the EIS have been revised to present information made public after the draft EIS was issued.

IV. The Draft EIS Fails to Proplery Consider Purpose and Need and Alternatives

The alternatives analysis is "the heart of the environmental impact statement," designed to offer a "clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. § 1502.14. Fundamentally, an agency must "to the *fullest* extent possible . . . consider alternatives to its action which would reduce environmental damage." *Calvert Cliffs' Coordinating Comm. v. U. S. Atomic Energy Comm'n*, 449 F.2d 1109, 1128 (D.C. Cir. 1971) (emphasis in original). Absent this comparative analysis, decisionmakers and the public can neither assess environmental trade-offs nor avoid environmental harms. *See id.* at 1114 (NEPA's alternatives requirement "seeks to ensure that each agency decision maker has before him and takes into proper account all possible approaches to a particular project (including total abandonment of the project) which would alter the environmental impact and the cost-benefit balance" and "allows those removed from the initial process to evaluate and balance the factors on their own"). The alternatives must include "reasonable alternatives not within the jurisdiction of the lead agency," as well as "appropriate mitigation measures not already included in the proposed action or alternatives." 40 C.F.R. § 1502.14. Because alternatives are so central to decisionmaking and mitigation, "the existence of a viable but unexamined alternative renders an environmental impact statement inadequate." *Oregon Natural Desert Ass'n v. Bureau of Land Mgmt.*, 625 F.3d 1092, 1100 (9th Cir. 2010) (internal alterations and citations omitted).

IP2-3

Although the draft EIS discusses a range of alternatives, it fails to provide the searching review that NEPA requires. FERC fails to adequately consider the impacts of the alternatives identified in the draft EIS. In addition, FERC fails to acknowledge, much less consider, numerous additional alternatives, including alternatives identified by Commenters' comment on Cameron LNG's application.

IP2-3: The alternatives analysis provided in the EIS is consistent with the Council on Environmental Quality (CEQ) regulations at 40 CFR 1500. Our alternatives analysis considers an alternative until it is proven to not be significantly environmentally preferable to the proposal by the applicant. Most of the eight alternatives suggested by the commenters in its scoping comments (pages 16 and 17, items one through 6 and item 8) were either not considered reasonable or beyond the scope of the EIS and are addressed in section 1.3 of the EIS, including table 1.3-2. The commenter's suggested alternatives in item 7 regarding use of electrical power were addressed in section 3.3 of the draft EIS, and the final EIS was revised to include additional such alternatives. Issues related to alternatives that would minimize wetland and wildlife impacts are addressed in our responses to more specific comments below as well as in as well as in sections 3.3.1, 3.3.2, and 3.3.6 of the EIS. Other alternatives suggested in item 7, such as alternative pollution control technology, are addressed in sections 3.4, 3.6 and 3.7 of the EIS.

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A. The Draft EIS Implicitly and Improperly Defined the Proposed Project's Purpose and Need

Cameron LNG is not alone in proposing to construct facilities to export LNG from the United States ("US"). Pending and authorized LNG export projects amount to 38.5 billion cubic feet per day (bcf/d) of gas.[4] The subset of projects identified in the "system alternatives" section of the draft EIS, together with the Cameron LNG proposal, amount to 20.46 bcf/d of gas.[5] On the other hand, the macroeconomic study commissioned by the Department of Energy concluded that under the "reference" cases for both US gas production and international demand, there would be *no* market for US LNG exports.[6]

IP2-4

IP2-5

IP2-6

IP2-7

This context requires a nuanced analysis from FERC. FERC must consider the effects of adding 1.7 bcf/d of US export capacity. On the other hand, FERC wrongly and uncritically assumes that there is a need for Cameron to provide 1.7 bcf/d of capacity in addition to the other proposed export projects, or at least in addition to all LNG exports for which contracts have been entered. FERC concludes that the Freeport, Sabine Pass, Trunkline, and Corpus Christi export projects would only provide alternatives to the project if they increased their planned capacity by the amount Cameron proposes for its Terminal expansion. DEIS 3-6 to 3-10. For example, FERC concluded that the Freeport LNG Terminal was not a "reasonable alternative to the proposed Terminal Expansion" because "the full capacity of the Freeport LNG Terminal expansion is contracted and use of the Freeport LNG Terminal as a system alternative to meet Cameron LNG's commitments to its clients would require that FLEX construct and operate three additional liquefaction trains and associated facilities." DEIS 3-6 to 3-7. Thus, although FERC's explicit statement of the purpose of the project uses only general terms, *i.e.*, "to transport and liquefy domestic natural gas into LNG for export, and deliver competitively-priced LNG to foreign markets," DEIS 1-3, FERC implicitly treats the purpose of the project much more narrowly, as providing an additional 1.7 bcf/d of export capacity beyond the 8.62 bcf/d represented by these other projects, for a total of 10.32 bcf/d of capacity in the Gulf.[7] Moreover, FERC's implicit purpose is couched in expansion of the existing facility rather than accomplishing the goal in an unattached facility. Where an agency thoughtlessly adopts a private party's narrow goals as the overall purpose and need, the agency "necessarily consider[s] an unreasonably narrow range of alternatives," and thus necessarily violates NEPA. *See Nat'l Parks & Conservation Ass'n v. BLM*, 606 F.3d 1058, 1072 (9th Cir. 2009). When preparing an EIS, it is the agency, not the project proponent, that "bears the responsibility for defining at the outset the

[4] US DOE, *Applications Received by DOE/FE to Export Domestically Produced LNG from the Lower-48 States* (as of Feb. 11, 2014), available at http://energy.gov/sites/prod/files/2014/02/f8/Summary%20of%20LNG%20Export%20Applications.pdf and attached as Exhibit 4. The 38.5 bcf/d is the aggregate of proposals to export LNG to free trade agreement countries. For non free trade agreement countries, the proposals amount to 35.58 bcf/d.
[5] Compare *id.* with Draft EIS 3-6 to 3-13 (enumerating proposals).
[6] NERA Economic Consulting, *Macroeconomic Impacts of LNG Exports from the United States* (2012), ("NERA Study") at 4, attached as Exhibit 5.
[7] The capacities for these terminals are Freeport (1.8), Sabine (2.72), Trunkline (2), Corpus Christi (2.1), Cameron (1.7). US DOE, *Applications Received by DOE/FE to Export Domestically Produced LNG from the Lower-48 States* (as of Feb. 11, 2014), *supra* n.4

IP2-4: FERC staff does not assume ". . .that there is a need for Cameron to provide 1.7 bcf/d of capacity . . .". The FERC is responsible, among other things, for conducting an environmental review of applications received irrespective of potential market demand. As noted in section 3.2.1 of the EIS, FERC staff believes that although we considered many projects as potential system alternatives, the market will ultimately decide which and how many of those facilities will be built.

IP2-5: Our assessment of system alternatives considered the volume of LNG required to meet Cameron LNG's existing contractual obligations with its customers. The projects assessed as system alternatives would also have contractual obligations that they would have to continue to meet in addition to Cameron's proposed volume.

IP2-6: Cameron LNG proposed an expansion of its existing facility and we conducted an environmental review of that proposal. However, our alternatives assessment included stand-alone export facilities as system alternatives (see section 3.2.1.2).

IP2-7: The EIS is not intended to be a determination of Project need. It is the duty and authority of the FERC's Commissioners to determine if the Project is in the public's convenience and necessity during its evaluation and review, prior to authorization. The FERC is not a proponent of the proposed Project, and therefore does not define the Project's purpose and need. The purpose is defined by Cameron in its applications to the FERC, and we use that stated purpose in the EIS for the Project. The purpose and need statement in the EIS serves as a disclosure of Cameron's stated purpose to which the FERC is responding and provides the basis for developing a reasonable range of alternatives. FERC staff neither endorses nor opposes Cameron's assertions of need.

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To: Kimberly D. Bose, Secretary, FERC
Sierra Club & GRN Comments on Draft EIS for Cameron LNG, LLC's and Cameron Interstate Pipeline, LLC's Liquefaction Project, FERC Docket Nos. CP13-25 & CP13-27
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IP2-7 (con't)

objectives of an action." *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 195-96 (D.C. Cir. 1991). To be sure, agencies may not ignore private applicants' objectives; an agency may pursue both private and public goals.[8] However, these two objectives are not "mutually exclusive or conflicting;" they simply "instruct agencies to take responsibility for defining the objectives of an action and then provide legitimate consideration to alternatives that fall between the obvious extremes." *Colorado Envtl. Coalition*, 185 F.3d at 1175. The mere fact that private parties have contracted for exports cannot provide a basis for defining the purpose and need of the project so narrowly as to avoid full consideration of alternatives that might frustrate those contracts.[9]

IP2-8

Even if FERC were to improperly conclude that there was a need to provide capacity for as much LNG export as the market would bear, FERC's analysis would be deficient. The 10.32 bcf/d of Gulf Coast exports that FERC implicitly concludes to be needed exceeds both the international demand predicted in reference cases in the macroeconomic export study commissioned by DOE and the volume of exports predicted by the Energy Information Agency's most recent Annual Energy Outlook.[10] Thus, while FERC must consider the cumulative impacts of this level of export, FERC cannot define the purpose so narrowly as to exclude alternatives that would provide lower volumes.

IP2-9

In summary, FERC's discussion of the no-action alternative is deficient because it assumes that the no-action alternative would not reduce environmental impacts because another export proposal would take Cameron's place. FERC's definition of the Project purpose and need is unlawfully narrow insofar as FERC implicitly concludes that the purpose and need is to provide for at least 1.7 bcf/d of export capacity in addition to the 8.62 bcf/d of capacity for which other Gulf Coast LNG export proposals have already entered into contracts. It was therefore inappropriate for FERC to dismiss system alternatives that would provide export from these terminals without expanding to provide this extra capacity and exclude such alternatives from full environmental analysis.

B. FERC's No Action Alternative Improperly Assumes that the Project Would Not Increase US Exports

IP2-10

FERC improperly assumes that the proposed project would not actually increase US exports. While FERC rejects various system alternatives on the ground that they would fail to meet the purpose and need of increasing US export capacity by the 1.7 bcf/d for which Cameron has entered unspecified commercial arrangements, elsewhere the draft EIS asserts that that if the

[8] *Colorado Envtl. Coalition v. Dombeck*, 185 F.3d 1162, 1175 (10th Cir. 1999) ("Agencies ... are precluded from completely ignoring a private applicant's objectives."); *Citizens Against Burlington*, 938 F.2d at 196 ("[T]he agency should take into account the needs and goals of the parties involved in the application.")
[9] Commenters do not dispute that frustration of those contracts is one of the many factors that might weigh in FERC's choice among alternatives; rather, we argue that these contracts cannot circumvent or abridge the alternatives analysis.
[10] EIA, *Annual Energy Outlook 2014 Early Release Overview*, at 2 (Dec. 16, 2013) (forecasting peak US LNG exports of 3.5 tcf per year, or 9.6 bcf/d, achieved in 2029), available at http://www.eia.gov/forecasts/aeo/er/pdf/0383er(2014).pdf and attached as Exhibit 6.

IP2-7 (con't): Need is not an environmental issue to be addressed at length in the EIS to justify the Project. Applicants propose projects and present their objectives, and the FERC reviews those proposals, including producing an environmental document to satisfy NEPA. The CEQ regulations for implementing NEPA (at 40 CFR 1502.13) only require that the EIS "briefly specify the underlying purpose and need to which the agency is responding…". The Commission will more fully consider the need for the Project when making its decision on whether or not to authorize the Project. Section 3 of the EIS contains a thorough analysis of alternatives to the Cameron Liquefaction Project, including the No-Action alternative.

The EIS provides an accurate description of the applicant's stated purpose and need for the proposed Project and evaluates potential alternatives to meeting that purpose and need. As stated previously, FERC believes that the market will determine the need for the Project

IP2-8: See response to comment IP2-5.

IP2-9: See responses to comments IP2-4, IP2-5, and IP2-7.

IP2-10: In order to address alternatives, we must make the assumption that the purpose and need of the Project (and competing projects) is valid. However, the market will ultimately decide which and how many LNG export facilities will be built and operated. Our assessment of the No-Action alternatives states, as noted by the commenter, that "other LNG export projects *could* also be developed . . ." [emphasis ours] and clearly states that with the No-Action Alternative, ". . . the potential adverse and beneficial environmental impacts identified in section 4.0 of this EIS would not occur." See response to comment IP2-4.

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IP2-10 (con't)

no action alternative is adopted, "the purpose of and need for the Project would likely be met by other LNG export projects developed elsewhere." DEIS 5-11. FERC confusingly states that "[w]ith or without the No-Action Alternative, other LNG export projects could also be developed elsewhere in the Gulf Coast region or in other areas of the United States." and FERC asserts that these other export projects would have similar or greater impacts than the proposed Cameron LNG projects. DEIS 3-1 to 3-2. FERC cannot assume that denying this project would merely lead to construction of a similar project at another site, or that the construction and operation of some number of LNG facilities is inevitable—especially because all potential substitute projects would also require FERC and DOE approval. FERC's analysis must consider the possibility that if it authorizes the project, this will increase the number of export facilities constructed and the amount of LNG that is produced and exported, thereby increasing total environmental impacts. FERC shirk its responsibility to take a hard look at the effects of the proposed project by assuming that denying the project would merely displace, rather than avoid, the impacts of LNG exports.

IP2-11

As we explain in part VII.C below, FERC's discussion of the no action alternative is also deficient because it either fails to consider the impacts of end use of exported LNG or contains an incomplete and unsupported analysis of these impacts.

C. FERC Fails To Take a Hard Look at System Alternatives.

IP2-12

The draft EIS discusses, as "system alternatives," the option of exporting LNG from an alternative proposed export project. FERC ultimately rejects each such alternative for one or both of two reasons: the alternative project (or any "necessary" expansion thereto) "would not meet Cameron LNG's timeline commitments of initial export in 2017," or the alternative would require construction of "liquefaction trains and associated facilities, similar to those of the proposed Project which would likely result in environmental impacts similar to those of the proposed Project," rather than providing any environmental benefit. *See, e.g.*, DEIS 3-7. NEPA requires greater flexibility regarding project needs and more searching analysis of alternatives' environmental impacts.

IP2-13

Beginning with the timing of delivery, Cameron LNG's unexplained "customer commitments" to delivery beginning in 2017, like any commitments to particular volumes,[11] are not a valid basis for narrowing the alternatives inquiry. Notably, section 1.1 of the draft EIS, titled "Project Purpose and Need," makes no reference to any need to begin operation by any specific date.[12] If delivery by 2017 is a need of the project, FERC must state this fact and explain its basis for imposing this requirement. The draft EIS does not do this—indeed, the only references to any commitments to begin delivery by 2017 appear in the discussion of system

[11] See part IV.A above.
[12] Section 1.1 of the draft EIS, states that "Cameron's stated Project purpose is to transport and liquefy domestic natural gas into LNG for export, and deliver competitively-priced LNG to foreign markets." 1-3. The draft EIS then identifies four bulleted subsidiary objectives: two general objectives regarding pipeline expansion necessary to enable export and two objectives relating to preserving capacities of the existing terminal. *Id.*

IP2-11: Because end users have not been and cannot be identified at this time, it is not possible to consider impacts of end use. Further, the impacts of end use in foreign, likely non-adjacent, countries is beyond the scope of a project proposed within the United States and evaluated under NEPA and CEQ regulations.

IP2-12: Regarding the Project purpose and need, see response to comment IP2-7. The alternatives analysis is consistent with CEQ regulations, particularly 40 CFR 1502.14, which in addition to requiring detailed analysis of alternatives in comparative form, states that "and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." For each alternative eliminated, the EIS states why the alternative was eliminated, and therefore we do not need a detailed analysis of those alternatives for comparison. The timeline for each alternative is not emphasized; however, it is still a component of the project and the evaluation of alternatives. The lack of providing a significant environmental advantage is the main reason for each alternative's elimination.

IP2-13: The system alternatives addressed in section 3.1 of the EIS were not eliminated solely on the basis of the timing of in-service dates, although many of the projects were in such an early stage of development that if approved, they would not be completed within years of the anticipated in-service date of the proposed Project. As noted in section 3.1, the majority of the projects eliminated did not offer a significant environmental advantage over the proposed Project. Regarding Cameron's contractual agreements, the relevant sections of the EIS have been revised to provide information regarding Cameron LNG's contractual commitment to provide LNG by 2017. In addition, in response to this comment, we have added section 3.2.1.3 (Combined Projects Considered as a System Alternative) to the EIS.

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alternatives. The draft EIS provides no discussion of the nature and scope of these commitments other than to indicate that Cameron has made some commitment, to some party, to begin at least some export by 2017. Private contractual commitments entered into prior to NEPA review cannot provide a valid basis for excluding alternatives from full analysis. Even if they could, however the available record does not support such an exclusion here.

IP2-13 (con't)

FERC's claim that other projects would not allow delivery by 2017 because these alternatives are not as far along in the permitting process cannot provide a basis for rejecting or limiting review of those alternatives. For any complex project requiring permits from multiple agencies, it is likely that by the time a NEPA analysis is performed, considerable progress will have been made in the overall permitting process. As such, the applicant's preferred project will almost always have a head start on alternative projects that would require different permitting. Eliminating alternatives from consideration on the ground that they are farther behind in the permitting process would therefore severely constrain the scope of alternatives to be considered in *any* complex project, undermining the purpose of the alternatives analysis.

For several projects, FERC contends that the Project would require an expansion before it could serve as an alternative, either because the proposed capacity is already contracted out to other parties or because the proposal is smaller than 1.7 bcf/d.Where the expansion is purportedly required because proposed capacity is already allocated, FERC's reliance on existing contractual arrangements is unsupported, as explained above. Where the proposed facility simply has a smaller capacity than Cameron LNG's proposal, FERC offers no explanation as to why a system alternative must consist of a single alternative proposal rather than a combination of multiple smaller proposals.

IP2-14

Separate from the timing of delivery, FERC discusses system alternatives as unlikely to provide environmental benefits. FERC's cursory discussion of the environmental impacts of these system alternatives falls far short of the hard look required by NEPA. FERC generally assumes that any project providing 1.7 bcf/d of export capacity will have similar impacts. The only variation recognized in FERC's analysis is the assumption that greenfield facilities would generally have greater impacts than conversions of existing LNG import terminals and the unsupported assertion that floating liquefaction terminals, such as the proposed Excelerate/Lavaca project, might have greater impacts than an equivalently sized onshore facility. NEPA requires a much more searching inquiry. As discussed below, many different proposals offer different facility designs, which can have significantly different air and other impacts. Even if other locations were to use the same design, the effect of that design would depend on the context of the location. For example, different sites will require differing amounts of wetland fills, will occur in areas of differing background air quality, or may be in the habitat of different threatened, endangered, or sensitive species. Meaningful choice among alternatives requires assessment and weighing of these differences, but the draft EIS glosses over these issues entirely.

IP2-14: As noted above, the alternatives analysis is consistent with CEQ regulations, particularly 40 CFR 1502.14, which states that "and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." For each alternative eliminated, the EIS states why the alternative was eliminated, primarily because it would not provide a significant environmental advantage. While each alternative may have areas that would impact fewer specific environmental resources, other resources may be impacted greater (e.g., offshore facilities would impact fewer wetlands; however these alternatives would have greater impacts on fish, Essential Fish Habitat (EFH), bottom habitats, and possible spills of hazardous materials). As noted in the EIS, the proposed Project would not have significant impacts, a statement that is substantiated by completed consultation with the State Historic Preservation Officer (SHPO) and the U.S. Fish and Wildlife Service (FWS), receipt of both an amended coastal use permit (CUP) and a Department of the Army (DA) permit for the Terminal Expansion (Section 404 of the Clean Water Act [CWA] and Section 10 of the Rivers and Harbors Act permits), air permits for the Terminal Expansion and the Holbrook Compressor Station, and the other environmental permits listed in table 1.5-1. An example is the most substantive impacts from this Project would likely come from the fill of wetlands. However, these are mostly low quality wetlands associated with the Terminal Expansion site and the U.S. Army Corps of Engineers (COE) and the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) agree that the creation of tidal wetlands would be more beneficial to wildlife and ecology.

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D. FERC's Discussion of "Siting," "Design," and Other Alternatives Is Deficient.

IP2-15

FERC's alternatives analysis also discusses alternatives regarding the local siting of equipment and design of the Terminal and Pipeline expansion. For reasons we explain in discussing the impacts of the preferred option, the draft EIS is deficient both in its discussion of these alternatives and its failure to consider other alternatives that would potentially have lower impacts. FERC also fails to consider, or even discuss, alternatives that would limit the indirect impacts of Cameron's proposed exports, including alternatives Commenters identified in their previous comment.

V. Direct Impacts

A. FERC Fails To Consider Direct Impacts of the Project on Wetlands.

IP2-16

FERC fails to take a hard look at the proposed Terminal Expansion's impacts on wetlands. First, FERC bases its analysis on incorrect information. For example, the draft understates damage to wetlands by using an incorrect jurisdictional determination that omits approximately 121 acres of impacted wetlands from consideration. Second, the draft fails to provide factual support for its analysis. For example, FERC offers no reason to believe that Cameron can compensate for the loss of three distinct types of wetland by creating only one type of wetland—freshwater marsh. Similarly, FERC fails to show that proximity to Cameron LNG's existing facility is an appropriate criterion for evaluation of alternatives. FERC also ignores the Clean Water Act's presumption that practicable non-wetland alternatives to the proposed Project exist unless clearly demonstrated otherwise and fails completely to: 1) consider non-wetland alternatives, or 2) demonstrate the absence of non-wetland alternatives.

1. FERC Must Reconsider Alternatives in Light of the Corps' Revised Wetland Jurisdictional Determination.

IP2-17

FERC bases its consideration of wetlands impacts and alternatives on outdated information. For example, the draft EIS fails to consider the US Army Corps of Engineers' Corps' December 31, 2013, "Revised Wetlands Jurisdictional Determination," which found "additional wetlands subject to [Corps] jurisdiction occur on the site." As a result, the draft EIS asserts incorrectly that the proposed terminal expansion will only affect 293.2 acres of wetlands and permanently fill 213.7 acres. DEIS at 4-29 to 30. However, the Corps has since identified 334.8 acres of jurisdictional wetlands in the proposed Terminal expansion area.[13] This error invalidates the draft's conclusions about impacts to wetlands and to fish, wildlife, and vegetation

[13] *See* FERC Dkt. No. CP13-25-000 New Appendix A-2, Attachment 6.

IP2-15: We do not understand what the commenter is referring to regarding "alternatives that would limit the indirect impacts of Cameron's proposed exports . . .". However, we address indirect impacts in our response to comment IP-73. Regarding alternatives Commenters identified in their previous comment, see response to comment IP2-9.

IP2-16: Section 4.4 of the draft EIS correctly depicted the acres of wetland that the Project would impact during construction. The only area that has significantly changed is the acreage of mitigation for those impacts, as the COE is now taking jurisdiction of many additional wetland acreages. The EIS has been revised to provide the current acreages of impact and mitigation. The COE issued a DA permit (Section 404 and Section 10 permits) for the Terminal Expansion after the draft EIS was prepared. The mitigation plan proposed by Cameron was reviewed and approved by the COE and is included in the DA permit. We revised the EIS to include an assessment of upland sites as potential alternatives to the proposed Terminal Expansion site. (see new section 3.3.2).

As stated in section 3.3, "We evaluated *the area in the vicinity of the existing Cameron LNG Terminal* [emphasis ours] for alternative sites to the proposed Terminal Expansion site. Proximity to the existing terminal was a criterion in the evaluation to allow Cameron LNG to use the existing infrastructure, such as the LNG storage tanks, the LNG carrier berths and cargo loading/unloading facilities, and associated facilities. Use of those existing facilities would avoid the impacts of constructing and operating new facilities." However, we revised section 3.3 to provide an assessment of upland sites from about 5.2 to 13.3 straight-line miles from the proposed site (see new section 3.3.2).

IP2-17: On the contrary, the draft EIS stated that even with only mitigating for 99.2 acres of jurisdictional wetland impact, we concluded that impacts on wetlands would not be significant. With the updated and increased acreages of mitigation, we continue to believe these impacts would not be significant. See response to comment IP2-16.

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IP2-17 (con't)

habitats. In turn, these errors infect FERC's analysis of alternatives. FERC must reconsider alternatives in light of the revised Corps data.

IP2-18

FERC considered two alternative sites for the proposed Terminal Expansion, both adjacent to Cameron's current facility. The analysis of alternatives focused on wetlands impacts "due to the high prevalence of wetlands in both areas and most other impacts being similar." DEIS at 3-15. FERC's conclusion that the alternatives evaluated would not provide a significant environmental advantage is predicated on data showing that the amount and quality of impacted wetlands would be greater under either alternative. FERC quantifies increases in impacted wetland acreage of 22% and 56% at the two alternative sites. *Id.* Because the evaluation of alternatives incorporates a jurisdictional determination that understates the acreage of wetlands in the proposed Project area, the conclusion that the proposed Project has less wetlands impacts is not supported by evidence and must be reevaluated.

IP2-18: We used National Wetlands Inventory (NWI) maps to determine the acreages of the alternative sites TEA-1 and TEA-2. To provide a comparison of those wetland acreages to those of the proposed site, we also used NWI maps to obtain the acreages of wetlands on the proposed site. Therefore, the comparison of wetland acreages in section 3.3 does not need to be revised to include the updated wetland acreages in the DA permit for the Terminal Expansion. We continue to believe that these alternatives would not provide a significant environmental advantage to the proposed site. See response to comment IP2-16.

2. FERC Failed to Consider the Presumed Availability of a Non-Wetlands Alternative.

a) FERC's Draft EIS Unlawfully Fails to Analyze Non-Wetlands Alternatives.

IP2-19

The draft EIS's failure to consider non-wetlands alternatives precludes both the hard look that NEPA requires and the analysis necessary for the US Army Corps of Engineers (the "Corps") to issue a Clean Water Act § 404 permit. Because natural gas liquefaction is not a wetlands-dependent activity, the law creates a presumption that non-wetlands alternatives are available. 40 C.F.R. § 230.10(a)(3) ("Where the activity associated with a discharge which is proposed for a special aquatic site … does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e., is not "water dependent"), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise."); see also 40 C.F.R. §230.10(a)(4) (explaining that in many cases, the analysis of alternatives required to fulfill this requirement will coincide with the alternatives analysis under NEPA). Here, FERC is acting as the lead agency, and the Corps will rely on FERC's environmental impact statement to satisfy its own NEPA obligations to permit the proposed Project's wetlands destruction. But FERC's EIS cannot satisfy The Corps' NEPA obligation if it does not include the analyses required under the Clean Water Act's regulations. See 40 C.F.R. § 1506.3(a) (allowing an agency to adopt an impact statement "provided that the statement…meets the standards for an adequate statement under these regulations."). Because FERC fails to consider non-wetlands alternatives it has not satisfied The Corps' requirements for NEPA and the corps cannot permit the fill of wetlands until such alternatives have been considered.

IP2-19: We revised the EIS to include an assessment of upland sites as potential alternatives to the proposed Terminal Expansion site. (see new section 3.3.2).

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IP2-19 (con't)

Neither FERC nor Cameron claims that construction of facilities for the liquefaction of natural gas and LNG storage are water-dependent activities. Similarly, the draft EIS and the Project application do not "provide detailed, clear, and convincing information proving impracticability" of any such non-special aquatic site alternative, as the Clean Water Act requires in order to choose a wetlands destroying alternative. See Utahns for Better Transp. v. U.S. Dept. of Transp., 305 F.3d 1152, 1186 (10th Cir. 2002) (explaining that the burden is on the applicant to show that a non-aquatic site alternative is impracticable) (emphasis in original). Therefore, any alternatives analysis for issuing a Clean Water Act § 404 permit must conclude that practicable alternatives that do not involve special aquatic sites are available and must consider those alternatives. Moreover, non-wetlands alternatives are available. Two examples of alternatives for FERC to consider are building the facility on non-wetlands separate from the existing terminal or building portions of the facility, such as pretreatment or liquefaction equipment, further inland and piping treated gas or LNG to the export terminal. But FERC has failed to consider these or other non-wetlands alternatives. On the contrary, the draft EIS considers only three site alternatives (including the proposed site), all three of which impact wetlands. In short, FERC's failure to consider non-wetland alternatives invalidates its own consideration of alternatives and precludes the Corps from relying on the DEIS to issue any Clean Water Act § 404 permit for the proposed Project.

b) FERC May Not Lawfully Adopt a Narrow Definition of the Project's Purpose to Restrict Consideration of Practicable Alternatives.

IP2-20

FERC's draft EIS must not adopt Cameron's narrow project purposes when considering alternatives to wetlands impacts. FERC states that it "assessed alternatives that could achieve the Project objectives," and so only considered alternatives that would "allow natural gas to be received by pipeline at the expanded LNG terminal that would be treated, liquefied, stored, and loaded from LNG storage tanks into vessels berthed at the terminal's existing marine facility," *i.e.* still be connected to the existing facility. DEIS at ES 1. This approach forecloses any non-wetlands alternatives by defining the purpose to require expansion of the existing facility. *See* DEIS at 3-15 (stating that proximity to the existing terminal was a criterion in the evaluation of alternatives). Consideration of alternatives "is the heart of the environmental impact statement." 40 C.F.R. § 1502.14. "If the agency constricts the definition of the project's purpose and thereby excludes what are truly reasonable alternatives, the EIS cannot fulfill its role." *Simmons v. U.S. Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997). FERC's narrowed consideration of alternatives is inappropriate where the proposed site is a wetland: "all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise." *See* 40 C.F.R. § 230.10(a)(3). FERC's draft EIS is insufficient because it fails to consider reasonable inland alternatives that could fulfill the purpose of the project without destroying economically and environmentally valuable wetlands.

IP2-20: See response to comment IP2-16.

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IP2-21

The purpose of the proposed Project is to construct liquefaction facilities for natural gas. The fact that Cameron wishes to integrate these liquefaction facilities with its existing shipping facility does not make the project water dependent. Liquefaction facilities could be located inland, away from special aquatic sites, and connected to shipping facilities via a pipeline. The Dominion Cove Point Liquefaction Project, for example, proposes to construct liquefaction facilities approximately a mile from the location of ship loading facilities and transfer LNG between the two by pipeline.[14]..The Dominion Cove Point Liquefaction Project demonstrates the practicability of moving liquefaction equipment to a different site. Because the DEIS failed to evaluate all practicable alternatives, such as the construction of inland liquefaction facilities connected to Cameron's existing export facility via pipeline, FERC's consideration of alternatives is inadequate.

IP2-21: See response to comment IP2-19. Additionally, Dominion Cove Point is proposing to use its existing facilities as part of its expansion to create an LNG export facility, similar to what Cameron LNG has proposed.

3. FERC Fails to Consider Alternative Methods that Could Minimize Wetland and Water Impacts.

IP2-22

FERC fails to take a hard look at alternative methods that could minimize wetland and water impacts. For example, the draft EIS fails to consider the alternative method of using Horizontal Directional Drilling (HDD) for all stream crossings. The draft EIS asserts that HDD "result[s] in no permanent impacts" on water crossings. DEIS 4-77. And the draft EIS recognizes that the other methods proposed will result in adverse environmental impacts on streams at and downstream from the proposed pipeline crossings. 4-23 to -26. But the draft EIS fails to consider using the HDD for the stream crossings other than perennial streams. FERC does not explain or support this omission.

IP2-22: The purpose of an EIS is to disclose impacts, not necessarily eliminate all environmental impacts. As noted in sections 4.3.2 and 4.4.5, the methods proposed for construction of the pipeline through waterbodies and wetlands would not result in significant impacts and we determined that impacts on waterbodies and wetlands along the proposed route would be minimized to the extent practicable. FERC has concluded that the Cameron Interstate Plan and Procedures and use of a dry crossing method would minimize impacts. Where warranted, Cameron Interstate proposed to adopt the HDD method.

4. FERC Has Not Taken a Hard Look at the Effectiveness or Potential Adverse Impacts of the Proposed Mitigation Measures.

IP2-23

The draft EIS proposes incomplete mitigation measures unsupported by evidence. For example, as noted by NMFS, FERC does not provide "detailed information pertaining to the marsh creation component of the mitigation plan." In addition to raising concerns about inconsistencies, NMFS also comments "based on our review of the draft EIS, details pertaining to mitigation area are missing from the sections of the document pertaining to EFH [essential fish habitat] or wetlands." Commenters agree with NMFS and add additional concerns.

One criterion set forth by the Fifth Circuit for determining the adequacy of an impact statement is "whether the EIS provides detail sufficient to allow those who did not participate in its preparation to understand and consider the pertinent influences involved." *Miss. River Basin Alliance v. Westphal*, 230 F. 3d 170, 174 (5th Cir. 2000). In this case, not only does the draft EIS fail to provide sufficient information for an outside party to understand and consider the influences leading to FERC's conclusion, it fails to provide sufficient information even for an agency participating in the preparation of the impact statement. Further, the adequacy of an EIS depends on "whether the agency in good faith objectively has taken a hard look at the

IP2-23: We revised portions of section 4.6.6.2 to address the concerns of NMFS (including detailed information regarding the creation of marsh habitat). With this updated information, along with the updated acreages of marsh mitigation, we are requesting NMFS consider the EIS as our revised EFH assessment.

[14] *See* FERC Dkt. No. CP13-113 RR 1, Figure 1-11(Map of proposed liquefaction facility connected to ship loading facility via pipeline)

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IP2-23 (con't)

environmental consequences of a proposed action and alternatives." *Id.* The conclusions which an agency makes must be supported by evidence in the record. *Id* at 174-5. The record here is inconsistent and incorporates outdated information. Conclusions based on inadequate evidence cannot suffice as a "hard look" taken in good faith objectively.

IP2-24

For example, Cameron LNG's mitigation plan is predicated on its ability to successfully create wetlands using material dredged from a shipping canal. If the dredged material is contaminated it is unlikely to sustain healthy created wetlands. The DEIS must identify specific procedures to assess whether the dredged material from the shipping canal contains contaminants. These procedures are practicable and appropriate steps to minimize the potential adverse impacts of discharging dredge spoil in the aquatic ecosystem. The DEIS must set forth procedures such as those set forth in 40 C.F.R. § 230.71 to ensure the contemplated mitigation measures are effective.

IP2-25

Also, FERC arbitrarily proposes action/mitigation measures for pipeline expansion impacts on wetlands. For example, FERC's own procedures state "the width of the construction right of way should be 75 feet or less in wetlands." DEIS 4-34. Cameron "proposed a right-of-way width of 100 feet for 66 wetlands crossings due to sandy soil conditions that require a greater trench width to maintain slope stability." *Id.* Cameron's rationale for the larger widths and its greater impacts is that it "determined that it is not possible to limit the width of construction right-of-way in wetlands to 75 feet." DEIS 2-26. But Cameron was able to overcome that "impossibility" for several of the wetlands crossings in response to FERC recommendation to reassess 7 of these wetlands crossings. Specifically, on February 20, 2014, Cameron proposed reductions of 25 feet, from 100 feet to 75 feet for five sections of pipeline.[15] Cameron also proposed reducing the width of additional temporary workspace in two locations from 125 feet to 100 feet.[16] Cameron does not support its proposals to reduce the right-of-ways and additional temporary workspaces by only 25 feet and not more. Cameron also does not explain why this reduction is not feasible for other rights-of-way and additional temporary workspaces. In short, FERC relies on inaccurate and unsupported information and propositions to analyze the proposed Project's requirements, alternatives, and environmental impacts.

IP2-26

Further, FERC arbitrarily proposes to replace the loss of three distinct types of wetlands with one type of wetland. The draft EIS identifies three types of wetlands which will be filled, including 24.5 acres of forested (PFO) wetlands, 119.4 acres of palustrine emergent wetlands, and 69.8 acres of palustrine scrub-shrub (PSS) wetlands. DEIS at 3.3, Table 3.3-1. The Corps' recent jurisdictional determination requires reevaluation using the currently applicable acreage of all wetlands. Regardless, FERC offers no evidence that the creation of tidal fresh/intermediate marsh will adequately compensate for lost forested wetland. While noting the long regeneration period required to reestablish forested wetlands (30 years or more), FERC offers no support for the conclusion that the draft EIS shouldnot include mitigation measures for forested wetlands to ensure functional equivalence. In short, FERC must substantiate its decision to mitigate the loss

[15] *See* FERC Dkt. No. CP13-25 Cameron LNG, LLC and Cameron Interstate Pipeline, LLC Response to DEIS under CP13-25, et al. Attachment 1.
[16] *Id.*

IP2-24: As noted in section 4.3.2 of the EIS, "During construction of Cameron LNG's existing terminal and prior to dredging, Cameron LNG conducted an evaluation of the sediment within the Calcasieu Ship Channel. That evaluation concluded that sediments in the channel were not contaminated (CH2MHILL 2003). If requested by the COE, Cameron LNG would test for contaminated sediments prior to construction within the proposed dredge area during construction of the work dock." We note that dredged materials from adjacent areas (e.g., the Calcasieu Ship Channel and the existing berthing area and turning basin) have successfully been used to create wetlands, indicating that the Project sediments could also reasonably be used to create wetlands. In addition, the Louisiana Department of Wildlife and Fisheries (LDWF) included the following statement in its comment letter on the draft EIS (comment letter SG2 in Appendix L): "LDWF has assisted the applicant in past years to create marsh from spoil material resulting from dredge activities of the LNG berthing slip. These spoil disposal areas have resulted in appropriate marsh elevations and successful re-vegetation. Therefore, LDWF continues to support such efforts."

IP2-25: We understand that in sandy soil, the width of the top of the trench is difficult to minimize and therefore the width of the construction right-of-way to allow construction may be wider than normally desired. Cameron Interstate's February 20, 2014 response to our recommendation in the draft EIS provides what we consider acceptable reductions to the right-of-way widths that are responsive to field conditions along those portions of the pipeline route. In addition, this reduction is in direct response to minimizing impacts on what would typically be considered higher quality wetlands (i.e., hardwood wetlands).

IP2-26: See response to IP2-16. In addition, the FERC does not determine compensation ratios for wetlands; that is the COE's responsibility. We work in concert with the COE during the environmental review and are merely disclosing in the EIS the impacts and how on-site wetland impacts would be avoided, minimized, and mitigated to the extent practicable. In this case, tidal brackish marsh is more imperiled in the Project area than forested emergent wetland. Therefore, this mitigation seems reasonable.

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IP2-26 (con't)

of acreage in three classifications of wetlands with the creation of tidal fresh/intermediate marsh alone or call for increased mitigation to provide adequate compensation for lost kinds of wetlands.

5. FERC Fails To Consider the Benefits of Functioning Wetlands.

Wetlands serve many economic and environmental functions that FERC has not considered. For example, on January 23, 2014, the Secretary of the Interior Sally Jewell explained, "Coastal wetlands not only provide key habitat for fish and wildlife but they also improve water quality, support local economies through jobs and improve community resilience through flood and storm surge protection."[17] In the same press release, the Director of the U.S. Fish & Wildlife Service, Dan Ashe, stated "With the latest data showing dramatic annual loss of coastal wetlands . . . [t]hese wetlands are invaluable resources we must protect."

IP2-27

For example, among other benefits FERC fails to consider, wetlands act as flood barriers, water filters and important wildlife habitat. Foremost is the availability of wetlands to absorb flood waters. Wetlands have the ability to mitigate storm surge and flood waters much like those which ravaged our coast in 2005. A wetland one acre in size will store 330,000 gallons of water when inundated to a depth of one foot.[18] Further, a ten acre wetland will retain 1.5 million gallons with a six-inch rise in water level.[19] The Corps has previously studied the link between wetland loss and storm damage and estimated that "a loss of 8,423 acres of wetlands within the basin would result in annual flood damages of over $17,000,000."[20]

IP2-28

Similarly, a recent study published by the Royal Swedish Academy of Sciences examined the correlation between monetary damage caused by a windstorm or hurricane and the local wetlands in order to attempt to quantify wetlands' flood and storm surge protection values.[21] The study valued coastal wetlands in Louisiana an average $4,200 per acre, per year.[22] Adding in the value of additional ecosystem services, the total value of each acre of wetlands is approximately $33,000 per acre, per year.[23] The study also acknowledged that coastal wetlands act as "horizontal levees" that are maintained by nature and are "far more cost-effective than constructed levees."[24]

[17] Dept. of Interior Press Release, available at http://www.doi.gov/news/pressreleases/secretary-jewell-director-ashe-announce-16-5-million-in-grants-to-conserve-coastal-wetlands.cfm attached as Exhibit 7.
[18] *See* FEMA TRAINING DOCUMENT, CH. 8 FLOODPLAIN NATURAL RESOURCES AND FUNCTIONS, p. 3. Available at http://training.fema.gov/EMIWeb/edu/docs/fmc/Chapter%208%20-%20FLOODPLAIN%20NATURAL%20RESOURCES%20AND%20FUNCTIONS.PDF , and attached as Exhibit 8.
[19] W. Niering, THE LIFE OF THE MARSH: THE NORTH AMERICAN WETLANDS 191 (1966).
[20] Sather, J. H.; Smith, R. D, *AN OVERVIEW OF MAJOR WETLAND FUNCTIONS AND VALUES* FWSOBS 84/18 (1984).
[21] Costanza, R. et. Al. THE VALUE OF COASTAL WETLANDS FOR HURRICANE PROTECTION, AMBIO Vol. 37, No. 4 JUNE 2008.
[22] *Id.* tbl. 3.
[23] *See id.* at 247.
[24] *See id.*

IP2-27: In section 4.4 of the EIS, we acknowledge "Wetlands can be a source of substantial biodiversity and serve a variety of functions that include providing wildlife habitat, recreational opportunities, flood control, and naturally improving water quality." The pipeline would only remove 16.0 acres of wetland during its operation. While the terminal wetland impacts would be much greater, the creation of tidal marsh would also likely serve as flood control.

IP2-28: Comment acknowledged. See response to comment IP2-27.

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IP2-28 (con't)

In addition to lowering storm surge, wetlands fill an important economic role by functioning as a vital fisheries habitat. Wetlands provide an essential link of the life cycle of 75 percent of the fish and shellfish commercially harvested in the United States.[25] Further, in 2004 landings of crab, salmon, and shrimp (all animals that make their homes in wetlands for all or at least part of their lives) were valued at $1,167 billion[26] The act of filling in wetlands decreases the habitat area for dependent fish and shellfish and will impact not only the Louisiana fishing industry, but the nation's fishing industry.

IP2-29

FERC fails to consider these values when it analyzed the proposed destruction of wetlands and evaluated the possibility of using contaminated sediments to build new wetlands. To put the wetland values in perspective, the project would cause a net loss of 235.6 acres of wetlands (by destroying 334.8 and providing only 99.2 in mitigation). Using the valuation data above, these 235.6 acres of wetlands have the value of $7,775,000 per year. This does not equal net zero loss, as FERC's draft EIS concludes.

IP2-29: FERC did not conclude, nor did the EIS state, that there would be a "net zero loss" of wetlands. See responses to comments IP2-16 and IP2-24.

6. FERC's Consideration of Essential Fish Habitat Is Incomplete and Based on Outdated or Inconsistent Information.

IP2-30

FERC fails to take a hard look at the impacts of the project on Essential Fish Habitat ("EFH") because the information it relied on is incomplete and based on outdated or inconsistent information. For example, the NMFS commented on January 30, 2014 that, "details pertaining to the mitigation area are missing from the section of the [draft EIS] pertaining to EFH or wetlands." The Commenters support NMFS's comment that key information is missing from the draft EIS for consideration of the impacts of filling 255 acres of shallow, tidally influenced water bottoms with dredged materials to elevations suitable for marsh establishment as mitigation for other project impacts.

IP2-30: See response to comment IP2-23.

IP2-31

In addition to the specific information NMFS lists as missing, the draft EIS lacks information on contamination testing for the dredged material, including but not limited to, how any contaminated dredged material will be treated, where any contaminated dredge materials will be placed, and what substitute material may be used for mitigation if the dredged material is in fact contaminated.

IP2-31: See response to comment IPI2-24.

B. FERC Fails To Take a Hard Look at Direct Impacts on Water Quality and Dependent Wildlife.

IP2-32

FERC's draft EIS fails to take the hard look at the proposed Project's impacts on water resources and related environments that NEPA requires. For example, the DEIS does not consider recent data on ship traffic impacts, but relies instead on decade-old analyses of potential

IP2-32: We disagree with the commenter's allegations and provide specific responses below.

[25] EPA, Office of Water, *Economic Benefits of Wetlands*, EPA843-F-06-004 (May 2006), attached as Exhibit 9.
[26] W. Niering, THE LIFE OF THE MARSH: THE NORTH AMERICAN WETLANDS 191 (1966).

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IP2-32 (con't)

impacts. The draft EIS also fails to adequately consider direct, indirect and cumulative impacts of the facility expansion on wastewater, stormwater, and groundwater. In short, the DEIS proposed Project does not give full consideration to the impacts of its draws on, outputs into, and potentials effects on water in and around the proposed Project area, as the following examples show:

1. The Draft EIS Relies on Incomplete and Outdated Data.

IP2-33

FERC's draft EIS relies on the 2003 EIS and 2006 EA instead of more current available information. NEPA requires that each federal action be judged against a "no action" baseline. 42 U.S.C. § 4332(E); 40 C.F.R. §§ 1502.14(d), 1508.9. This baseline is intended to provide a fair "benchmark, enabling decisionmakers to compare the magnitude of environmental effects of the action alternatives." 46 Fed. Reg. 18,026, 18,027 (Mar. 23, 1981). Similarly, the underlying purpose of NEPA will not be served if FERC approves the proposed Project based on outdated information. *See Holy Cross v. U.S. Army Corps of Engineers*, 455 F. Supp. 2d 532, 545 (E.D. La. 2006). The DEIS must provide enough up-to-date detail to allow the public to effectively comment. *See Holy Cross Neighborhood Ass'n v. U.S. Army Corps of Engineers* 2011 WL 4015694, *6 (E.D. La. 2011) (citing *Sierra Club v. Froehlke,* 816 F.2d 205, 213 (5th Cir. 1987)).

a) FERC Relies on the Wrong Baseline to Analyze Environmental Impacts.

IP2-34

FERC frequently uses the extent of previously authorized activity as the baseline. For example, it states that Cameron's existing authorization allows a maximum of 210 vessels per year. DEIS 2-1. "Because Cameron LNG is not proposing to change the authorized frequency or size of LNG vessels, impacts associated with these activities are not addressed in this EIS." DEIS 4-22, 4-49, 4-57, 4-834-85, 4-103, 4-200. Operations at Cameron have never even approached this level of activity. The Department of Transportation's Marine Administration provides statistics for the "Lake Charles, LA" port, which includes both the Cameron LNG and Trunkline LNG terminals.[27] In 2007, the last year before the shale gas boom, LNG vessel traffic to both Cameron and Trunkline combined amounted to 77 vessels, with a capacity of 5.8 million metric tons of LNG.[28] By 2011, LNG vessel traffic to the Lake Charles port fell to only four vessels.[29] Indeed, FERC's chosen baseline would be too high even for *nationwide* LNG vessel traffic, which was only 213 vessels in 2006 and has been below this level ever since.[30] The

[27] *See, e.g.,* http://lkc.ports.moranshipping.com/default.aspx (identifying terminals in the Lake Charles port).
[28] Maritime Administration, Dep't of Transp., "Vessels Calls at U.S. Ports by Vessel Type," *available at* http://www.marad.dot.gov/library_landing_page/data_and_statistics/Data_and_Statistics.htm (under HTML heading "Vessel Calls") (last updated Oct. 6, 2013).
[29] *Id.*
[30] Maritime Administration, Dep't of Transp., "Vessel Calls Snapshot, 2011," *available at* http://www.marad.dot.gov/documents/Vessel_Calls_at_US_Ports_Snapshot.pdf.

IP2-33: The EIS does not rely on data from the 2003 EIS and the 2006 EA to evaluate impacts of the proposed Project. Cameron LNG is not proposing to increase the number or size of LNG carriers currently authorized to call on the terminal; those earlier documents are referred to because they were part of the decision-making process to authorize having 210 LNG carrier round trips from the territorial seas to the existing berthing facilities at the Cameron LNG Terminal.

IP2-34: We agree that Cameron LNG has never had 210 ships per year call on its existing facility; however, they are permitted to do so, and environmental effects of those ships were reviewed in previous dockets. There would not be cumulative effects of shipping resulting from this Project as there are no changes proposed to the number or size of ships that are currently authorized to call on the Terminal. We do not believe this to be misleading, as we clearly state the number of vessels that are authorized for the Terminal. Further, the U.S. Coast Guard (Coast Guard) is the federal agency responsible for determining the suitability of waterways for LNG marine traffic. As noted in section 4.12.1 of the EIS: "In accordance with 33 CFR 127, the Coast Guard has reviewed the proposed liquefaction facilities and stated that a Letter of Intent (LOI) or a revision to the WSA [Waterway Suitability Assessment] is not required for the Terminal Expansion Project because the proposed modifications lie outside the Marine Transfer Area."

The FERC relies on the Coast Guard to carry out the necessary evaluations under its jurisdiction for LNG facilities, and we incorporate the findings of the Coast Guard into our environmental reviews of LNG export and import terminals.

IP2-34 (con't)

minimal level of ship traffic to Cameron LNG indicates that other equipment at the existing terminal is similarly minimally used.

FERC's analysis must also reflect the fact that the impacts of adding activity now are different, and likely greater, than they would have been when the import projects were previously analyzed and authorized. For example, although FERC's prior NEPA analyses evaluated the effects of adding 210 ships per year to the Calcasieu shipping channel, those analyses were premised on a baseline that is no longer accurate. Although the existing Cameron project has not increased ship traffic in the area, other projects have. This change is reflected in both FERC documents and Maritime Administration data. Looking at FERC statements, as FERC explained in the 2003 EIS, for decades, traffic in the Calcasieu Ship Channel has been increasing: averaging between 400 to 600 vessels per year in the 1980s to a maximum of over 800 vessels per year in the 1990s. *See* 2003 EIS at 4-69. In 2006, when FERC last assessed the terminal's traffic impacts, FERC stated that the Channel hosted an average of 1,000 vessels per year, with further increases projected. *See* 2006 EA at 46; *see also id.* at 76 (discussing expected traffic increases from other LNG terminals in the area). Evaluating the proposed Project's impacts in light of current traffic levels is crucial, as traffic levels impact shoreline erosion, air quality, marine safety, recreational use of the Channel, and shipping delays and congestion. *See id.* at 22, 41, 65-66, 75-76, 78-79. Maritime Administration Data shows a similar trend, with traffic continuing to increase through the present.[31] Although FERC may tier off prior analyses per 40 C.F.R. § 1502.20, tiering cannot preclude a cumulative impacts analysis. *See Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 895-96 (9th Cir. 2002) (noting that a NEPA document "may be deficient if it fails to include a cumulative impact analysis or to tier to an EIS that reflects such an analysis"). Here, FERC's prior traffic analyses do not constitute an adequate cumulative impacts analysis where baseline traffic has changed. Indeed, tiering is improper if new issues develop after a prior environmental analysis. *See W. Watersheds Project v. BLM*, 774 F. Supp. 2d 1089, 1098-99 (D. Nev. 2011).

Similarly, FERC's baseline is outdated insofar as it fails to include environmental changes since the 2003 and 2006 studies, including but not limited to increased storm activity and flooding in the area, additional impaired waters in the area, and environmental disasters in the Gulf of Mexico such as the BP Horizon and other oils spills.

Thus, the baseline for FERC's NEPA assessment must be the status quo of minimal, if any, operation of the terminal. Since the "current level of activity is used as a benchmark," *Custer Cty. Action Ass'n v. Garvey*, 256 F.3d 1024, 1040 (10th Cir. 2001), FERC cannot define the baseline in terms of environmental effects that, although potentially previously authorized,

[31] Department of Transportation, Maritime Administration, *Vessels Calls at U.S. Ports by Vessel Type* (Nov. 6, 2013), *attached as* Exhibit 10, available at, http://www.marad.dot.gov/documents/US_Port_Calls_by_Vessel_Type.xls. Although the Maritime Administration indicates lower total vessel traffic for the Port of Lake Charles than the FERC statements regarding Calcasieu Shipping Channel traffic, the two data sources plainly show the same increasing trend. The Maritime Administration reports Lake Charles traffic of 579 in 2002, 705 in 2006, and 780 in 2011.

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IP2-34 (con't)

have never actually occurred and that will not actually occur in the future but for FERC action here. *Accord Cmtys. for a Better Env't v. S. Coast Air Quality Mgmt. Dist.*, 48 Cal.4th 310, 328, 106 Cal.Rptr.3d 502, 226 P.3d 985 (2010) ("An approach using hypothetical allowable conditions as the baseline results in 'illusory' comparisons that 'can only mislead the public as to the reality of the impacts and subvert full consideration of the actual environmental impacts,' a result at direct odds with [the state environmental review statute's] intent.") (applying state NEPA-like statute). "NEPA procedures emphasize clarity and transparency of process," and, for this reason, "courts not infrequently find NEPA violations when an agency miscalculates the 'no build' baseline." *N.C. Wildlife Fed'n v. N.C. Dep't of Transp.*, 677 F.3d 596, 603 (4th Cir. 2012). Failing to provide complete baseline data, or relying on stale or misleading data, violates the statute's requirement that agencies provide a fair benchmark for their decisions. *See N. Plains Res. Council v. Surface Trans. Bd.*, 668 F.3d 1067, 1084-86 (9th Cir. 2011). FERC's analysis must therefore reflect the fact that if the proposed projects are authorized, the impacts will be greater than merely an increase over previously authorized, but never realized, activity.

b) FERC Fails to Consider Tug Availability.

IP2-35

Tugs are necessary to maneuver large vessels through the Calcasieu Ship Channel. In 2000, the Channel had only four permanent tugs available. 2003 EIS at 4-81. Because most LNG carriers require three tugs for turning and berthing, one tug remained available for other users. *Id.* In the 2003 EIS, FERC recommended that Cameron devise a plan for securing more tugs so that the project would not impact other tug users in the area, contributing to traffic congestion and delays. 2003 EIS at 4-82. By the time of the 2006 EA, Cameron had not yet supplied additional tugs, putting the channel at risk of "significant delays." 2006 EA at 68, 75. The current DEIS does not discuss the availability of tugs. FERC must explain whether Cameron secured additional tugs, and, if not, how the proposed Project will impact traffic delays and congestion given current traffic conditions and tugs.

c) FERC's Outdated Data Precludes the Necessary Hard Look at Environmental Impacts.

IP2-36

FERC's use of outdated data precludes FERC from taking a hard look at the proposed Project. For example, FERC's reliance on decade old ship traffic analyses precludes a hard look at the impacts of that traffic given environmental changes in the area, such as the "dead-zone" in the Gulf of Mexico and other water impairments in areas affected by the project. In the past four years, EPA has listed parts of the Gulf of Mexico along the Louisiana coast as "impaired" for dissolved oxygen. Similarly, EPA has listed other areas near the proposed Project as "impaired" for other reasons. For example, the Calcasieu River and Ship Channel are "impaired" for Polychlorinated Biphenyls (PCBs) and Polycyclic Aromatic Hydrocarbons (PAHs) and the Sabine River Basin Coastal Bays and Gulf Waters are "impaired" for mercury. FERC must consider the proposed Project's impacts in light of these changes in water quality since the 2003 and 2006 studies it relies on.

IP2-37

In another example, FERC states that dredging for the work dock will result in impacts

IP2-35: As noted in our response to IP2-34, Cameron LNG has not proposed an increase in the number of LNG carriers visiting the terminal or changes to the routes of carriers. The Coast Guard is responsible for assessing the suitability of the waterway, and the Coast Guard stated its assessment of the suitability of the waterway does not require revision.

IP2-36: See response IP2-34. The potential Impacts of the proposed Project on water quality within the Calcasieu Ship Channel are addressed in section 4.3.2.2. Normal runoff from the Terminal Expansion is not anticipated to include either PCBs or PAHs.

IP2-37: We are not aware of any agency or individual reporting impacts (including contaminated sediments) due to dredging of the existing terminal's berthing area or the ensuing maintenance dredging. Further, we disclose the impacts of dredging in sections 4.3.2.2 and 4.6.2.1 of the EIS.

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IP2-37 (con't)

similar to those that occurred during construction and maintenance dredging of the existing Terminal's berthing area. DEIS 4-22. However, FERC fails to provide evidence of those earlier impacts to allow the public to follow its assumption. Instead of supporting this conclusion with data collected on actual impacts since the 2003 EIS and the 2006 EA, FERC relies on the outdated information to make projections about impacts from the proposed Project.

2. FERC Fails to Take a Hard Look at Impacts on Water Quality From Expected Discharges, Including, But Not Limited to, Wastewater, Stormwater, and Ballast Water.

a) FERC Does Not Adequately Consider Impacts of Stormwater Run Off.

IP2-38

FERC fails to take a hard look at impacts on water quality from expected discharges, such as wastewater, storm water, and ballast water. For example, FERC notes that "[c]onstruction would increase the amount of impervious surfaces at the Terminal Expansion site, which would increase stormwater runoff volumes." DEIS 4-24. But the draft EIS provides only a general description of how stormwater will be diverted during construction to one of the two ponds on the property. Consequently, there is no discussion of possible alternative locations or methods for stormwater runoff during construction or operation. Additionally, there is no description of backup measures that will be taken if, for example, the pond overflows or becomes inaccessible. Finally, the draft EIS fails to discuss how Cameron will deal with certain hazardous materials, such as heavy metals, petroleum products, or brake chemicals.

b) FERC Does Not Adequately Consider Impacts of Wastewater on Water Quality or the Surrounding Environment.

IP2-39

FERC fails to address how Cameron will deal with wastewater generated from construction and operation of the expanded Terminal and Pipeline, including the impacts of wastewater on the surrounding environment that may be affected if the wastewater is not dealt with properly. As a result, FERC fails to take a "hard look" at the effects that wastewater may have on the environment.

c) FERC Does Not Adequately Consider Impacts of Ballast Discharges on Water Quality.

IP2-40

Similarly, the draft EIS fails to take a hard look at the impacts of ballast water discharges. As the draft EIS acknowledges, ballast water management requirements have changed since the 2003 EIS and 2006 and 2010 EAs were completed for the original Terminal. *See* DEIS 4-22; 33 C.F.R. part 151; 46 C.F.R. part 162. The draft EIS fails to consider the impacts or differences in ballast water treatment. Moreover, the draft EIS assumes compliance with the new regulations and fails to consider the impacts of non-compliance. In short, FERC's analysis of ballast water

IP2-38: As stated in the EIS, Cameron LNG would follow the stormwater discharge requirements of its Environmental Plan, which includes the FERC Plan, as well as the requirements of the Louisiana Pollutant Discharge Elimination System permit. Those actions would be consistent with the current stormwater discharge at the existing terminal. Hazardous materials would be stored and handled in accordance with the requirements of the Cameron LNG Environmental Plan, which includes offsite disposal.

IP2-39: Discharges associated with construction of the Project would follow the requirements of the Cameron LNG and Cameron Interstate Environmental Plans and the appropriate state discharge permits.

IP2-40: As noted previously, Cameron LNG does not propose any modifications to the number or size of vessels currently authorized to call on the Terminal. However, we note that the revisions to ballast water discharge regulations represent improvements to the regulations and would result in greater avoidance of invasive species issues than previous regulations. LNG carriers visiting the terminal would be required to comply with the current regulations and would be monitored for compliance by the Coast Guard. Ballast water would initially be obtained at the port of departure of an LNG carrier, but the ballast water would be exchanged in the open ocean and treated on board the vessel. Ballast water would be discharged at the berthing facility as LNG is loaded on the LNG carrier, the same as the authorized loading of foreign-sourced LNG onto LNG carriers that is currently authorized at the existing terminal.

IP2-40 (con't)

treatment inappropriately relies on outdated data, acknowledges that the data it relies on is no longer applicable, and fails to give the matter adequate consideration.

IP2-41

Moreover, FERC does not support its presumption that its previous analysis for import shipping ballast is applicable or appropriate for the current Proposed Project involving export shipping ballast. Similarly, the DEIS contains little or no discussion of where the ballast water will come from, where it will be dumped, the quality of the water, or its potential to bring in invasive species.

3. FERC Fails to Adequately Analyze the Impacts and Alternatives for Local Water Withdrawals.

IP2-42

FERC fails to take a hard look at withdrawal impacts on groundwater. The Chicot Aquifer is the principal source of groundwater in the Project area for municipal, industrial, agricultural, and domestic use (USGS 1998). EPA has designated the Chicot Aquifer System as a sole-source aquifer (53 CFR 20893). EPA defines a sole- or principal-source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas have no alternative drinking water sources that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water.

The draft EIS estimates that "total withdrawals over the course of construction of the Terminal Expansion would be approximately 73.5 million gallons." The draft EIS says that this is a small amount compared to daily public and industry use, but it relies on outdated data from 2007. Additionally, there is no discussion of alternative sources of water that are not sole-source aquifers. For example, the DEIS fails to consider the alternative of using non-potable water.

FERC also inadequately considers the water withdrawals that will take place during operation. For example, the Project proposes to use water from the City of Hackberry. But the draft EIS fails to consider how that water will get from Hackberry to the Project area or what impacts such withdrawals will have on Hackberry, its population, or its water supply. The draft EIS also fails to consider alternative sources of water for use during operation, including the alternative of non-potable sources.

IP2-43

Additionally, the DEIS concludes that since "no known effects on groundwater" occurred during initial dredging, that no groundwater impacts would arise. But FERC's conclusion is an unsupported assumption and inadequate for the purposes of an EIS. 42 U.S.C. § 4332(C). For example, FERC does not show how it determined "no effects on groundwater." Similarly, FERC does not support its conclusion that further dredging will have the same results as initial dredging.

4. FERC Fails to Adequately Analyze the Impacts on Water Quality from Sediment Disturbance.

IP2-44

FERC fails to take a hard look at the impacts of sediment disturbance. For example, the

IP2-41: LNG carriers are currently authorized to export LNG from the Cameron LNG Terminal and would discharge ballast water under that authorization. See response to comment IP2-40.

IP2-42: We disagree. The total water use over the 3-year construction period represents approximately 0.01 percent of the annual withdrawal volume reported for the Chicot Aquifer (see section 4.3.1.2). As stated in section 4.3.1.2 of the EIS, during operation water would be supplied through an existing on-site connection. The draft EIS inaccurately noted the supplier would be the City of Hackberry, whereas Cameron Parish Waterworks District 2 would provide the water. This correction was made in section 4.3.1.2 of the final EIS. As stated in the EIS, Cameron LNG and the provider would agree to water usage volumes and rates. As a result, we do not believe that it is appropriate to assess potential alternative water supplies.

IP2-43: During the course of the research conducted in preparing the EIS, we did not encounter any information indicating construction of the existing terminal resulted in impacts on groundwater.

IP2-44: See response to comment IP-24 regarding the potential for contaminated sediments. Cameron LNG would comply with the requirements of the Modified Maintenance Dredge Permit issued to Cameron LNG by the Louisiana Department of Natural Resources (LDNR) on November 20, 2013, which we believe would minimize sediment and turbidity impacts to the extent practicable and would not cause a significant impact on the environment. Therefore, we believe alternative methods of construction are not warranted.

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To: Kimberly D. Bose, Secretary, FERC
Sierra Club & GRN Comments on Draft EIS for Cameron LNG, LLC's and Cameron Interstate Pipeline, LLC's Liquefaction Project, FERC Docket Nos. CP13-25 & CP13-27
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IP2-44 (con't)

draft EIS states that Cameron expects to dredge about 205,000 yd^3 of material for the proposed work dock. DEIS 2-9. Yet, FERC's consideration of turbidity in the water due to dredging fails to address or call for tests on potential contamination in the sediment or the release of that contamination into the water, so it is unknown what impacts the dredging will have in the dredging area or the spoil placement area. Furthermore, FERC fails to discuss alternative methods of dredging beyond its proposed use of a hydraulic dredge with a suction header and turbidity curtains. In order to properly assess whether this method will have the least harmful impact, FERC must set out and consider alternatives. 42 U.S.C. § 4332(C).

As mentioned earlier, because FERC relies on outdated information regarding shipping traffic, the draft EIS fails to discuss associated increases in turbidity. Specifically, FERC fails to analyze export shipping impacts on the basis that it had already considered such impacts in the 2003 EIS and 2006 EA for imports. As a result, FERC fails to reassess the accumulated actual impacts from the shipping traffic that could have been objectively measured and, instead, relies on prior estimated impacts. Since better information is now available, FERC should have used it when drafting the current draft EIS.

IP2-45

The draft EIS states that pilings for the LNG storage tank and work dock would have no contaminating effect on the aquifer. DEIS 4-18. This statement is unsupported by testing or other evidence. Consequently, FERC did not discuss any alternatives to minimize contamination, including alternatives to the use of structural pilings.

5. FERC Fails to Adequately Analyze the Impacts on Water Quality from Switching between Liquefaction and Regasification.

IP2-46

FERC fails to analyze the environmental impacts of switching between liquefaction and regasification. The draft EIS indicated that Cameron is able to operate the expanded terminal exclusively as a liquefaction/export facility or exclusively as an import/regasification facility, but not both concurrently. DEIS 1-1. As a result, Cameron expects to switch between these two types of operations. The draft EIS fails to consider the environmental impacts of such expected switches in operations.

6. FERC Fails to Explain How It Approved the Cameron Spill Mitigation Protocol.

IP2-47

FERC fails to explain why it approved the Cameron spill mitigation protocol. In *O'Reilly v. U.S. Army Corps of Engrs.*, the Fifth Circuit Court of Appeals stated that reliance on mitigation measures may reduce a project's adverse impacts below the level of significance; however, in order to fulfill NEPA's requirements, an EIS involving mitigation must include a thorough evaluation of mitigation options. 477 F.3d 225 (5th Cir. 2007). Here, FERC fails to effectively demonstrate how the proposed mediation measures for spills would remediate the adverse impacts so that they would not significantly affect the environment. For example, the DEIS refers to the Cameron Interstate Environmental Plan several times, but does not support or

IP2-44 (con't): See responses to comments IP2-33 and IP2-34. Section 4.3.2.2 recognizes that dredging would result in temporary increases in the currently high turbidity levels of the area in the vicinity of dredging. As noted in our response to comment IP2-44, Cameron LNG has been issued a Modified Dredging Permit by LDNR and would comply with the requirements of that permit. In addition, as stated in section 4.6.2.1, "Cameron LNG would also conduct water sampling before and throughout dredging operations to ensure that standards specified in the previous COE permit would not be exceeded for total suspended solids or dissolved oxygen." As a result, no alternative dredging methods were assessed, and we believe the proposed and permitted dredging methods would not result in a significant impact.

IP2-45: As noted in section 4.3.1.2, the maximum piling depth would be approximately 110 feet below ground surface, and the shallowest aquifer is approximately 200 feet from the surface. We believe that impacts would be minimized and not significant, and alternatives to structural piles are therefore not required.

IP2-46: The potential impacts of operation of the proposed Project on water quality are addressed in the EIS. The potential impacts of operation of the existing facility were addressed in previous environmental documents. We do not believe that stopping the export process and starting the import process, or vice versa, would result in additional impacts on water quality.

IP2-47: The EIS addresses the potential impacts of normal operation of the Project. If a spill occurs, the facility has been designed to avoid impacts on the public, and Cameron provided contingency plans to address the release and a list of the agencies it would contact regarding the release. These plans are consistent with the approved plans for the existing terminal. Spills of hazardous substances would be contained, cleaned up, and materials would be disposed of at state-approved facilities. We believe that these measures would minimize the likelihood of any significant impacts on the environment.

IP2-47 (con't)

explain how that plan will be effective, what alternative mitigation plans, if any, were considered, and why FERC approved this mitigation plan over other alternatives. *See e.g.* DEIS 4-19.

7. FERC Fails to Adequately Consider the Potential Adverse Effects on Fish and Wildlife.

IP2-48

FERC fails to consider that construction and operation of the proposed Project will result in increases in habitat disturbance. The draft EIS states that, "Cameron LNG would permanently remove all habitats at the Terminal Expansion site and convert them to industrial land." DEIS 4-42. FERC justifies this by offering that "these habitats have been previously disturbed." *Id.* However, this justification is the opposite of what NEPA requires regarding cumulative impacts. Instead, FERC should have considered how past disturbances combined with foreseeable future disturbances would affect local wildlife habitats.

IP2-49

Additionally, the Project plans to increase the water depth from about 3.5 feet to about 15 feet below. Yet, the draft EIS does not address how this alteration will affect indigenous fish and wildlife. For example, FERC does not discuss how the depth change will disrupt habitat formation and migration patterns of fish and wildlife.

IP2-50

Furthermore, although FERC lists the threatened and endangered species that might be negatively impacted by the Project, it only gives a cursory review of why it believes no significant impacts will arise. It is unclear whether the biological assessment was sufficient. For example, was there an on-site inspection? Were experts consulted for review? Were alternatives considered to avoid any unnecessary effects? FERC's inadequate analysis of the proposed Project's impacts on specially protected species is addressed further below.

IP2-51

FERC's failure to take a hard look at impacts of the Project on Essential Fish Habitat is also evident from the draft EIS's inadequate consideration of the impacts of dredging, construction, pollutant run-off during facility construction and operation, maintenance dredging, and ship traffic on the essential fish habitat in and around the Project area. FERC's inadequate analysis of the proposed Project's impacts on Essential Fish Habitat is addressed further above.

IP2-48: Section 4.6.1.1 provides an assessment of the direct and indirect potential impacts on wildlife due to construction and operation of the Terminal Expansion. As noted in that section, "However, these habitats have been previously disturbed and offer limited productive wildlife habitat within the Terminal Expansion site, and a large amount of similar and/or higher quality habitat exists adjacent to and near the Terminal Expansion site for wildlife use." In addition, section 4.6.1.1 states that the mitigation areas that would be developed as a part of the Project (see Appendix K) "would provide higher quality habitat for wildlife currently using the Terminal Expansion area." Cumulative impacts on wildlife are not addressed in the page referred to by the commenter, but are addressed in section 4.13.2.5.

IP2-49: The text of section 4.6.3.4 of the EIS has been revised to address the issue regarding indigenous fish raised by the commenter.

IP2-50: The FERC and Cameron consulted with FWS and NMFS regarding the Project's impacts on threatened and endangered species. Cameron conducted habitat surveys in the vicinity of Project components to determine what habitat was available for threatened and endangered species, then conducted species-specific surveys within those habitats. These surveys were conducted in consultation with FWS and NMFS. As noted in comment letter FG1, the FWS concurred with our determination that the Project *is not likely to adversely affect* threatened and endangered species. Consultation with NMFS is ongoing.

IP2-51: Section 4.6.3 of the EIS provides a detailed description of, and an evaluation of, potential impacts on EFH. See our response to comment FG3-1 (NMFS comment letter).

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C. The Draft EIS's Discussion of The Effects of Air Pollutants Emitted from The Preferred Alternatives Is Insufficient.

1. The Draft EIS Fails to Take a Hard Look at the Impact of Emissions from Operation of the Terminal and Pipeline Expansion on Ozone Levels

The draft EIS predicts that the preferred alternatives will, in aggregate, have the potential to emit 3,206 tons per year (tpy) of nitrogen oxides (NO_X) and 322 tpy of volatile organic chemicals (VOC), in addition to emissions of other pollutants.

Table 1: Projected Project Operating Emissions

Source of operating emissions	Emissions, in TPY	
	NO_x	VOC
Terminal Expansion (DEIS 4-113)	2333	97
Pipeline Expansion (DEIS 4-118)	384	200
Marine Vessel Activities (while berthing or at berth) (DEIS 4-216)	269	10
Marine Vessel Activities (outside moored safety zone) (DEIS 4-216)	220	15
Totals	3206	322

IP2-52

NO_X and VOC directly impact human health. In addition, these pollutants contribute to the formation of ground-level ozone. As Commenters explained in their protest of Cameron's application to FERC, ozone harms human respiratory systems and has been linked to premature death, heart failure, chronic respiratory damage, and premature aging of the lungs.[32] Ozone may also exacerbate existing respiratory illnesses, such as asthma and emphysema, or cause chest pain, coughing, throat irritation and congestion. Children, the elderly, and people with existing respiratory conditions are the most at risk from ozone pollution.[33] Significant ozone pollution also damages plants and ecosystems.[34] Ozone also contributes substantially to global climate

[32] EPA, *Proposed New Source Performance Standards and Amendments to the National Emissions Standards for Hazardous Air Pollutants for the Oil and Natural Gas Industry: Regulatory Impact Analysis*, 4-25 (July 2011) ("O&G NSPS RIA"), *available at* http://www.epa.gov/ttnecas1/regdata/RIAs/oilnaturalgasfinalria.pdf, and attached to Env. Protest of Cameron Apps. as Exhibit 7; Jerrett *et al.*, *Long-Term Ozone Exposure and Mortality*, New England Journal of Medicine (Mar. 12, 2009), *available at* http://www.nejm.org/doi/full/10.1056/NEJMoa0803894#t=articleTop, and attached to Env. Protest of Cameron Apps. as Exhibit 9.
[33] *See* EPA, *Ground-Level Ozone, Health Effects, available at* http://www.epa.gov/glo/health.html, and attached to Env. Protest of Cameron Apps. as Exhibit 10. EPA, *Nitrogen Dioxide, Health*, available at http://www.epa.gov/air/nitrogenoxides/health.html, and attached to Env. Protest of Cameron Apps. s as Exhibit 11.
[34] EPA, *Proposed New Source Performance Standards and Amendments to the National Emissions Standards for Hazardous Air Pollutants for the Oil and Natural Gas Industry: Regulatory Impact Analysis*, 4-26 (July 2011)

IP2-52: We revised section 4.11.1.5 to include a discussion of the ozone modeling analysis completed by Cameron LNG.

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IP2-52 (con't)

change over the short term. According to a recent study by the United Nations Environment Program (UNEP), behind carbon dioxide and methane, ozone is now the third most significant contributor to human-caused climate change.[35]

Ozone is a criteria pollutant under the Clean Air Act. EPA has set a National Ambient Air Quality Standard for ozone, determining that allowing pollution in excess would fail to protect human health and public welfare. DEIS 4-108. This standard limits ozone to 75 parts per billion.[36] Although the Cameron Terminal site itself sits within an area that is designated as in attainment of this standard, emissions from the proposed project will affect three non-attainment areas: to the east, the Baton Rouge Metropolitan Statistical Area, and to the west, the Houston-Galveston-Brazoria area and, somewhat more distantly, the Dallas-Fort Worth.[37] In addition, the nearby Beaumont/Port Arthur area is approaching or already violating the 8-hour ozone NAAQS, despite having been designated as in attainment in the EPA's May 2012 rule.[38] Modeling submitted to LDEQ in connection with PSD permit application for the Terminal Expansion demonstrated that the project would increase ozone levels in these regions.[39]

Despite ozone's harmful health effects, these high background levels of ozone, and modeling demonstrating that the proposed projects would aggravate ozone levels, the draft EIS contains no discussion whatsoever of the proposed projects' contributions to ozone formation or the effects this contribution would have on human health and the environment.

IP2-53

In remedying this defect, FERC cannot simply rely on the modeling submitted to LDEQ, or on LDEQ's conclusions regarding ozone. This modeling appears to have looked solely at emissions of ozone precursors by the stationary sources subject to PSD review, excluding, for example, ozone precursor emissions from mobile sources such as vessel traffic. NEPA requires consideration of these mobile source emissions, and as we explain above, such vessel traffic will not occur absent approval of the proposed export project, notwithstanding the fact that it was authorized by approval of the import projects. It also appears that the modeling and analysis performed in connection with the LDEQ application took a narrower view of cumulative impacts

("O&G NSPS RIA"), *available at* http://www.epa.gov/ttnecas1/regdata/RIAs/oilnaturalgasfinalria.pdf and attached to Env. Protest of Cameron Apps. as Exhibit 7.

[35] *Id. See also* United Nations Environment Programme and World Meteorological Organization, (2011): *Integrated Assessment of Black Carbon and Tropospheric Ozone: Summary for Decision Makers* (hereinafter "UNEP Report,") at 7, available at http:// www.unep.org/dewa/Portals/67/pdf/Black_Carbon.pdf, and attached to Env. Protest of Cameron Apps. as Exhibit 12.

[36] Specifically, an area violates this standard when the three-year average of annual fourth-highest daily maximum 8 hour ozone concentrations exceeds 75 ppb. EPA, *National Ambient Air Quality Standards for Ozone*, 73 Fed. Reg. 16436 (Mar. 27, 2008); 40 C.F.R. Pt. 50, App'x I.

[37] EPA, *Air Quality Designations for the 2008 Ozone National Ambient Air Quality Standard*, 77 Fed. Reg. 30,088 (May 12, 2012).

[38] *See* Sierra Club, *et al., Comments on the Proposed Part 70 Operating Permit Renewal/Modification and Prevention of Significant Deterioration Permit for the Cameron LNG, LLC Terminal in Cameron Parish, Louisiana*, 13-14 (July 15, 2013), attached as Exhibit 11. We incorporate the arguments made in this comment here by reference.

[39] *Id.* at 15-16.

IP2-53: As stated in section 4.11.1.5, "Modeling was also conducted for mobile sources of air emissions, which include LNG ships and support vehicles…" and "Mobile source emissions and modeling results are discussed in section 4.13.2.11, Cumulative Impacts." As stated in section 4.13.2.11, modeling considered off-site sources available on LDEQ's website, which would (1) include all existing projects as well as those under construction for which necessary data to consider them in the modeling conducted was available, and (2) would not include potential future projects not yet proposed. As stated in section 4.13.2.11, "Projects that would potentially be constructed in the future, and are considered to be major sources of air emissions, would be required to conduct a similar PSD analysis. Should operation of a new project result in a significant impact on air quality, the LDEQ would enforce operational limitations or require emissions controls that ensure the facility's compliance with the SIP and attainment with the NAAQS."

Lastly, in the absence of EPA-defined significance criteria for ozone, these cumulative modeling results for the ozone precursor, NO_2, were presented in the EIS, demonstrating no new violations, and no increases in the severity or frequency of violations of the NAAQS, which EPA established to protect human health and public welfare for criteria pollutants, including ozone.

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than what is required under NEPA, in that this modeling did not acknowledge the ozone contributions of reasonably foreseeable future projects, such as the other LNG export projects pending FERC review. 40 C.F.R. § 1508.7.

Even if FERC concludes that the effect of the proposed projects, in conjunction with the cumulative effects of other reasonably foreseeable actions, will not cause or contribute to a violation of the present ozone NAAQS, FERC must take a hard look at whether ozone impacts will harm human health and the environment. For example, FERC must consider the large body of evidence indicates that ozone harms human health at levels above 60 ppb.[40]

2. Greenhouse Gas Emissions

The draft EIS's use of a global warming potential of 21 for methane is flawed. The draft EIS discusses greenhouse gas emissions from the proposed projects in terms of CO_2e, or carbon dioxide equivalent. To calculate CO_2e, emissions of non- CO_2 greenhouse gases are multiplied by a pollutant-specific "global warming potential," which reflects the ratio between the amount of warming a ton of that pollutant causes and the amount of warming that would be caused by a ton of CO_2. Comparing methane to CO_2 is complicated by the fact that while methane is much more potent of a greenhouse gas than CO_2, methane is much shorter-lived in the atmosphere. While methane is much more potent than CO_2 even on a hundred year timeframe, on a twenty year timeframe, the ratio is several times greater.

IP2-54

The draft EIS uses a global warming potential for methane of 21, purportedly representing a 100 year timeframe. DEIS 4-108. The draft EIS states that it is using this figure because it was used in EPA's greenhouse gas reporting rule. This figure, however, represents outdated science, as recognized by both EPA and the Intergovernmental Panel on Climate Change. EPA proposed to update the greenhouse gas reporting rule in March of 2013,[41] and finalized this update on November 29, 2013, months before the draft EIS was released.[42] This rule adopted a methane global warming potential of 25. EPA based this decision on the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). While EPA's proposed update was waiting to be finalized, in September 2013, the IPCC's Fourth Assessment Report was superseded in pertinent part by that body's Fifth Assessment Report.[43] This report estimates that methane has 34 times the global warming potential of carbon dioxide over a 100 year time frame and at least 86 times the global warming potential of carbon dioxide over a 20-year time frame.[44] Thus, the available evidence overwhelmingly indicates that the methane global warming potential FERC used in the draft EIS is too low. FERC should use the global warming potentials identified in the IPCC's Fifth Assessment Report, and if FERC uses the 100 year potential rather than the 20 year potential, FERC must provide a basis for this decision.

[40] *See, e.g.*, EPA, *Proposed National Ambient Air Quality Standard for Ozone*, 75 Fed. Reg. 2938 (Jan. 19, 2010).
[41] EPA, *2013 Revisions to the Greenhouse Gas Reporting Rule and Proposed Confidentiality Determinations for New or Substantially Revised Data Elements; Proposed Rule*, 78 Fed. Reg. 19802, 19808-810 (Apr. 2, 2013).
[42] EPA, *2013 Revisions to the Greenhouse Gas Reporting Rule and Final Confidentiality Determinations for New or Substantially Revised Data Elements; Final Rule*, 78 Fed. Reg. 71904, 71909 (Nov. 29, 2013).
[43] IPCC, *Climate Change 2013: The Physical Science Basis: Chapter 8,* page 714, Table 8.7, attached as Exhibit 12.
[44] *Id.*

IP2-54: The estimated greenhouse gas (GHG) emissions for construction and operation of the Terminal Expansion and the Pipeline Expansion have been recalculated using the revised global warming potential (GWP) values in EPA's November 2013 finalized amendments to its Greenhouse Gas Reporting Rule. The revised emissions are listed in tables 4.11.1-5, 4.11.1-6, 4.11.1-7, and 4.11.1-8. The GHG emission estimates reported in this EIS reflect the 100-year potential for methane for consistency with the EPA's standard metric for defining the GWPs in its Greenhouse Gas Reporting Rule and the internationally accepted standard for reporting GHG emissions.

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IP2-54 (con't)

Correcting this error is necessary for assessing the impact of the greenhouse gases that will be emitted by the activities described in the draft EIS. It is also crucial for a reasoned assessment of the impacts of the increases in gas production that would be an indirect effect of the proposed projects, as discussed in part VII below.

3. The Draft EIS Fails To Adequately Discuss Alternatives that Would Have Lower Air Pollution Impacts.

IP2-55

The draft EIS discusses only two alternatives for terminal expansion design: the preferred option and an option that would use ten small on-site gas turbines to generate electricity rather than purchasing this power from the grid. At a minimum, FERC must consider several other design alternatives, including use of electric compressors as part of the liquefaction process and full or partial carbon capture and sequestration. Moreover, even for the alternatives discussed in the draft EIS, FERC's analysis is deficient.

IP2-55: See responses to individual comments below.

a) The Application Fails to Take A Hard Look at Alternatives for Use and Source of Electricity

IP2-56

The draft EIS provides an incomplete and inconsistent analysis of options for the source and use of electricity. For the terminal expansion, the draft EIS considers only two design options: the initially proposed design, which FERC contends would have involved on-site electricity generation using "10 gas turbine-driven generators, providing approximately 240-MW of on-site electric power," DEIS 3-19, and the preferred alternative, which forgoes this onsite generation in favor of purchasing power from the grid. The draft EIS also evaluates two design options for the new compressor station incorporated into the pipeline expansion: use of 12 natural gas fired compressors or use of electric motors. DEIS 3-26. The draft EIS also briefly describes and improperly dismisses several other design alternatives for the Hollbrook compressor station, as discussed below.

IP2-56: We disagree. We concluded that the alternatives would not provide a significant environmental advantage after reviewing the probable impacts from emissions. (We note that the use of purchased power was recommended by the Sierra Club, which Cameron LNG agreed to use. Therefore, the argument that this alternative was not fully discussed seems to be arbitrary.) We also disagree with the last sentence of the paragraph and believe that the assessment of design alternatives for the Holbrook Compressor Station is consistent with NEPA and CEQ regulations.

IP2-57

The draft EIS is silent as to two other key terminal expansion design alternatives regarding electricity generation and use. One such alternative is the use of electric motors instead of mechanical-drive gas turbines in the liquefaction process. This alternative was identified in Commenters' prior comment.[45] This alternative is plainly viable and it has been proposed for three U.S. LNG export projects that had submitted completed applications to FERC well before the draft EIS was issued: Freeport, Texas, CP12-509; Jordan Cove, OR, CP13-483; and Oregon LNG, OR, CP09-06. The Oregon LNG proposal warrants particular consideration, because that project proposes to use the same 4.5 million ton per year APCI liquefaction trains proposed for Cameron LNG, merely substituting electric motors for the GE 7EA combustion turbines Cameron proposes to use.[46] Electric compressors have no combustion emissions (although emissions will be associated with the generation of electricity used), and electric compressors have numerous desirable performance characteristics. FERC must consider at least two

IP2-57: Section 3.4.2 of the EIS was revised to address the use of electric motors instead of the combustion turbines as a potential alternative.

[45] Env. Protest of Cameron Apps. at 16-17.
[46] Oregon LNG, CP09-6-001, Resource Report 1 at 1-9 to 1-10 (June 2013).

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IP2-57 (con't)

alternative designs incorporating electric compressors: a design that would power electric compressors with electricity purchased from the grid, as is proposed in the Freeport and Oregon LNG projects, and a design that would provide power from a new, associated combined cycle natural gas plant, as is proposed for the Jordan Cove LNG project.

IP2-58

Another alternative that should have been considered is the installation of waste heat recovery or heat recovery steam generator units for all six of the proposed GE 7A turbines used in liquefaction service, to provide on-site electricity generation to offset the need to purchase power from the grid. The draft EIS does not discuss waste heat recovery. The Louisiana Department of Environmental Quality, in responding to Commenters' comments on the draft PSD permit for the terminal expansion, indicated that under the proposed design, waste heat would be recovered for only three of the six proposed GE Frame 7EA turbines.[47] LDEQ rejected the alternative of requiring waste heat recovery on the remaining three turbines on the ground that no further process heat would be required at the terminal.[48] But FERC must consider the option of using waste heat to generate electricity, rather than merely to provide process heat. The proposed GE 7EA turbines are frequently installed with heat recovery steam generation.[49] Generating electricity from heat that would otherwise be wasted, and using that electricity to offset the need to purchase electricity from the grid or otherwise generate that electricity onsite, would presumably have lower environmental impacts than would production of power from these other sources.

IP2-59

For each design alternative (for either the terminal or the pipeline), FERC must analyze the indirect effects of the production of any power purchased from the grid, in addition to the effects of constructing any necessary power lines or other infrastructure. For the preferred terminal expansion alternative, the draft EIS explicitly but inappropriately excludes the effects of offsite power production from the analysis. DEIS 3-20. Absent an assessment of the effects of the effects of producing power offsite, the draft EIS cannot provide a reasoned basis for choosing between the preferred alternative (purchase of electricity from the grid) and the initial proposal (generation of electricity onsite using numerous simple cycle gas turbines). Moving environmental impacts outside the scope of the EIS is not the same thing as reducing environmental impacts. FERC's analysis of the alternative of using electric compressors at the proposed pipeline compressor station, although flawed for reasons described below, demonstrates the danger of failing to consider the effects of offsite electricity generation: depending on the facilities used to generate purchased electricity, offsite power generation might have greater environmental impact than would onsite generation. Similarly, the impacts of an alternative that uses electric liquefaction compressors powered by electricity purchased from the grid (as opposed to electricity provided by an associated combined cycle power plant, the Jordan

[47] Louisiana Department of Environmental Quality ("LDEQ"), *Public Comments Response Summary* (Oct. 2, 2013) ("LDEQ Response to Comments") at, 27, attached as Exhibit 13.
[48] *Id.*
[49] *See, e.g.*, GE Energy, *Heavy Duty Gas Turbine Products* (2009) at 11, 17, available at http://www.ge-energy.com/content/multimedia/_files/downloads/dataform_2046207337_2809806.pdf, and attached as Exhibit 14. A simpler summary of this information is provided at http://www.ge-energy.com/products_and_services/products/gas_turbines_heavy_duty/7ea_heavy_duty_gas_turbine.jsp.

IP2-58: According to in the Interstate Natural Gas Association of America Foundation White Paper (INGAA Foundation) on waste heat (INGAA 2008), there is potential for the recovery of waste heat energy at facilities with natural gas turbines over 15,000 horsepower and a 60 percent load factor. However, in the absence of historical data for operational throughput of these LNG export facilities and the uncertainty of whether or not the liquefaction facilities would indeed operate at least at a 60 percent load factor, it is premature to suggest any further actions for waste heat recovery facilities to generate electricity.

[Reference cited: INGAA Foundation. 2008. Waste Heat Recovery Opportunities for Interstate Natural Gas Pipelines. February. Available at: http://www.ingaa.org/Foundation/Foundation-Reports/Studies/7616/6208.aspx]

IP2-59: As described in section 4.11.1.5, during normal operation of the Project, emissions from the Project would be in compliance with the air permits issued by LDEQ (see table 1.5-1). Similarly, the emissions from power plants providing the electrical power that Cameron LNG would purchase to provide power to the Terminal Expansion would have to be in compliance with air permits. If Cameron LNG were to use electric liquefaction compressors using purchased power, emissions from the power plants providing the electrical power would have to be in compliance with air permits. As a result, no matter which form of power is used, the provider of the power must comply with the requirements of air permits (Title V and/or PSD permits). The text of section 3.4.2 has been revised to address the use of electrically powered liquefaction compressors as a potential design alternative for the Terminal Expansion.

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IP2-59 (con't)

Cove option) requires consideration of the emissions caused by placing additional load on the grid. Of course, Commenters suggested the purchase of electric power on the assumption that offsite generation would, in fact, be the cleaner alternative. But NEPA commands agencies to take a hard look at the environmental impacts of all available alternatives, to support an informed choice among them.

IP2-60

Fortunately, available tools make it possible to assess likely emissions associated with increased demand for electricity. The draft EIS's assertion to the contrary is incorrect. The draft EIS contends that:

> Emissions for the on-site power generation option would be concentrated at the Terminal Expansion site, whereas it is likely that the emissions for purchased power would not be from a single source because Entergy obtains electricity from more than one power generation facility. Therefore, it is not possible to determine the difference of the emission between the two design options.

DEIS 3-20 to 3-21. The fact that Entergy obtains power from more than a single facility does not mean that it is "not possible" to estimate, in a meaningful way, the emissions that would be associated with additional electrical demand from the Cameron terminal. Reflecting the integrated nature of the electricity grid, EPA has created the Emissions & Generation Resource Integrated Database (eGRID),[50] which can be used to estimate air pollution impacts associated with adding marginal units of electricity demand at the level of subregions, states, or by utility.[51] The eGRID database uses detailed information on historical emissions from electric generating units throughout the United States and associated transmission constraints to define emission rates for each subregion. The database conveniently provides emission rates in units of lb/MWh for the three main greenhouse gases (CO_2, CH_4, and N_2O) as well as for the 2 primary air pollutants associated with power production (SO_2 and NO_x, with NO_x given in annual NO_x rates and ozone season NO_x rates). Using this publicly available and widely-utilized data source, FERC could easily estimate the global warming and air pollution impacts associated with power usage from proposed LNG export facilities.

IP2-61

On the other hand, in discussing the pipeline expansion, FERC over-simplifies the analysis by assuming that all power used for electric pipeline compressors would be provided by a single power plant, Big Cajun II. DEIS 3-26. The draft EIS accepts Cameron's statement that the local utility "purchases power from the Big Cajun II Power Plant, a local coal-fired power plant" and that "increased power generation from the Big Cajun II Power Plant [] would be

[50] *See* http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html. Information for 2010, for example, is provided at http://www.epa.gov/cleanenergy/documents/egridzips/eGRID_9th_edition_V1-0_year_2010.zip and attached here as Exhibit 15.
[51] EPA, *How to use eGRID for Carbon Footprinting Electricity Purchases in Greenhouse Gas Emission Inventories* (July 2012), *available at* http://www.epa.gov/ttnchie1/conference/ei20/session3/adiem.pdf and attached as Exhibit 16.

IP2-60: See response to comment IP2-59.

IP2-61: After discussions with Beauregard Electric, Cameron Interstate reported in its April 23, 2013 filing that "Beauregard Electric indicated that they purchase their power from the Big Cajun II Power Plant, a local coal-fired power plant." FERC accepts that information as being accurate. See response to comment IP2-59.

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required to operate the Holbrook Compressor Station" using electric compressors. DEIS 3-26 (emphasis added). Although the draft EIS states that increased generation from Big Cajun II would be "required," *id.*, this statement is unsupported, as there is no evidence in the record demonstrating that this power could not come from another power plant. Indeed, as explained in the preceding paragraph, in light of the integration of electric grids, it is inappropriate to assume that the marginal power used by the electric pipeline compressor alternative would come solely from Big Cajun II. FERC should instead use the eGRID approach described above in assessing the impacts of additional demand from this location.

IP2-61 (con't)

If FERC nonetheless determines that there is some highly unusual circumstance (not articulated in the draft EIS) that makes it appropriate to look solely at Big Cajun II, FERC must at least look at Big Cajun II's likely future emissions. The draft EIS does not provide the basis for the calculations used to estimate Big Cajun II's emissions. Presumably, this calculation is based on Big Cajun II's existing emission profile. If so, it fails to represent the best available data regarding Big Cajun II's likely future emissions, because EPA has entered a consent decree with Big Cajun II's operator, Louisiana Generating, which requires installation and operation of controls for sulfur dioxide and particulate matter, compliance with a cap on nitrogen oxide emissions, refueling one boiler unit to natural gas, and retirement, refueling, repowering or retrofitting of another boiler unit to further lower emissions.[52] EPA anticipates significant emission reductions, relative to 2011 emissions, as a result of this consent decree.[53]

IP2-62

In summary, the draft EIS omits important design alternatives, including the use of electrically driven liquefaction equipment and the use of heat recovery steam generators to offset electricity needs. The draft EIS also fails to take a hard look at the indirect effects of added electricity consumption by entirely failing to consider the effects of the terminal expansion project's electricity consumption and by taking too simplistic a view of the effects of consumption by alternatives to the pipeline expansion project.

IP2-62: See responses to comments IP2-57 through IP-59.

b) Carbon Capture and Sequestration

IP2-63

FERC must consider design alternatives that would require carbon capture and sequestration (CCS) from the Cameron LNG facility for both the post-combustion natural-gas exhaust from the compressor turbines and the pretreatment process. FERC seriously erred by only considering the feasibility of post-combustion CCS. FERC failed to consider in its GHG analysis that the Cameron LNG facility already includes a process for stripping CO_2 from pipeline natural gas (feed gas), which results in a high-purity CO_2 stream that is relatively

IP2-63: Our analysis of air quality impacts and emissions associated with the proposed Project includes a disclosure of the estimated emissions and mitigation measures both proposed by the Applicant and those recommended by FERC staff. However, in regard to specific mitigation technology, staff defers to the agencies with particular technical expertise over the resource. In this case, the LDEQ has federally delegated authority to enforce the Clean Air Act (CAA) and ensure that emission sources, such as the Cameron LNG Terminal, comply with the CAA and the SIP, including requiring technically, economically, and reasonable emissions control technologies.

[52] EPA, *Louisiana Generating Settlement*, available at http://www2.epa.gov/enforcement/louisiana-generating-settlement and attached as Exhibit 17; see also *Consent Decree: Louisiana Generating LLC, Civil Action No. 09-100-JJB-DLD*, available at http://www2.epa.gov/enforcement/consent-decree-louisiana-generating-llc-civil-action-no-09-100-jjb-dld and attached as Exhibit 18.

[53] *Id.* Ideally, the assessment of the effects of expanded power purchase from Entergy would also look at likely future emissions profiles, rather than past practice. But an estimate based on existing emissions would be vastly more informative than the complete dearth of information in the draft EIS.

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inexpensive and easy to capture. At this time, Cameron LNG proposes to essentially vent this CO_2 into the atmosphere rather than attempt to capture it.

CCS is a process that uses a chemical or physical solvent to remove CO_2, the dominant GHG, from a CO_2-containing stream (such as natural gas, flue gas, synthesis gas) using absorption, with subsequent stripping of the absorbed CO_2 to produce a concentrated CO_2 stream. Depending upon the acid gas removal technology applied, the CO_2 may need to be dried, then compressed to a dense phase state for pipeline transport to an appropriate storage location, most likely underground in a geological storage reservoir such as a deep saline aquifer or an oil reservoir or coal seam. CCS is far and away the most effective add-on technology available to reduce, by as much as 90 percent, GHG emissions from industrial facilities like the Cameron terminal expansion.

IP2-63 (con't)

Cameron LNG's project description details the removal of CO_2 that is already part of the project design. "Before liquefaction, the feed gas would be pre-treated for removal of mercury, hydrogen sulfide, **carbon dioxide (CO_2)**, and water." DEIS 2-8 (emphasis added). This process produces a very concentrated CO_2 stream. The draft EIS is short on detail, but the resulting waste stream from the Amine Units should be expected to result in a highly concentrated CO_2 stream, as much as 96% CO_2 by volume (98% by weight), which is ideal for CCS. This stream can be sequestered in a geologic formation with no further treatment or used for enhanced oil recovery or other end uses.

IP2-64

The draft EIS's alternatives section (Part 3) contains absolutely no mention of design alternatives incorporating CCS. Confusingly, however, the draft EIS's cumulative impacts section includes some discussion of the options for limiting greenhouse gas emissions from the terminal expansion project. DEIS 4-220 to 4-222.[54] As a threshold issue, FERC must clarify how this discussion fits into FERC's NEPA analysis in general, and the alternatives analysis in particular. This discussion appears to be derived from Cameron LNG's Prevention of Significant Deterioration (PSD) air permit application. On page 4-220, the draft EIS states that

> Cameron LNG and Cameron Interstate would incorporate GHG BACT analyses as part of the air permit applications to LDEQ. Potential controls for these emissions include preventing the GHG formation, or the emissions, such as, monitoring piping components to prevent GHG emissions, as well as (1) carbon capture and storage, (2) use of the most thermally efficient equipment, (3) use of low carbon fuels, (4) use of renewable

[54] Specifically, this occurs in section 4.13.2.11, on cumulative impacts on air quality. The draft EIS also mentions "BACT for Greenhouse Gas Emissions" on page 4-127, in the section on direct air impacts. Here, the draft lists in two sentences the technologies that LDEQ determined represented the Best Available Control Technology in that agency's review of Cameron LNG's PSD permit. This brief section does not discuss or acknowledge any alternatives to the proposed design, such as carbon capture and sequestration.

IP2-64: The discussion of best available control technology (BACT) for GHG emissions is included in the cumulative impacts discussion as a means of presenting potential mitigation measures for reducing the Project's GHG emissions and the Project's contribution to cumulative impacts on climate change.

Section 4.13.2.11 has been revised to indicate that Cameron LNG and Cameron Interstate would incorporate GHG BACT analyses as part of the air permits issued by LDEQ. Further, while the analysis in the EIS is very similar to that performed for the PSD permit to evaluate air quality impacts, the LDEQ, with delegated authority from the EPA under the CAA, is responsible for administering the PSD permit program in Louisiana. A BACT analysis is not required as part of a NEPA analysis. The emissions and modeling presented in the EIS are based on the operating equipment emission rates with the selected control technology committed to by Cameron LNG. The results of the modeling analysis identify that impacts would be within the allowable values.

energy sources [solar and wind], (5) Solid Oxide Fuel Cell Technology, and (6) good combustion/operating practices.

IP2-64 (con't)

DEIS 4-220. The draft EIS's reference to analyses that Cameron "would incorporate" in air permit applications is confusing in light of the fact that the air permit applications were submitted in August and October 2012, respectively. Immediately following the quoted sentence is a two page discussion under the heading "BACT for GHG Emissions," summarizing the evaluation of Best Available Control Technology, or BACT, for greenhouse cases. Although the Clean Air Act's BACT provisions, like NEPA, require discussion of alternatives, the contours of the two statutes' requirements are not identical, and FERC's analysis must comport with NEPA. FERC must explain how (if at all) this discussion is intended to fit into FERC's NEPA analysis.

IP2-65

Putting aside the draft EIS's strange presentation of CCS, the analysis contained therein falls short of the hard look NEPA requires. As noted above, FERC completely failed to consider CCS from the pretreatment process. In addition, the draft EIS uncritically accepts LDEQ's conclusion that here, both capture and sequestration are "technically infeasible," a term of art in CAA BACT analysis, for the post-combustion CO_2 from the compressor turbines. LDEQ based its conclusion of infeasibility on the difficulty in capturing CO_2 and the lack of options for CO_2 transport and storage. DEIS 4-220 to 4-221. LDEQ's conclusions are contradicted by more recent, and more thorough, analyses from EPA.

Beginning with the draft EIS's statement that capture is infeasible, in the proceeding on Freeport LNG's PSD permit for GHGs, EPA and Sierra Club agreed that CCS is technically feasible for emissions from gas pretreatment and combustion emissions from the proposed GE 7EA turbine.[55] The GE 7EA turbine is the same turbine Cameron proposes to use in the terminal expansion. FERC therefore cannot rest on LDEQ's determination that carbon capture is "technically infeasible," for purposes of BACT analysis, as a basis for eliminating design alternatives involving CCS from the scope of NEPA analysis. Indeed, CCS for the pretreatment emissions is relatively simple. As the draft EIS here observes, the difficulty associated with CCS is inversely correlated with the purity of the CO_2 stream. 4-220. The draft EIS fails to acknowledge, however, that the gas pretreatment process will produce a CO_2 stream of high purity amenable to capture. In the Freeport proceeding, the applicant indicated that CO_2 from gas pretreatment could be captured and sequestered for less than $15 per ton, EPA agreed, and Sierra Club's analysis concluded that with better facility design, Freeport LNG could capture this CO_2 so cheaply that it could make a net profit off of its sale.[56] Thus, there is no basis for the draft EIS's statement that there are no controls available to eliminate emissions of the CO_2 removed from pipeline gas. 4-221. FERC must consider one or more design alternatives that would

[55] EPA Region 6, *Statement of Basis: Draft Greenhouse Gas Prevention of Significant Deterioration Preconstruction Permit for the Freeport LNG Development, L.P., Freeport LNG Liquefaction Project* , PSD-TX-1302-GHG, at 12, 29-30 (Dec. 2, 2013), *available at* http://www.epa.gov/earth1r6/6pd/air/pd-r/ghg/freeport_lng_sob120213.pdf and attached as Exhibit 19.
[56] Sierra Club, *Comments on Freeport LNG Liquefaction Project –Permit No. PSD-TX-1302-GHG* (Jan. 6, 2014) , at 3, 14-17. Attached as Exhibit 20.

IP2-65: We acknowledge that EPA Region 6 determined that CCS for the Freeport LNG Liquefaction Project was technically feasible for the GHG emissions from the natural gas pretreatment and combustion emissions for the Freeport LNG Liquefaction Project . However, Sierra Club fails to acknowledge in its comment letter that EPA Region 6 currently concludes in its *Statement of Basis* for the draft GHG PSD for the Freeport LNG Terminal that although technically feasible, CCS technology for the pretreatment process and combustion emissions was shown to be not only economically infeasible, but could result in increased emissions of criteria pollutants and GHGs, and therefore, eliminated CCS from further consideration, further noting that energy efficient technologies are preferred over add-on controls such as CCS. We do realize that EPA Region 6 might revise its opinion on the feasibility of CCS in its final GHG PSD permit based on certain factors, and potentially require implementation of CCS technology at the Freeport LNG Terminal, whereas, it may not be implemented at the Cameron LNG Terminal. However, we maintain that the LDEQ is the appropriate agency federally delegated by EPA with particular technical expertise over air quality to account for all the pertinent factors and use its permitting process to appropriately enforce all mitigation measures for compliance with the NAAQS and the CAA.

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IP2-65 (con't)

capture this CO_2. One such alternative should be a design optimized for this purpose, such as a selective acid gas removal technology that uses a physical solvent, instead of the amine units proposed in the preferred alternative. Examples of these technologies are Selexol[57] or Rectisol[58] units, which could selectively remove both CO_2 and sulfur compounds to levels suitable for enhanced oil recovery or other sequestration. The resulting CO_2 stream would have a low water content and a lower sulfur content and could go directly to a compression and smaller drying plant and then to a pipeline.

IP2-66

Turning to sequestration, the draft EIS also appears to conclude that even if carbon capture were on option, there would be no way to transport this carbon to a place where it could be sequestered. The analysis in the draft EIS does not support this conclusion. DEIS 4-220 to 4-221. As explained in a different section of the draft EIS, Leucadia Energy's proposed Lake Charles Carbon Capture and Sequestration Project is approximately 11 miles from the proposed terminal expansion site. DEIS 4-194. This project plans to deliver captured CO_2 to the Denbury Green Pipeline, which would then transport CO_2 to regions where it could be sequestered. DEIS 4-195. This project is still in the permitting stage, but is expected to come online at a time similar to completion of Cameron's proposed terminal and pipeline expansions, *i.e.*, "early 2017." *Id.* This proposal, and its proximity to the Cameron LNG site, demonstrates that carbon captured from Cameron LNG could be delivered to the Denbury Green Pipeline and then to places where it could be sequestered. The draft EIS nonetheless appears to conclude that such delivery is impossible. The draft EIS appears to reject the option of constructing a 20 mile pipeline directly connecting the Cameron terminal with the Denbury Green pipeline without explaining why this alternative is being rejected. The draft also recognizes the possibility of building a shorter pipeline connecting the Cameron terminal with the Leucadia Energy project, but rejects this option on the ground that the proposed pipeline between that project and Denbury Green does not have additional capacity sufficient for CO_2 from Cameron. There is no basis for rejecting CCS merely because its disposal would require a pipeline. Building pipelines is certainly a concept FERC is familiar with, and it is within the capabilities of applicant. The EIS must consider alternatives that include transport of CCS by pipeline to nearby facilities. Those alternative include delivery to the Denbury Green pipeline, and the expansion of the design of the Leucadia Energy interconnection—which has not yet been built—to facilitate CCS at the Cameron terminal. *See, e.g.*, 40 C.F.R. § 1502.14(c) (EIS must consider "reasonable alternatives not within the jurisdiction of the lead agency.").

IP2-67

FERC must—as part of its alternatives analysis—take a hard look at alternatives for full or partial capture and sequestration of CO_2 emissions from the gas pretreatment process as well as the proposed combustion turbines. The limited discussion of CCS included in the draft EIS's cumulative impacts section rests on assertions which are contradicted by EPA's detailed statements in other proceedings and are without basis.

[57] UOP, *UOP Selexol Technology for Acid Gas Removal* (2009), available at: http://www.uop.com/?document=uop-selexol-technology-for-acid-gas-removal&download=1 and attached as Exhibit 21.
[58] Arthur L. Kohl and Richard B. Nielsen, Gas Purification, 5th Edition, Gulf Publishing Company, Chapter 14: Physical Solvent for Acid Gas Removal, 1997.

IP2-66: We believe that the carbon capture and sequestration options identified by the commenter were analyzed appropriately in the EIS in the context of an evaluation of potential mitigation measures for the GHG emissions associated with the Project. We reiterate here that the LDEQ is the appropriate agency federally delegated by EPA with particular technical expertise over air quality to account for all the pertinent factors and to use its permitting process to appropriately enforce all mitigation measures for compliance with the NAAQS and the CAA.

IP2-67: See responses to comments IP2-63 and IP2-64.

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c) Other Alternative Designs That Would Reduce Conventional Pollutant Emissions.

IP2-68

The draft EIS fails to discuss other design options that would reduce emissions of conventional air pollutant emissions. Notably, FERC fails to include an alternative that would have required the use of selective catalytic reduction (SCR) to reduce emissions of nitrogen oxides. Two other pending LNG export proposals—Cove Point, Maryland and Freeport, Texas—propose to install and operate SCR on the same model GE 7EA turbine Cameron proposes to use here. SCR is often installed in connection with a thermal oxidizer to reduce carbon monoxide emissions. The draft EIS also fails to explore alternatives that would reduce fugitive volatile organic compound emissions, such as designs that would minimize the number of components that are likely to have fugitive emissions.

VI. FERC's Consideration of Endangered Species Is Inadequate to Satisfy the Requirements of NEPA and the Endangered Species Act.

IP2-69

The draft EIS fails to adequately consider impacts on or support its conclusions about the threatened, endangered, or special status species that U.S. Fish and Wildlife Service (US FWS), the National Marine Wildlife and Fisheries (NMWF), and the Louisiana Department of Fish and Wildlife have identified as present in the area.

IP2-70

Under ESA section 7(a)(2), federal agencies must, "in consultation with and with the assistance of the Secretary insure that any action authorized, funded, or carried out by such agency ([*i.e.*,] 'agency action') is not likely to jeopardize the continued existence of any" federally listed endangered species.[59] An action "jeopardizes" a species if it "reasonably would be expected to reduce the reproduction, numbers, or distribution of a listed species to such an extent as to appreciably reduce the likelihood of the survival and recovery of that species in the wild."[60] The benefit of the doubt is given to the species.[61] Thus, agencies are under a substantive mandate to use "all methods and procedures which are necessary" to prevent the loss of any endangered species, regardless of the cost.[62] ESA section 7(a)(2) requires that, "each agency shall use the best scientific and commercial data available."[63]

Section 7(c) requires a "biological assessment for the purpose of identifying any endangered species . . . which is likely to be affected by such action." FWS's regulations state, "[a] biological assessment shall evaluate the potential effects of the action on listed and proposed species . . . and determine whether any such species . . . are likely to be adversely affected by the

[59] 16 U.S.C. § 1536(a)(2).
[60] *Roosevelt Campobello International Park Com. v. United States EPA*, 684 F.2d 1041, 1048-49 (1st Cir. 1982). See also 50 C.F.R. § 402.02.
[61] *Roosevelt*, 684 F.2d at 1049 (citing H.Conf.Rep.No.96-697, 96th Cong., 1st Sess. 12, reprinted in (1979) U.S.Code Cong. & Ad.News, 2557, 2572, 2576).
[62] *Roosevelt*, 684 F.2d at 1049 (citing *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 185 (1978)).
[63] 16 U.S.C. § 1536(a)(2).

IP2-68: As noted in section 3.7.2, we evaluated the use of selective catalytic reduction (SCR) at the Holbrook Compressor Station, in response to the commenter's scoping comment and stated that the LDEQ concluded that SCR and use of an oxidation catalyst were not feasible pollution control options due to economic, environmental, and energy impacts. Cameron LNG also evaluated the use of SCR on the GE 7EA turbines at the Terminal Expansion as part of its air permit application. The LDEQ eliminated this control technology for reasons stated in its PSD permit PSD-LA-766 issued to Cameron LNG and in its response to comments from the Sierra Club dated October 2, 2013 (included as Exhibit 13 in the Sierra Club comment letter, available at www.ferc.gov, Docket No. CP13-25, Accession No. 20140303-5142.). We reiterate that a BACT analysis is not required as part of a NEPA analysis. Lastly, we defer to the LDEQ's decision-making process regarding feasible pollution control options.

IP2-69: We disagree. As stated previously, we believe that the analysis in the EIS, in combination with the survey reports provided directly to the FWS and NMFS, more than adequately consider project impacts on listed species. In fact, in its comment letter on the draft EIS (comment letter FG1 in Appendix L), the FWS concurred with our determination that the Project *is not likely to adversely affect* threatened and endangered species.

IP2-70: We conclude that we have complied with the ESA.

IP2-70 (con't)

action and is used in determining whether formal consultation or a conference is necessary."[64] The regulations define the phrase "effects of the action" to include "direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action."[65]

IP2-71

FERC's draft EIS, which asserts that it stands as a biological assessment for ESA consultation purposes as well as a NEPA environmental impacts statement, fails to consider the proposed Project's impacts on threatened, endangered, and protected species adequately to serve either asserted purpose. DEIS 4-64. For example, FERC prematurely "eliminate[d] from further review" 10 out of 21 identified species in the area and fails to adequately support its conclusion that there will be "no effect" on those species. *See* DEIS 4-64, tbl. 4.7-1. Similarly, FERC's conclusions that impacts on the endangered and threatened species that it did not "eliminate from further review" are not supported by the facts or analysis that FERC presents. *See id.* 4-66. Moreover, FERC's reliance on incomplete, inaccurate, and outdated information and analysis, as discussed elsewhere in these comments,[66] does not satisfy the ESA's "best scientific and commercial data requirements" and precludes the "hard look" at environmental impacts that NEPA requires.

FERC's failure to consider the best scientific and commercial data and the proposed Project's impacts on threatened, endangered, or special status species is even more egregious in light of the Department of the Interior findings on the importance and annual losses of the habitat at risk of destruction for the proposed Project. On January 23, 2014, the Department of the Interior announced that "coastal wetlands comprise less than 10 percent of the nation's land area yet support a significant number of wildlife species, including 75 percent of migratory birds, nearly 80 percent of fish and shellfish, and about half of all our threatened and endangered species. Wetlands in coastal watersheds in the U.S. are experiencing a net annual loss of about 80,160 acres according to a new study by the [U.S. Fish and Wildlife] Service."[67] As the U.S. Fish and Wildlife Service Director Dan Ashe stated, "These wetlands are invaluable resources we must protect."[68]

A. FERC Failed to Support its Conclusion of "No Effect" on 10 out of 21 Endangered or Threatened Species in Listed Project Area.

FERC does not support its sweeping conclusion that there will be "no effect" on 10 out of 21 presented species. *See* DEIS at 4-64, tbl. 4.7-1. For example, FERC "eliminated from further

[64] 50 C.F.R. § 402.12(a).
[65] *Id.* at § 402.02.
[66] For example, FERC relies on 2003 and 2006 shipping traffic analyses throughout the DEIS, including for its consideration of impacts of protected species. *See, e.g.*, DEIS at 7-1 ("As Cameron LNG does not propose to change the authorized number or size of LNG carriers, and no ballast water would be needed for construction barges, these items are not discussed further in this EIS.")
[67] http://www.doi.gov/news/pressreleases/secretary-jewell-director-ashe-announce-16-5-million-in-grants-to-conserve-coastal-wetlands.cfm
[68] *Id.*

IP2-71: FERC requested that the FWS consider in addition to the draft EIS the various survey reports prepared by Cameron (submitted separately), as our Biological Assessment (BA) for the proposed Project. The FERC and Cameron consulted with FWS and NMFS regarding the Project's impacts on threatened and endangered species. Cameron conducted habitat surveys in the vicinity of Project components to determine what habitat was available for threatened and endangered species, then conducted species-specific surveys within those habitats. These surveys were conducted in consultation with FWS and NMFS. Survey reports included data identifying habitat and species-specific surveys (including the red-cockaded woodpecker) to help confirm presence or absence of listed species. Through use of these surveys, consultation with resource agencies, and our own expertise, we were able to draw reasonable conclusions regarding impacts on listed species.

Our assessment noted that piping plover could transit through the area during construction of the Terminal Expansion; however, it is likely they would avoid the area due to the high level of activity (section 4.7.1.1). We also noted that manatees are not likely present, appropriate habitat for foraging is minimal, and in fact, the manatee has not been observed in the vicinity of the Terminal Expansion site in over 80 years (see section 4.7.1.3). Although foraging and transit habitat for the Kemp's ridley sea turtle exist near the site of the proposed construction dock, given the level of industrial activity in the Calcasieu Ship Channel, it is highly unlikely that this species would use any habitat near the proposed Terminal Expansion. Finally, we revised the text of section 4.7.1.4 to include information on additional sea turtle species in our analysis. In addition, no bald eagle nesting sites were found within 0.5 mile of any Project facilities (see section 4.7.2.1). We believe these conditions provide reasonable justification for our conclusions.

IP2-71 (con't)

review," the Hawksbill sea turtle and the Leatherback sea turtle, federally listed endangered species for the project area whose critical habitat are "wherever found."[69] DEIS tbl. 4.7-1. FERC appears to have precluded an analysis of the impacts on these species on the basis that "suitable habitat is not present within the Project area." *Id.* But FERC does not provide information showing how it reached that conclusion. It does not discuss what such habitat would include or otherwise show that the statement is correct. Moreover, both the Hawksbill and Leatherback sea turtle "is known to or is believed to occur" in Cameron Parish, where the Proposed Project's impacts will occur.[70] And the National Marine Fisheries provides information that the impacts associated with the Project, such as dock construction, dredging, artificial light, and changes in vegetation, are the sorts of impacts that are detrimental to sea turtles.[71]

B. FERC Failed to Support its Conclusion of "Not Likely to Adversely Affect" or "Impacts Would Not Be Significant" for Endangered or Threatened Species Listed in the Proposed Project Area.

FERC does not support its conclusions about impacts on the 11 species which the agency agrees merit "further review."[72] For example, FERC dismisses 7 of 11 "species listed as federally threatened [that] occur in Beauregard, Calcasieu, and Cameron Parishes" on the erroneous and unsupported conclusion that "only four would be within the area of the proposed Project." *See* DEIS at 4-64. FERC offers no evidence to support this conclusion and thus no basis for a party not involved in the preparation of the DEIS to understand the pertinent influences leading to the decision. Moreover, several of these species, including the red cockaded woodpecker, are "known to occur" in the proposed Project area. DEIS at 4-207

FERC also fails to support and even contradicts its conclusion for the specific species it lists. For example, FERC's conclusion that the Project "is not likely to likely to adversely affect the West Indian manatee" is unsupported. FERC states its conclusion is only on a "belief", on the claim that "the manatee has not been observed in the vicinity of the Terminal Expansion site in over 80 years and appropriate habitat for foraging is minimal." *See* DEIS at 4-68. Moreover, FERC contradicts its own conclusion when it notes that "manatees may be present in the Calcasieu Ship Channel and increased vessel strikes may potentially occur with an increase in vessel traffic during Cameron LNG's construction and use of the work dock." *Id.* Indeed,

[69] For the Hawksbill sea turtle, *see* http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C00E, attached as Exhibit 22. For the Leatherback sea turtle, *see* http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C00F, attached as Exhibit 23.
[70] *See* http://ecos.fws.gov/speciesProfile/profile/countiesBySpecies.action?entityId=154, attached as Exhibit 24
[71] National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1993. Recovery Plan for Hawksbill Turtles in the U.S. Caribbean Sea, Atlantic Ocean, and Gulf of Mexico. National Marine Fisheries Service, St. Petersburg, Florida. p. 7-11.
[72] FERC lists these species as: Piping Plover, Red-Cockaded Woodpecker, West Indian Manatee, Kemp's Ridley Sea Turtle, Bald Eagle, Brown Pelican, Alligator Snapping Turtle, Old Prairie Crawfish, Dotted Gay-Feather, Long-Sepaled False Dragon Head, and Silveus Dropseed. DEIS Tbl. 4.7-2.

IP2-71 (con't): As noted in its comment letters on the draft EIS (see comment letter FG1 in Appendix L), the FWS concurred with our determinations of effect regarding threatened and endangered species. The agency also stated that "No further consultation, regarding threatened and endangered species, with the FWS Lafayette Field Office will be necessary unless there are significant changes in the scope or location of the project." Based on those statements, we believe that FWS has implicitly accepted the EIS as the BA, and therefore a separate BA is not necessary. The purpose of a BA is to analyze the direct and indirect impacts of an action on listed species. We believe that we have done this and further believe that our impact assessments of threatened and endangered species as described in the EIS are scientifically defensible, appropriate, are consistent with NEPA, and meet the requirements of both the ESA and CEQ.

Consultation with NMFS is ongoing.

IP2-71 (con't)

manatee populations have increased in the past decade, a fact FERC fails to consider.[73] In short, FERC's consideration of the proposed Projects effects on West Indian Manatees is incomplete and contradictory and the agency fails to support its conclusion that the proposed Project is "not likely to adversely affect" this endangered species.

C. FERC's Reliance on Outdated, Inaccurate, and Incomplete Information Invalidates the DEIS Conclusions on the Proposed Projects Impacts on Endangered, Threatened, and Other Protected Species.

FERC's reliance on incomplete, inaccurate, and outdated information and analysis does not satisfy the ESA's "best scientific and commercial data available" requirement, and precludes the "hard look" at environmental impacts that NEPA requires. For example, FERC relies on outdated 2011 data from NMFS to claim that "given the level of industrial activity in the Calcasieu Ship Channel, it is highly unlikely that the Kemp's ridley sea turtle would use any habitat near the proposed terminal expansion." DEIS at 4-69. This statement is contradicted by a 2013 study conducted by the National Parks Service and U.S. Geological Survey that identified "critical foraging habitat, particularly in waters off Louisiana."[74] This study shows foraging habitat in the Gulf of Mexico near the proposed Terminal Expansion site, contrary to FERC's analysis.[75] Moreover, the expected impacts of the proposed Project are the kinds of impacts known to adversely affect sea turtles.[76] For example, expected impacts include artificial lighting during and after dock construction, dredging, and changes in vegetation. FERC must reevaluate the impacts on Kemp's ridley sea turtles and others species using the most recent scientific data.

Similarly, the surveys FERC relies on to identify the presence of protected species do not account for seasonal variation and migration and therefore does provide complete information on the presence of wildlife in the project area. FERC's relies on surveys conducted by Cameron in May, June, and July 2012, and January 2013, which observed "[n]o federal or state listed threatened, endangered, candidate, or special status species." DEIS at 4-64. These observations omit wildlife activity for August through December and February through April, i.e. over half the year. Cameron does not support or explain why it chose to observe during some months and not others. The limited observation months, however, omit opportunities to observe seasonal activity. For example, bald eagles nest in south Louisiana during the winter and fly north around March.[77] At least one bald eagle nesting site has been identified in Calcasieu parish.[78] In short,

[73] *See* 77 F.R. 15618.
[74] Shaver et al., *Ecology and Evolution 2013; 3(7): 2002–2012* and attached as Exhibit 25.
[75] *Id.* at 2008.
[76] National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1993. Recovery Plan for Hawksbill Turtles in the U.S. Caribbean Sea, Atlantic Ocean, and Gulf of Mexico. National Marine Fisheries Service, St. Petersburg, Florida. p. 7-11.
[77] *See* Vernon L. Wright and Tom Hess, *Bald Eagles Make Comeback in South Louisiana*, Louisiana Agriculture Magazine (Spring 2002), *available at* http://www.lsuagcenter.com/en/communications/publications/agmag/Archive/2002/Spring/Bald+Eagles+Make+Comeback+in+South+Louisiana.htm, and attached as Exhibit 26.
[78] *See id.* at Figure 2.

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IP2-71 (con't)

FERC's conclusion that protected species are absent from the project area because a four month survey did not observe the presence of those species is arbitrary and unsupported.

In another example of FERC's failure to take a hard look at environmental impacts on protected species, the DEIS fails to consider potential impacts outside the proposed project area. Even if there is no habitat within the confines of the project's construction, there will be project impacts outside of those boundaries. For examples, pollutant run-off, debris from construction and ships, artificial lighting, and ship traffic will impact the wetlands and aquatic environments. Because the DEIS fails to consider impacts outside the proposed project area and does not use relevant contemporary data it does not satisfy the ESA's hard look requirement.

D. The DEIS Does Not Satisfy the Requirements for an ESA Biological Assessment Because Its Scope Does not Cover All Agency Actions.

The DEIS does not satisfy the requirements for an ESA biological assessment because its scope does not cover all federal agency actions. Although FERC may act as lead agency to meet the consultation and conference responsibilities for all federal agencies involved, to do so its biological assessment must cover the scope of each of those agencies actions. *See* 50 CFR § 402.07. Here, FERC fails to cover that scope, for example, by failing to consider the upstream indirect effects under the Department of Energy's action allowing increased export of LNG.

VII. Indirect Effects of Induced Gas Production, Gas Price Increases, and End Use of LNG.

IP2-72

Gas exported as LNG must come from somewhere. The only options are an increase in domestic supply to match this new demand or a decrease in other domestic consumption to free up gas that would otherwise be used elsewhere. As explained in the Energy Information Administration's January 2012 LNG Export Study and in numerous subsequent analyses, the US will likely see a combination of both.[79] The predominant effect will be an increase in supply as gas producers increase output in response to new demand. The extra demand will also cause increases in domestic gas prices, which will cause some domestic consumers (primarily in the electricity generating sector) to reduce their consumption (according to EIA, primarily but not exclusively by switching to coal). Both this increase in production and this shift in the power sector will have environmental impacts. Additional environmental impacts will result from the consumption of exported LNG by end users. These environmental impacts are all indirect effects that must be included in the NEPA analysis. The draft EIS is deficient because it improperly

[79]DOE/FE has commissioned a two part study of the economic impacts of LNG exports. Energy Information Administration, *Effect of Increased Natural Gas Exports on Domestic Energy Markets*, (2012) ("EIA Export Study"), attached as Exhibit 27; *NERA Study*, *supra* n.6. Sierra Club and others submitted extensive comments on these studies. Sierra Club Initial NERA Comment, attached as Exhibit 28; Synapse Analysis of NERA Study, attached as Exhibit 29; Sierra Club Reply NERA Comment, attached as Exhibit 30.

IP2-72 We agree that end users would cause environmental impacts; however, it is not possible to know where those end users would be, or for us to realistically be able to characterize those impacts (especially in foreign countries, where environmental constraints would be different from the U.S. permitting process). Thus, determining the end users and associated impacts is not reasonably foreseeable. Our response to the last two sentences of this paragraph is included below in our response to comment IP2-73.

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IP2-72 (con't)

excludes effects relating to gas production and domestic power production from analysis, and because the analysis of impacts relating to end use of US LNG is incomplete.

A. Environmental Impacts of Induced Gas Production

The additional demand for US natural gas that will be created by Cameron's proposal will induce an increase in domestic gas production, with a general agreement that roughly 63% of exported gas will come from new production.[80] Moreover, available tools also allow FERC to predict where increased production will occur with a level of specificity sufficient to support meaningful analysis of the environmental impacts of this production—and for many impacts, such as greenhouse gas emissions, geographic specificity is not needed at all.

1. Cameron's Proposal Will Induce Additional U.S. Gas Production

IP2-73

Cameron, DOE, the EIA, NERA, essentially every other LNG export applicant, and other informed commenters all agree that LNG exports will induce additional production in the United States. As explained in Commenters' protest, Cameron's own applications to FERC and DOE predict such production and tout it as a source of benefits.[81] The consensus of the EIA and private modelers is that US LNG exports will induce domestic production equivalent to "about 60 to 70 percent" of the demand created by export projects (*i.e.*, the volume of gas exported together with the gas necessary for the operation of export facilities), with EIA putting the specific estimate for its reference cases at 63%.[82] The EIA further predicts that "about three quarters of this increased production [will come] from shale sources," with the remainder derived from other production types.[83] DOE's conditional authorization of Cameron's application to export LNG to non-free trade agreement countries explicitly endorsed and relied upon this EIA analysis.[84]

Accordingly, Cameron's proposed export of 1.7 bcf/d of gas, plus the additional gas that will be consumed at the terminal site (per EIA, roughly 10% of the volume exported),[85] can be expected to induce an additional 1.18 bcf/d of production.

[80] EIA Export Study, *supra* n.79, at 10.
[81] Env. Protest of Cameron Apps. at 28.
[82] From the EIA Export Study, *supra* n.79, at 6, 10. *See also, e.g.*, Deloitte MarketPoint, Analysis of Economic Impact of LNG Exports from the United States, at 3, 24 ("Deloitte Study"), attached as Exhibit 31.
[83] EIA Study at 6.
[84] Order Conditionally Granting Long-Term Multi-Contract Authorization To Export Liquefied Natural Gas By Vessel From The Cameron LNG Terminal In Cameron Parish, Louisiana, to Non-Free Trade Agreement Nations ("DOE Cameron Conditional Auth."), DOE/FE Order 3391 (Feb. 11, 2014) at 132 ("Our decision is not premised on an uncritical acceptance of the general conclusion of the LNG Export Study of net economic benefits from LNG exports."), 131 ("we find that the LNG Export Study is fundamentally sound."), 88 ("we observe that more natural gas is likely to be produced domestically if LNG exports are authorized than if they are prohibited."), attached as Exhibit 32.
[85] *Id.* at 2.

IP2-73: The commenter contends that the proposed Project and other planned LNG export projects, if constructed and operated, will cause an increase in environmental impacts from induced gas production and pipeline transportation. The development of natural gas in shale plays by hydraulic fracturing is not the subject of this EIS nor is the issue directly related to the proposed Project. Production and gathering activities, and the pipelines and facilities used for these activities, are not regulated by FERC, but are overseen by the affected region's state and local agencies with jurisdiction over the management and extraction of the shale gas resource. Determining the well and gathering line locations and the environmental impacts associated with their development and operation is not feasible as the market and gas availability at any given time would determine the source of the natural gas.

As part of its NEPA analysis of proposed projects, the FERC often considers the potential environmental impacts of natural gas production and development occurring in the project area as part of the cumulative impacts analysis to the extent that there is meaningful information available to assist the FERC's decision-making process in a particular proceeding. With respect to production and development activities that are not within the project area, the FERC determines whether such activities should be included in the EA or EIS based upon a fact-specific analysis. CEQ regulations require agencies to consider environmental effects of proposed actions, including direct and indirect effects, if these effects are "reasonably foreseeable." Where appropriate, the FERC evaluates the specific facts to determine whether natural gas production and development is a "reasonably foreseeable" direct or indirect result of construction and operation of the project under consideration, or whether such activities are too speculative or attenuated to warrant inclusion in the EA or EIS.

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Available tools can also predict where this additional production will occur. Cameron predicts that much of the gas for the project will come from the Barnett, Haynesville, and Eagle Ford shales.[86] Available models can provide more sophisticated predictions. EIA's core analytical tool is the National Energy Modeling System ("NEMS"). NEMS was used to produce the EIA exports study. NEMS models the economy's energy use through a series of interlocking modules that represent different energy sectors on geographic levels.[87] Notably, the "Natural Gas Transmission and Distribution" module models the relationship between U.S. and Canadian gas production, consumption, and trade, specifically projecting U.S. production, Canadian production, imports from Canada, *etc.*[88] For each region, the module links supply and demand annually, taking transmission costs into account, in order to project how demand will be met by the transmission system.[89] Importantly, the Transmission Module is *already* designed to model LNG imports and exports, and contains an extensive modeling apparatus allowing it to do so on the basis of production in the U.S., Canada, and Mexico.[90] At present, the Module focuses largely on LNG imports, reflecting U.S. trends up to this point, but it also already links the Supply Module to the existing Alaskan *export* terminal and projects exports from that site and their impacts on production.[91]

Similarly, EIA's "Oil and Gas Supply" module models individual regions and describes how production responds to demand across the country. Specifically, the Supply Module is built on detailed state-by-state reports of gas production curves across the country.[92] As EIA explains, "production type curves have been used to estimate the technical production from known fields" as the basis for a sophisticated "play-level model that projects the crude oil and natural gas supply from the lower 48."[93] The module distinguishes coalbed methane, shale gas, and tight gas from other resources, allowing for specific predictions distinguishing unconventional gas supplies from conventional supplies.[94] The module further projects the number of wells drilled each year, and their likely production – which are important figures for estimating environmental impacts.[95] In short, the supply module "includes a comprehensive assessment method for determining the relative economics of various prospects based on future financial considerations, the nature of the undiscovered and discovered resources, prevailing risk factors, and the available

[86] DOE/FE Dkt. No. 11-162-LNG App. at 9-10; *see also* CP13-25 App. at 12 ("The sources of natural gas for the Liquefaction Project will include the vast supplies available from the U.S. Gulf Coast area, including the Texas and Louisiana producing regions.").
[87] EIA, *The National Energy Modeling System: An Overview*, 1-2 (2009), attached to the Env. Protest of Cameron Apps. as Exhibit 27, available at http://www.eia.gov/oiaf/aeo/overview/pdf/0581(2009).pdf.
[88] *Id.* at 59.
[89] EIA, *Model Documentation: Natural Gas Transmission and Distribution Module of the National Energy Modeling System*, 15-16 (2012), attached to the Env. Protest of Cameron Apps.as Exhibit 28, *available at* http://www.eia.gov/FTPROOT/modeldoc/m062(2011).pdf.
[90] *See id.* at 22-32.
[91] *See id.* at 30-31.
[92] EIA, *Documentation of the Oil and Gas Supply Module*, 2-2 (2011), attached to the Env. Protest of Cameron Apps. as Exhibit 29, *available at* http://www.eia.gov/FTPROOT/modeldoc/m063(2011).pdf.
[93] *Id.* at 2-3.
[94] *Id.* at 2-7.
[95] *See id.* at 2-25 to 2-26.

IP2-73 (con't): In this case, the environmental impacts from induced production and pipeline transportation which may result from additional shale gas development are not "reasonably foreseeable" and such additional development, or any correlative potential impact, is not an "effect" of the Cameron Liquefaction Project for purposes of a cumulative impacts analysis. No specific shale-gas play has been identified as a source of natural gas and the proposed Project does not depend on additional shale gas production, which may occur for reasons unrelated to the Project and over which the Commission has no control, such as state permitting for additional gas wells.

Therefore, induced gas production and pipeline transportation and the impacts associated with gas production and transportation, other than the impacts associated with the proposed Pipeline Expansion, are outside of the scope of this EIS.

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technologies. The model evaluates the economics of future exploration and development from the perspective of an operator making an investment decision."[96] Thus, for each play in the lower 48 states, the EIA is able to predict future production based on existing data. The model is also equipped to evaluate policy changes that might impact production; according to EIA, "the model design provides the flexibility to evaluate alternative or new taxes, environmental, or other policy changes in a consistent and comprehensive manner."[97] Thus, there is no technical barrier to modeling where exports will induce production going forward. Indeed, EIA used this model for its export study, which forecast production and price impacts.

Deloitte Marketpoint has provided similar discussion of the ways exports will induce domestic production.[98] Deloitte explains that its "World Gas Model" includes detailed global gas resources, including modeling of "575 plays in the US alone."[99] For this model, "Within each major region are very detailed representations of many market elements: production, liquefaction, transportation, market hubs, regasification and demand by country or sub area."[100] This includes modeling individual "producers, pipelines, refineries, ships, distributors, and consumers." *Id.* Deloitte applied this model to another proposal and derived specific volumes of predicted production increases in five distinct shale gas plays.[101] While Deloitte only provides as aggregate estimates for other shale plays and for non-shale sources, it appears that Deloitte's model is capable of providing geographically specifying where this aggregated production will occur. Commenters offer no opinion at this time about the strengths or weaknesses of Deloitte's models relative to EIA's. Commenters simply note that multiple tools exist which allow predictions of how and where production will respond to exports.

2. Induced Production Must Be Considered in the NEPA Analysis

As Commenters previously explained, the effects of increased gas production must be considered in the NEPA analysis. The draft EIS explains its basis for excluding these effects as follows:

> The development of natural gas in shale plays by hydraulic fracturing is not the subject of this EIS nor is the issue directly related to the proposed Project. Production and gathering activities, and the pipelines and facilities used for these activities, are not regulated by FERC, but are overseen by the affected region's state and local agencies with jurisdiction over the management and extraction of the shale gas resource. Determining the well and gathering line locations and their environmental impact is not feasible as the market and gas availability at any given time would

[96] *Id.* at 2-3.
[97] *Id.*
[98] Deloitte Study, *supra* n.82, at 14.
[99] *Id.* at 25.
[100] *Id.* at 24.
[101] *Id.*

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determine the source of the natural gas. Therefore, it is outside of the scope of this EIS.

1-11. This explanation is contrary to the facts and the governing NEPA standards. NEPA requires consideration of "indirect effects" of the proposed action, which include "growth inducing effects" and "reasonably foreseeable" effects "removed in distance" from the site of the proposed action. 40 C.F.R. § 1508.8(b). The fact that FERC does not regulate gas production or pipelines in the production sector does not remove this issue from the scope of FERC's NEPA obligations, as courts have consistently held that NEPA requires consideration of effects that are outside the scope of the reviewing federal agency's regulatory authority. The Ninth Circuit has explicitly held that NEPA requires agencies to analyze the effects of their actions even when the agency does not have permitting authority over those effects, explaining that "[W]hile it is the development's impact on jurisdictional waters that determines the scope of the [Army Corps of Engineers'] *permitting authority*, it is the impact of the permit on the environment at large that determines the Corps' NEPA responsibility." *Save Our Sonoran v. Flowers*, 408 F.3d 1113, 1122 (9th Cir. 2005) (emphasis added). Similarly, the Surface Transportation Board has been required to consider impacts railroad permitting would have on coal combustion and coal mining despite the Board's lack of authority to regulate these issues. *Mid States Coalition for Progress v. Surface Transportation Board*, 345 F.3d 520 (8th Cir. 2003), *N. Plains Resource Council v. Surface Transp. Bd.*, 668 F.3d 1067, 1081-82 (9th Cir. 2011). Still other cases have required NEPA analyses of proposed casino projects to include impacts of increases in vehicle traffic the projects would induce. *Michigan Gambling Opposition v. Kempthorne*, 525 F.3d 23, 29 (D.C. Cir. 2008), *Taxpayers of Michigan Against Casinos v. Norton*, 433 F.3d 852, 863 (D.C. Cir. 2006).

As to uncertainty as to the source of gas, we note that there is no need to determine the precise wells in which the particular gas molecules used at the Cameron facility are located. As with changes in electricity production, all that is required is a forecast as to how the nation's gas production system as a whole will respond. FERC has not shown that, despite the use of available tools such as NEMS, uncertainty regarding where this production precludes useful discussion of possible impacts. Indeed, for some issues, such as greenhouse gas emissions associated with production, it is unclear how the uncertainty that FERC claims could be relevant.

3. Induced Production Will Impose Significant Environmental Harms

Natural gas production—from both conventional and unconventional sources—is a significant air pollution source, can disrupt ecosystems and watersheds, leads to industrialization of entire landscapes, threatens groundwater, and presents challenging waste disposal issues. FERC must consider the increase in these environmental harms that exports are likely to stimulate.

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Much of the induced production resulting from exports is likely to come from shale gas and other unconventional sources. EIA has concluded that "[o]n average, across all cases and export scenarios, the shares of the increase in total domestic production coming from shale gas, tight gas, [and] coalbed sources are 72 percent, 13 percent, [and] 8 percent," respectively.[102]

A subcommittee of the DOE's Secretary of Energy's Advisory Board recently highlighted "a real risk of serious environmental consequences" resulting from continued expansion of shale gas production.[103] Shale gas production (as well as coalbed and tight sands production) typically requires the controversial practice of hydraulic fracturing, or fracking. As we explain below, natural gas production in general, and fracking in particular, impose a large number of environmental harms.

a) Natural Gas Production is a Major Source of Air Pollution

Natural gas production is a significant source of greenhouse gases and other air pollutants, including methane (CH_4), volatile organic compounds (VOCs), nitrogen oxides (NO_x), sulfur dioxide (SO_2), hydrogen sulfide (H_2S), and particulate matter (PM_{10} and $PM_{2.5}$). These operations also emit listed hazardous air pollutants (HAPs) in significant quantities, and so contribute to cancer risks and other acute public health problems. Pollutants are emitted during all stages of natural gas development, including (1) oil and natural gas production, (2) natural gas processing, (3) natural gas transmission, and (4) natural gas distribution.[104] Within these development stages, the major sources of air pollution include wells, compressors, pipelines, pneumatic devices, dehydrators, storage tanks, pits and ponds, natural gas processing plants, and trucks and construction equipment.

[102] EIA Export Study, *supra* n.79, at 11.
[103] DOE, Secretary of Energy's Advisory Board, Shale Gas Production Subcommittee Second 90-Day Report (2011) at 10, attached to the Env. Protest of Cameron Apps. as Exhibit 32. *See also* DOE, Shale Gas Production Subcommittee First 90-Day Report, attached to the Env. Protest of Cameron Apps. as Exhibit 33.
[104] EPA, Oil and Natural Gas Sector: Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution, Background Technical Support Document for the Proposed Rules, at 2-4 (July 2011) ("2011 TSD"), attached to the Env. Protest of Cameron Apps. as Exhibit 34.

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Figure 1, drawn from EPA's regulation of some of the aspects of this sector, summarized emission points.

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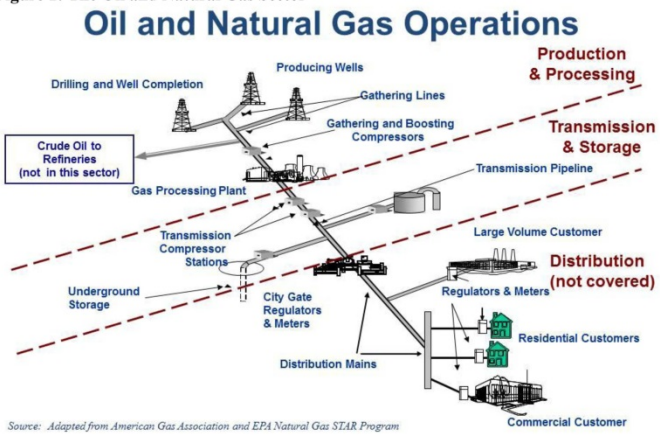
Figure 1: The Oil and Natural Gas Sector



(1) Greenhouse Gas Emissions from Gas Production

Methane is the primary pollutant emitted by gas production. Emissions occur as result of intentional venting or unintentional leaks during drilling, production, processing, transmission and storage, and distribution. For example, methane is emitted when wells are completed and vented, as part of operation of pneumatic devices and compressors, and as a result of leaks (fugitive emissions) in pipelines, valves, and other equipment.

Methane is a potent greenhouse gas: as explained in part V.C.2 above, the Intergovernmental Panel on Climate Change estimates that methane has 34 times the global warming potential of carbon dioxide over a 100 year time frame and at least 86 times the global warming potential of carbon dioxide over a 20-year time frame.[105]

EPA has recognized methane emissions from natural gas production and systems as a major contributor to climate change, and many recent studies indicate that EPA has in fact understated the scope of the problem. EPA has identified natural gas systems as the "single

[105]Methane is also an ozone precursor. EPA, *Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews*, 76 Fed. Reg. 52,738, 52,791 (Aug. 23, 2011),.

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largest contributor to United States anthropogenic methane emissions," amounting to over 40% of the total.[106] Even when using a global warming potential that has been superceded by recent higher estimates, EPA concluded that methane emissions from the oil and gas production industry constituted 5% of all carbon dioxide equivalent (CO_2e) emissions in the country.[107] The question of how much methane is released during gas production has received extensive recent attention. EPA's 2013 greenhouse gas inventory, which is based on industry's self-reported data and assumed emission factors, implies that about 1.5% of gross gas production leaks to the atmosphere in one way or another.[108] Numerous other recent studies indicate that the EPA assessment is, if anything, too low, and that actual emissions may be significantly higher. An August 2011 report from the Worldwatch Institute and Deutsche Bank summarizes much of the work that had been done at that point.[109] The Worldwatch Report discussed three prior reports that used "bottom-up" methodologies, based on assumed emissions from individual components and sources in the gas production sector; these were reports by Dr. Robert Howarth et al., of Cornell,[110] Mohan Jiang et al. of Carnegie-Mellon,[111] and Timothy Skone of NETL.[112] The Worldwatch Report separately derived a "top-down" estimate, which produced a result similar to the NETL estimate.[113] These various assessments are summarized in the following chart.

[106] *Id.* at 52,792 (Aug. 23, 2011).
[107] *Id.* at 52,791–92.
[108] EPA's 2013 inventory does not explicitly state the leak rate for natural gas production. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2011*, Table ES-2 (2013), attached as Exhibit 33. EPA's prior inventory implied a leak rate of 2.4%, as extrapolated by a previous study. Alvarez *et al.*, *Greater focus needed on methane leakage from natural gas infrastructure*, Proceedings of the National Academy of Science (Apr. 2012) at 1, attached as Exhibit 34. Because the current inventory's sector-wide emissions estimates for the same time periods have been reduced by roughly 1/3, the current inventory implies a leak rate of roughly 1.5%.
[109] Mark Fulton *et al.*, *Comparing Life-Cycle Greenhouse Gas Emissions from Natural Gas and Coal* (Aug. 25, 2011) ("Worldwatch Report"), attached to the Env. Protest of Cameron Apps. as Exhibit 92.
[110] Robert W. Howarth *et al.*, *Methane and the greenhouse-gas footprint of natural gas from shale formations*, Climactic Change (Mar. 2011), attached to the Env. Protest of Cameron Apps. as Exhibit 93.
[111] Mohan Jiang *et al.*, *Life cycle greenhouse gas emissions of Marcellus shale gas*, Environ. Res. Letters 6 (Aug. 2011), attached to the Env. Protest of Cameron Apps. as Exhibit 94.
[112] The Worldwatch Report discusses Timothy J. Skone, *Life Cycle Greenhouse Gas Analysis of Natural Gas Extraction and Delivery in the United States*, Presentation to Cornell (May 12, 2011), attached to the Env. Protest of Cameron Apps. as Exhibit 95. NETL published a more complete version of this analysis after the Worldwatch Report was released. Timothy J. Skone, *Life Cycle Greenhouse Gas Inventory of Natural Gas Extraction, Delivery and Electricity Production* (Oct. 24, 2011), attached to the Env. Protest of Cameron Apps. as Exhibit 96.
[113] Worldwatch Report, *supra* n.109, at 9.

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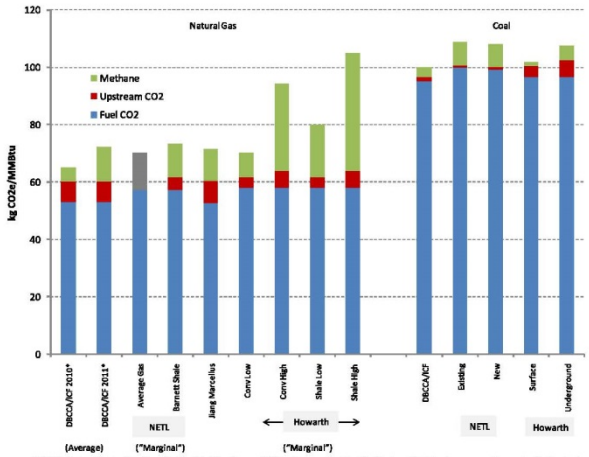
Figure 2: Comparison of Recent Life-Cycle Assessments[114]



Source: DBCCA Analysis 2011; NETL 2011; Jiang 2011; Howarth 2011. Note: NETL Average Gas study includes bar shaded grey due to inability to segregate upstream CO2 and methane values, which were both accounted for in the study. See page 10 for more information. *2011 EPA methodology compared to 2010.

As this figure demonstrates, although the 2011 studies differ, most of them estimate production greenhouse gas emissions (combined methane and "upstream CO_2") in a similar range. Synthesizing these studies, the Worldwatch Report estimated, using a now-outdated methane global warming potential of 25, that normalized life-cycle GHG emissions from domestic natural gas production at approximately 20.1 kilograms, or over 44 pounds, of CO_2e per MMBtu of gas produced.[115] This is roughly comparable to EPA's implied 1.5% leak rate estimate.

Studies completed since 2011 indicate that methane emissions from gas production could be much higher. One study looking specifically to emissions from gas production in the Dallas-Fort Worth area, in the Barnett Shale, concluded that gas production in this region (which is subject to a number of strict pollution controls because of its ozone non-attainment status) had a

[114] *Id.* at 3.
[115] *Id.* at 15 Ex. 8.

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leak rate of approximately 1.5%.[116] This study cautions, however, that its bottom-up methodology can understate emissions, and this study failed to account for emissions from liquids unloading at the well site. Two studies led by researchers with the National Ocean and Atmospheric Administration (NOAA) Earth System Research Laboratory that have directly measured methane in the atmosphere in other regions have estimated much higher leak rates. The first of these studies explains that by monitoring methane, propane, benzene, and other volatile organic compounds in the air around oil and gas fields, the authors can estimate oil and gas production's contributions to these pollutant levels.[117] According to the study authors, their "analysis suggests that the emissions of the species we measure are most likely underestimated in [the then-]current inventories," perhaps by as much as a factor of two, which would imply a leak rate of about 4.8% of production.[118] A second announced NOAA study suggests that leak rates may be as high as 9%.[119] Most troublingly, a California study identified a 17% leak rate for oil and gas operations in the Los Angeles basin.[120]

Two studies released in the past three months specifically criticize EPA's estimates of greenhouse gas emissions from gas production as too low. In December of 2013, a paper published by Scot M. Miller *et al.* in the Proceedings of the Natural Academy of Sciences reviewed atmospheric measurements of methane and concluded that "The US EPA recently decreased its CH_4 emission factors for fossil fuel extraction and processing by 25–30% (for 1990–2011), but we find that CH_4 data from across North America instead indicate the need for a larger adjustment of the opposite sign."[121] In other words, rather than reducing the estimated leak rate from 2.4% to something approaching 1.5%, EPA should have increased its estimate to at least 3%. In February, a paper published in Science similarly concluded that bottom-up estimates like EPA's greenhouse gas inventory underestimate methane emissions from gas production.[122]

The additional production that would be induced in response to Cameron's proposed project could have emissions that are even higher than these nationwide estimates. One reason is

[116] Jeffrey Logan et al., Joint Inst. for Strategic Analysis, Natural Gas and the Transformation of the U.S. Energy Sector (2012) ("JISEA report") at 5, available at http://www.nrel.gov/docs/fy13osti/55538.pdf and attached to the Env. Protest of Cameron Apps. as Exhibit 86. This study concluded that greenhouse gas emissions from natural gas production add 78g CO_2e/kWh to the total emissions associated with electricity generating at an efficient modern combined cycle natural gas plant, a figure similar to what Worldwatch estimates. *Id.* at 25.
[117] G. Petron *et al.*, *Hydrocarbon emissions characterization in the Colorado Front Range: A pilot study*, 117 J. of Geophysical Research 4304, DOI 10.1029/2011JD016360 (2012), attached to the Env. Protest of Cameron Apps. as Exhibit 35.
[118] *Id.* at 4304. The inventory this study referred to was EPA's prior greenhouse gas inventory, which had implied a gas production leak rate of 2.4%. *See supra* n.108.
[119] J. Tollefson, *Methane leaks erode green credentials of natural gas*, Nature (Jan. 2, 2013), attached to the Env. Protest of Cameron Apps. as Exhibit 97.
[120] Peischl, J., *et al.*, *Quantifying sources of methane using light alkanes in the Los Angeles basin, California*, J. Geophys. Res. Atmos (2013), attached as Exhibit 35.
[121] Miller, S., *et al.*, *Anthropogenic emissions of methane in the United States*, Proceedings of the National Academy of Sciences (Dec. 10, 2013) ("PNAS Study"), at 20022, attached as Exhibit 36.
[122] Brandt, A.R., *et al*, *Methane Leaks from North American Natural Gas Systems*, Science, Vol. 343, no. 6172 at pp. 733-735 (Feb. 14, 2014), attached as Exhibit 37.

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that, according to EIA's predictions, additional production that results from exports will include a higher proportion of unconventional gas than the current production mix, and these unconventional sources are likely to have higher greenhouse gas emissions. As noted above, the EIA Export Study predicts that extraction induced by exports will overwhelmingly be from shale gas sources.[123] Several studies have found that shale gas has higher production emissions than conventional sources. Notably, EPA recently estimated methane emissions from a conventional well completion at only 0.80 tons, while completion of a hydraulically fractured well yielded 158.55 tons of methane.[124] Furthermore, if exports disproportionately increase production near the terminal rather than evenly increasing production nationwide, this production could have higher than average emissions: the Miller *et al.* study found that methane emissions from gas production in the south central United States were particularly severe.[125] Even if FERC determines that it impossible to assess whether or how emissions from production induced by Cameron's proposal would differ from average national production emissions, however, FERC must analyze the greenhouse gas emissions that would result from production increases if it assumed that the nationwide data is representative.

(2) Non-greenhouse Gas Air Pollution from Gas Production

***Volatile Organic Compounds (VOCs) and NO_x*:** The gas industry is also a major source of two other ozone precursors: VOCs and NO_x.[126] VOCs are emitted from well drilling and completions, compressors, pneumatic devices, storage tanks, processing plants, and as fugitives from production and transmission.[127] The primary sources of NO_x are compressor engines,

[123] EIA Export Study, *supra* n.79, at 11.
[124] *See* 2011 TSD, *supra* n.104 at 4-7 (Table 4-2). Although JISEA recently found greenhouse gas emissions from unconventional production in the Barnett shale to be "similar to levels reported in the literature from conventional natural gas," JISEA, *supra* n.116, at 4, that study's estimates may be too low. First, the JISEA study used data from the Barnett Shale, which is located in an ozone nonattainment area where emissions are likely to be rigorously controlled. It is therefore possible that its results may not generalize well to production in other plays. Second, the study did not include emissions associated with liquids unloading, a practice that involves removal of liquids from the well and consequent release of greenhouse gases, based on the assumption that liquids unloading is not frequently practiced in unconventional production. A recent industry survey suggests that liquids unloading is in fact practiced in unconventional production, however, so it may be appropriate to add emissions from liquids unloading to JISEA's life-cycle emissions total. Adding emissions associated with liquids unloading would contribute an additional 6 to 28 grams of CO2e/kWh, or even 100g under low-recovery conditions. JISEA, *supra* n.116, at 29 (citing Terri Shires & Miriam Lev-On, *Characterizing Pivotal Sources of Methane Emissions from Unconventional Natural Gas Production,* 11-14 (2012), attached to the Env. Protest of Cameron Apps. as Exhibit 98).
[125] PNAS Study, *supra* n.121, at 20021.
[126] *See, e.g.*, Al Armendariz, *Emissions from Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements* (Jan. 26, 2009), available at http://www.edf.org/documents/9235_Barnett_Shale_Report.pdf (hereinafter "Barnett Shale Report") at 24, attached to the Env. Protest of Cameron Apps. as Exhibit 40.
[127] *See, e.g.,* 2011 TSD, *supra* n.104, at 4-7, 5-6, 6-5, 7-9, 8-1; *see also* Barnett Shale Report, *supra* n.126, at 24.

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turbines, and other engines used in drilling and hydraulic fracturing.[128] NO_x is also produced when gas is flared or used for heating.[129]

As a result of significant VOC and NO_x emissions associated with oil and gas development, numerous areas of the country with heavy concentrations of drilling are now suffering from serious ozone problems. For example, the Dallas Fort Worth area in Texas is home to substantial oil and gas development. Within the Barnett shale region, as of September 2011, there were more than 15,306 gas wells and another 3,212 wells permitted.[130] Of the nine counties surrounding the Dallas Fort Worth area that EPA has designated as "nonattainment" for ozone, five contain significant oil and gas development.[131] A 2009 study found that summertime emissions of smog-forming pollutants from these counties were roughly comparable to emissions from motor vehicles in those areas.[132]

Oil and gas development has also brought serious ozone pollution problems to rural areas, such as western Wyoming.[133] On July 20, 2012, the US EPA designated Wyoming's Upper Green River Basin as a marginal nonattainment area for ozone.[134] In an extended assessment, the Wyoming Department of Environmental Quality ("WDEQ") found that ozone pollution was "primarily due to local emissions from oil and gas . . . development activities: drilling, production, storage, transport, and treating."[135] In the winter of 2011, the residents of Sublette County suffered thirteen days with ozone concentrations considered "unhealthy" under EPA's current air-quality index, including days when the ozone pollution levels exceeded the worst days of smog pollution in Los Angeles.[136] In 2013, a Wyoming Department of Health

[128] *See, e.g.*, 2011 TSD, *supra* n.104, at 3-6; Barnett Shale Report, *supra* n.126, at 24; Air Quality Impact Analysis Technical Support Document for the Revised Draft Supplemental Environmental Impact Statement for the Pinedale Anticline Oil and Gas Exploration and Development Project at 11 (Table 2.1).), attached to the Env. Protest of Cameron Apps. as Exhibit 41.
[129] 2011 TSD, *supra* n.104, at 3-6; Colorado Department of Public Health and Environment, *Colorado Visibility and Regional Haze State Implementation Plan for the Twelve Mandatory Class I Federal Areas in Colorado*, Appendix D at 1 (2011), available at http://www.cdphe.state.co.us/ap/RegionalHaze/AppendixD/4-FactorHeaterTreaters07JAN2011FINAL.pdf and attached to the Env. Protest of Cameron Apps. as Exhibit 42.
[130] Texas Railroad Commission history of Barnett Shale, attached to the Env. Protest of Cameron Apps. as Exhibit 43.
[131] Barnett Shale Report, *supra* n.126, at 1, 3.
[132] *Id.* at 1, 25-26.
[133] Schnell, R.C, *et al.* (2009), "Rapid photochemical production of ozone at high concentrations in a rural site during winter," *Nature Geosci.* 2 (120 – 122). DOI: 10.1038/NGEO415, attached to the Env. Protest of Cameron Apps. as Exhibit 44.
[134] EPA, *Air Quality Designations for the 2008 Ozone National Ambient Air Quality Standards*, 77 Fed. Reg. 30088, 30157 (May 21, 2012).
[135] Wyoming Department of Environmental Quality, Technical Support Document I for Recommended 8-hour Ozone Designation of the Upper Green River Basin (March 26, 2009) at viii, *available at* http://deq.state.wy.us/out/downloads/Ozone%20TSD_final_rev%203-30-09_jl.pdf, attached to the Env. Protest of Cameron Apps. as Exhibit 46.
[136] EPA, *Daily Ozone AQI Levels in 2011 for Sublette County, Wyoming*, *available at* http://www.epa.gov/cgi-bin/broker?msaorcountyName=countycode &msaorcountyValue=56035&poll=44201&county=56035&msa=-1&sy=2011&flag=Y &_debug=2&_service=data&_program=dataprog.trend_tile_dm.sas, attached to the Env. Protest of Cameron Apps. as Exhibit 47; *see also* Wendy Koch, *Wyoming's Smog Exceeds Los Angeles' Due to Gas*

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study linked elevated levels of ozone pollution to increased visits at two local health clinics for respiratory-related complaints.[137] In the past, residents have faced repeated warnings regarding elevated ozone levels and the resulting risks of going outside[138] and WDEQ has drafted a plan, which includes weather forecasting, public updates and short-term ozone emission reduction measures, in anticipation of elevated ozone levels in 2014.[139]

Ozone problems are mounting in other Rocky Mountain states as well. In recent years Northeastern Utah's Uintah Basin has experienced severe ozone pollution. In the winter of 2012 to 2013, this region suffered over fifty days where air quality monitors measured ozone in excess of federal standards and some days where ozone levels were almost twice the federal standard.[140] The Utah Department of Environmental Quality has determined that "Oil and gas operations were responsible for 98-99 percent of volatile organic compound (VOC) emissions and 57-61 percent of nitrogen oxide (NOx) emissions," the primary chemical contributors to ozone formation.[141] The Bureau of Land Management (BLM) has similarly identified the multitude of oil and gas wells in the region as the primary cause of the ozone pollution.[142]

Rampant oil and gas development in Colorado and New Mexico is also leading to high levels of VOCs and NO_x. In 2008, the Colorado Department of Public Health and Environment concluded that the smog-forming emissions from oil and gas operations exceed vehicle emissions for the entire state.[143] Moreover, significant additional drilling has occurred since

Drilling, USA Today, *available at* http://content.usatoday.com/communities/greenhouse/post/ 2011/03/wyomings-smog-exceeds-los-angeles-due-to-gas-drilling/1, attached to the Env. Protest of Cameron Apps. as Exhibit 48.

[137] State of Wyoming, Department of Health, *Associations of Short-Term Exposure to Ozone and Respiratory Outpatient Clinic Visits — Sublette County, Wyoming, 2008–2011* (Mar. 1, 2013) at 3, available at http://www.health.wyo.gov/phsd/ehl/index.html and attached Exhibit 38.

[138] *See, e.g.*, 2011 DEQ Ozone Advisories, Pinedale Online! (Mar. 17, 2011), http://www.pinedaleonline.com/news/2011/03/OzoneCalendar.htm (documenting ten ozone advisories in February and March 2011), attached to the Env. Protest of Cameron Apps. as Exhibit 49; Wyoming Department of Environmental Quality, Ozone Advisory for Monday, Feb. 28, Pinedale Online! (Feb. 27, 2011), http://www.pinedaleonline.com/news/2011/02/OzoneAdvisoryforMond.htm, attached to the Env. Protest of Cameron Apps. as Exhibit 50.

[139] *DEQ plans for the 2014 winter ozone season*, Pinedale Online! (Dec. 19, 2013), available at http://www.pinedaleonline.com/news/2013/12/DEQplansforthe2014wi.htm and attached as Exhibit 39.

[140] *See, e.g.*, Utah Dept. of Environmental Quality, *Utah's Environment 2013: Planning and Analysis: Uintah Basin Ozone Study* (updated Jan. 17, 2014), *available at* http://www.deq.utah.gov/envrpt/Planning/s12.htm and attached as Exhibit 40.

[141] Utah Dept. of Environmental Quality, *Uinta Basin: Ozone in the Uinta Basin* (Updated Jan. 28,2014), *available at* http://www.deq.utah.gov/locations/uintahbasin/ozone.htm, attached as Exhibit 41.

[142] BLM, *GASCO Energy Inc. Uinta Basin Natural Gas Development Draft Environmental Impact Statement* ("GASCO DEIS"), at 3-13, *available at* http://www.blm.gov/ut/st/en/fo/vernal/planning/nepa_/gasco_energy_eis.html, attached to the Env. Protest of Cameron Apps. as Exhibit 53.

[143] Colo. Dept. of Public Health & Env't, Air Pollution Control Division, Oil and Gas Emission Sources, Presentation *for the Air Quality Control Commission Retreat*, at 3-4 (May 15, 2008), attached to the Env. Protest of Cameron Apps. as Exhibit 54.

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2008. Colorado is now home to more than 51,000 wells.[144] On July 20, 2012, the US EPA designated the metropolitan Denver and the North Front Range area in Colorado as a marginal nonattainment area for ozone.[145] Additionally, portions of Colorado's Western Slope now qualify as a nonattainment area because the three year average ozone value is above the NAAQS.[146] Monitoring also shows that many other areas of the state have ozone pollution levels that exceed levels EPA has recognized as having significant health impacts.[147] In 2013, the Colorado Department of Public Health and Environment issued 42 advisories, cautioning active children and adults, older adults, and people with asthma to reduce prolonged or heavy outdoor exertion, for the Front Range region due to ozone levels that had been exceeded or were expected to be exceeded.[148]

There is also significant development in the San Juan Basin in southeastern Colorado and northwestern New Mexico, with approximately 35,000 wells in the Basin. As a result of this development and several coal-fired power plants in the vicinity, the Basin suffers from serious ozone pollution.[149] This pollution is taking a toll on residents of San Juan County. The New Mexico Department of Public Health has documented increased emergency room visits associated with high ozone levels in the County.[150]

VOC and NO_x emissions from oil and gas development are also harming air quality in national parks and wilderness areas. Researchers have determined that numerous "Class I areas"

[144] Colorado Oil & Gas Conservation Commission, *Colorado Weekly & Monthly Oil and Gas Statistics*, at 11 (Jan. 7, 2014), available at http://cogcc.state.co.us/ (library—statistics—weekly/monthly well activity), attached to the Env. Protest of Cameron Apps. as Exhibit 55.
[145] EPA, *Air Quality Designations for the 2008 Ozone National Ambient Air Quality Standards*, 77 Fed. Reg. at 30110, *supra* n.134.
[146] Colorado Air Quality Control Commission, 2013 Summer Ozone Season Review (Oct. 17, 2013) slides at 5, available at http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheadername1=Content-Disposition&blobheadername2=Content-Type&blobheadervalue1=inline%3B+filename%3D%22Review+of+the+2013+Ozone+Season+%2822+pages%29.pdf%22&blobheadervalue2=application%2Fpdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1251896466011&ssbinary=true and attached as Exhibit 42.
[147] *Id.* at 2-11.
[148] Colorado Department of Public Health and the Environment, Forecasting Air Quality in Colorado (May 16, 2013) at slides 2-3, 5, available at http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheadername1=Content-Disposition&blobheadername2=Content-Type&blobheadervalue1=inline%3B+filename%3D%22Forecasting+Air+Quality+in+Colorado+-+15+pgs.pdf%22&blobheadervalue2=application%2Fpdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1251854889571&ssbinary=true and attached as Exhibit 43.
[149] *See Four Corners Air Quality Task Force Report of Mitigation Options*, at vii (Nov. 1, 2007), *available at* http://www.nmenv.state.nm.us/aqb/4C/TaskForceReport.html, attached to the Env. Protest of Cameron Apps. as Exhibit 56.
[150] Myers *et al.*, *The Association Between Ambient Air Quality Ozone Levels and Medical Visits for Asthma in San Juan County* (Aug. 2007), *available at* http://www.nmenv.state.nm.us/aqb/4c/Documents/SanJuanAsthmaDocBW.pdf, attached to the Env. Protest of Cameron Apps. as Exhibit 57.

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– a designation reserved for national parks, wilderness areas, and other such lands[151] – are likely to be impacted by increased ozone pollution as a result of oil and gas development in the Rocky Mountain region. Affected areas include Mesa Verde National Park and Weminuche Wilderness Area in Colorado and San Pedro Parks Wilderness Area, Bandelier Wilderness Area, Pecos Wilderness Area, and Wheeler Peak Wilderness Area in New Mexico.[152] These areas are all near concentrated oil and gas development in the San Juan Basin.[153]

As oil and gas development moves into new areas, particularly as a result of the boom in development of shale resources, ozone problems are likely to follow. For example, regional air quality models predict that gas development in the Haynesville shale will increase ozone pollution in northeast Texas and northwest Louisiana and may lead to violations of ozone NAAQS.[154]

Moreover, VOCs are not simply ozone precursors. They are also co-emitted with a stew "hazardous air pollutants" (HAPs) including benzene. HAPs, by definition, are toxic and also may be carcinogenic. High levels of carcinogens, including benzene compounds, are associated with gas production sites. Unsurprisingly, recent risk assessments from Colorado document elevated health risks for residents living near gas wells.[155] Indeed, levels of benzene and other toxics near wells in rural Colorado were "higher than levels measured at 27 out of 37 EPA air toxics monitoring sites . . . including urban sites" in major industrial areas.[156] These pollution levels are even more concerning than these high concentrations would suggest because several of the toxics emitted by gas operations are endocrine disruptors, which are compounds known to harm human health by acting on the endocrine system even at very low doses; some such compounds may, in fact, be especially dangerous specifically at the low, chronic, doses one would expect near gas operations.[157]

Sulfur dioxide: Oil and gas production also emits sulfur dioxide, primarily from natural gas processing plants.[158] Sulfur dioxide is released as part of the sweetening process, which removes

[151] *See* 42 U.S.C. § 7472(a).
[152] Rodriguez et al., *Regional Impacts of Oil and Gas Development on Ozone Formation in the Western United States,* 59 Journal of the Air and Waste Management Association 1111 (Sept. 2009), available at http://www.wrapair.org/forums/amc/meetings/091111_Nox/Rodriguez_et_al_OandG_Impacts_JAWMA9_09.pdf, attached to the Env. Protest of Cameron Apps. as Exhibit 58.
[153] *Id.* at 1112.
[154] *See* Kemball-Cook et al., *Ozone Impacts of Natural Gas development in the Haynesville Shale,* 44 Environ. Sci. Technol. 9357, 9362 (2010), attached to the Env. Protest of Cameron Apps. as Exhibit 59.
[155] L. McKenzie *et al.*, *Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources,* Science of the Total Environment (In Press, Mar. 22, 2012), attached to the Env. Protest of Cameron Apps. as Exhibit 36.
[156] *Id.* at 16.
[157] *See* L. Vandenberg *et al.*, *Hormones and Endocrine-Disrupting Chemicals: Low-Dose Effects and Nonmonotonic Dose Responses*, Endocrine Disruption Review (2012), attached as Exhibit 44.
[158] 76 Fed. Reg., *supra* n.106, at 52,756.

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hydrogen sulfide from the gas.[159] Sulfur dioxide is also created when gas containing hydrogen sulfide (discussed below) is combusted in boilers or heaters.[160]

Hydrogen sulfide: Some natural gas contains hydrogen sulfide. Gas containing hydrogen sulfide above a specific threshold is classified as "sour gas."[161] According to EPA, there are 14 major areas in the U.S., found in 20 different states, where natural gas tends to be sour.[162] All told, between 15 and 20% of the natural gas in the U.S. may contain hydrogen sulfide.[163]

Given the large amount of drilling in areas with sour gas, EPA has concluded that the potential for hydrogen sulfide emissions from the oil and gas industry is "significant."[164] Hydrogen sulfide may be emitted during all stages of development, including exploration, extraction, treatment and storage, transportation, and refining.[165] For example, hydrogen sulfide is emitted as a result of leaks from processing systems and from wellheads in sour gas fields.[166]

Hydrogen sulfide emissions from the oil and gas industry are concerning because this pollutant may be harmful even at low concentrations.[167] Hydrogen sulfide is an air pollutant with toxic properties that smells like rotten eggs and can lead to neurological impairment or death. Long-term exposure to hydrogen sulfide is linked to respiratory infections, eye, nose, and throat irritation, breathlessness, nausea, dizziness, confusion, and headaches.[168] Although hydrogen sulfide was originally included in the Clean Air Act's list of hazardous air pollutants, it was removed with industry support.[169]

Although direct monitoring of hydrogen sulfide around oil and gas sources is limited, there is evidence that these emissions may be substantial, and have a serious impact on people's health. For example, North Dakota reported 3,300 violations of an odor-based hydrogen sulfide

[159] 2011 TSD, *supra* n.104, at 3-3 to 3-5.
[160] 76 Fed. Reg., *supra* n.106, at 52,756.
[161] *Id.* at 52,756. Gas is considered "sour" if hydrogen sulfide concentration is greater than 0.25 grain per 100 standard cubic feet, along with the presence of carbon dioxide. *Id.*
[162] EPA, Office of Air Quality Planning and Standards, *Report to Congress on Hydrogen Sulfide Air Emissions Associated with the Extraction of Oil and Natural Gas* (EPA-453/R-93-045), at ii (1993) (hereinafter "EPA Hydrogen Sulfide Report"), attached to the Env. Protest of Cameron Apps. as Exhibit 60.
[163] Lana Skrtic, *Hydrogen Sulfide, Oil and Gas, and People's Health* ("Skrtic Report"), at 6 (May 2006), *available at* http://www.earthworksaction.org/pubs/hydrogensulfide_oilgas_health.pdf, attached to the Env. Protest of Cameron Apps. as Exhibit 61.
[164] EPA Hydrogen Sulfide Report, *supra* n. 162, at III-35.
[165] *Id.* at ii.
[166] 2011 TSD, *supra* n.104, at 2-3.
[167] *See* James Collins & David Lewis, *Report to CARB, Hydrogen Sulfide: Evaluation of Current California Air Quality Standards with Respect to Protections of Children* (2000), available at http://oehha.ca.gov/air/pdf/oehhah2s.pdf, attached to the Env. Protest of Cameron Apps. as Exhibit 62.
[168] EPA Hydrogen Sulfide Report, *supra* n. 162, at ii.
[169] *See* Pub. L. 102-187 (Dec. 4, 1991). We do not concede that this removal was appropriate. Hydrogen sulfide meets section 112 of the Clean Air Act's standards for listing as a hazardous air pollutant and should be regulated accordingly.

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standard around drilling wells.[170] People in northwest New Mexico and western Colorado living near gas wells have long complained of strong odors, including but not limited to hydrogen sulfide's distinctive rotten egg smell. Residents have also experienced nose, throat and eye irritation, headaches, nose bleeds, and dizziness.[171] An air sample taken by a community monitor at one family's home in western Colorado in January 2011 contained levels of hydrogen sulfide concentrations 185 times higher than safe levels.[172]

Particulate Matter (PM): The oil and gas industry is a major source of PM pollution. This pollution is generated by heavy equipment used to move and level earth during well pad and road construction. Vehicles also generate fugitive dust by traveling on access roads during drilling, completion, and production activities.[173] Diesel engines used in drilling rigs and at compressor stations are also large sources of fine PM/diesel soot emissions. VOCs are also a precursor to formation of $PM_{2.5}$.[174]

PM emissions from the oil and gas industry are leading to significant pollution problems. For example, monitors in Uintah County and Duchesne County, Utah have repeatedly measured wintertime $PM_{2.5}$ concentrations above federal standards.[175] These elevated levels of $PM_{2.5}$ have been linked to oil and gas activities in the Uinta Basin.[176] Modeling also shows that road traffic associated with energy development is pushing PM_{10} levels very close to violating NAAQS standards.[177]

In summary, gas production emits numerous harmful air pollutants. These pollutants take a serious toll on surrounding communities. For example, a research team led by the Colorado School of Public Health measured benzene and other pollutants released from unconventional well completions.[178] Elevated levels of these pollutants correspond to increased cancer risks for people living within half of a mile of a well[179] – a very large population which will increase as drilling expands.

(3) Cameron's Project Will Itself Will Induce Significant Production-related Air Emissions

[170] EPA Hydrogen Sulfide Report, *supra* n. 162, at III-35.
[171] See Global Community Monitor, *Gassed! Citizen Investigation of Toxic Air Pollution from Natural Gas Development*, at 11-14 (2011), attached to the Env. Protest of Cameron Apps. as Exhibit 63.
[172] *Id.* at 21.
[173] *See* GASCO DEIS, supra n.142, at App. J at 2.
[174] O&G NSPS RIA, *supra* n.32, at 4-18.
[175] GASCO DEIS, *supra* n.173, at 3-12.
[176] BLM, West Tavaputs Plateau Natural Gas Full Field Development Plan Final Environmental Impact Statement (July 2010), at 3-20, available at http://www.blm.gov/ut/st/en/fo/price/energy/Oil_Gas/wtp_final_eis.html.
[177] *See* GASCO DEIS, *supra* n.173, at 4-27.
[178] L. McKenzie *et al.*, *supra* n.155.
[179] *Id.* at 2.

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As we have discussed above, under its current FERC application, Cameron proposes to export about 620.5 bcf/y of natural gas, and will demand approximately an additional 10% of this gas for the liquefaction process. Thus, Cameron's proposal would create roughly 682.55 bcf/year of new gas demand. The EIA predicts that about 63% of demand for exports will come from new production, which in this case would amount to 430 bcf/year. EPA conversion factors allow us to estimate the emissions impacts of this new production. These leak rates, and EPA conversion factors between the typical volumes of methane, VOC, and HAP in natural gas,[180] make it possible to estimate the potential impact of increasing gas production in the way that LNG export would require.

The table below uses these conversion factors to calculate the emissions associated with producing 430 bcf/year of new gas demand, the likely inducement specifically attributable to Cameron. We calculate for a 1% leak rate (which is below the current value, but is included as a conservative case to reflect successful air pollution controls more extensive than those which EPA has promulgated), the current EPA estimated rate of 1.5%, the 2.4% rate used in EPA's previous inventory, the 3% leak rate advocated by the Miller *et al.* PNAS study, and the higher leak rates the NOAA studies suggest in studies of particular plays, generating results for methane, VOC, and HAP.[181]

Table 2: Emissions Associated with Production of 430 bcf/y of Natural Gas

Leak Rate	Methane (tpy)	VOC (tpy)	HAP (tpy)
1%	89,440	13,049	948
1.50%	134,160	19,574	1,422
2.4%	214,656	31,318	2,275
3%	268,320	39,148	2,844
4.80%	429,312	62,637	4,551
9%	804,960	117,444	8,533

Thus, Cameron's current proposal, alone, would be responsible for hundreds of thousands of tons of increased air pollution. Notably, the threshold for major source permitting under the Clean Air Act is generally just tens of tons of pollution; for greenhouse gases, it is generally 75,000 tons. Cameron would thus greatly increase air pollution in the regions from which it draws its gas, imperiling public health and the global climate.

[180] *See* 2011 TSD, *supra* n.104, at Table 4.2. EPA calculated average composition factors for gas from well completions. These estimates, which are based on a range of national data are robust, but necessarily imprecise for particular fields and points along the line from wellhead to LNG terminal. Nonetheless, they provide a beginning point for quantitative work. EPA's conversions are: 0.0208 tons of methane per mcf of gas; 0.1459 lb VOC per lb methane; and 0.0106 lb HAP per lb methane.

[181] These figures were calculated by multiplying the volume of gas to be exported (in bcf) by 1,000,000 to convert to mcf, and then by 63% to generate new production volumes. The new production volumes of gas were, in turn, multiplied by the relevant EPA conversion factors to generate tonnages of the relevant pollutants. These results are approximations: Although we reported the arithmetic results of this calculation, of course only the first few significant figures of each value should be the focus.

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b) Gas Production Disrupts Landscapes and Habitats

Increased oil and gas production will transform the landscape of regions overlying shale gas plays, bringing industrialization to previously rural landscapes and significantly affecting ecosystems, plants, and animals. These impacts are large and difficult to manage.

Land use disturbance associated with gas development impacts plants and animals through direct habitat loss, where land is cleared for gas uses, and indirect habitat loss, where land adjacent to direct losses loses some of its important characteristics.

Regarding direct losses, land is lost through development of well pads, roads, pipeline corridors, corridors for seismic testing, and other infrastructure. The Nature Conservancy (TNC) estimated that in Pennsylvania, "[w]ell pads occupy 3.1 acres on average while the associated infrastructure (roads, water impoundments, pipelines) takes up an additional 5.7 acres, or a total of nearly 9 acres per well pad."[182] New York's Department of Environmental Conservation reached similar estimates.[183] After initial drilling is completed the well pad is partially restored, but 1 to 3 acres of the well pad will remain disturbed through the life of the wells, estimated to be 20 to 40 years.[184] Associated infrastructure such as roads and corridors will likewise remain disturbed. Because these disturbances involve clearing and grading of the land, directly disturbed land is no longer suitable as habitat.[185]

Indirect losses occur on land that is not directly disturbed, but where habitat characteristics are affected by direct disturbances. "Adjacent lands can also be impacted, even if they are not directly cleared. This is most notable in forest settings where clearings fragment contiguous forest patches, create new edges, and change habitat conditions for sensitive wildlife and plant species that depend on "interior" forest conditions."[186] "Research has shown measureable impacts often extend at least 330 feet (100 meters) into forest adjacent to an edge."[187]

TNC's study of the impacts of gas extraction in Pennsylvania is particularly telling. TNC mapped projected wells across the state, considering how the wells and their associated infrastructure, including roads and pipelines, interacted with the landscape. TNC's conclusions make for grim reading. It concluded:

[182] TNC, Pennsylvania Energy Impacts Assessment, Report 1: Marcellus Shale Natural Gas and Wind 10, 18 (2010), attached to the Env. Protest of Cameron Apps. as Exhibit 64.
[183] N.Y. Dep't of Envtl. Conservation, Revised Draft Supplemental General Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program, 5-5 (2011) ("NY RDSGEIS"), available at http://www.dec.ny.gov/energy/75370.html.
[184] Id. at 6-13.
[185] *Id.* at 6-68.
[186] Pennsylvania Energy Impacts Assessment, *supra* n.182, at 10.
[187] NY RDSGEIS, *supra* n.183, at 6-75.

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- About 60,000 new Marcellus wells are projected by 2030 in Pennsylvania with a range of 6,000 to 15,000 well pads, depending on the number of wells per pad;
- Wells are likely to be developed in at least 30 counties, with the greatest number concentrated in 15 southwestern, north central, and northeastern counties;
- Nearly two thirds of well pads are projected to be in forest areas, with forest clearing projected to range between 34,000 and 83,000 acres depending on the number of number of well pads that are developed. An additional range of 80,000 to 200,000 acres of forest interior habitat impacts are projected due to new forest edges created by well pads and associated infrastructure (roads, water impoundments);
- On a statewide basis, the projected forest clearing from well pad development would affect less than one percent of the state's forests, but forest clearing and fragmentation could be much more pronounced in areas with intensive Marcellus development;
- Approximately one third of Pennsylvania's largest forest patches (>5,000 acres) are projected to have a range of between 1 and 17 well pads in the medium scenario;
- Impacts on forest interior breeding bird habitats vary with the range and population densities of the species. The widely-distributed scarlet tanager would see relatively modest impacts to its statewide population while black-throated blue warblers, with a Pennsylvania range that largely overlaps with Marcellus development area, could see more significant population impacts;
- Watersheds with healthy eastern brook trout populations substantially overlap with projected Marcellus development sites. The state's watersheds ranked as "intact" by the Eastern Brook Trout Joint Venture are concentrated in north central Pennsylvania, where most of these small watersheds are projected to have between two and three dozen well pads;
- Nearly a third of the species tracked by the Pennsylvania Natural Heritage Program are found in areas projected to have a high probability of Marcellus well development, with 132 considered to be globally rare or critically endangered or imperiled in Pennsylvania. Several of these species have all or most of their known populations in Pennsylvania in high probability Marcellus gas development areas.
- Marcellus gas development is projected to be extensive across Pennsylvania's 4.5 million acres of public lands, including State Parks, State Forests, and State Game Lands. Just over 10 percent of these lands are legally protected from surface development.[188]

[188] Pennsylvania Energy Impacts Assessment, *supra* n.182, at 29.

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Increased gas production will exacerbate these problems, which is bad news for the state's lands and wildlife and the hunting, angling, tourism, and forestry industries that depend on them. Although TNC adds that impacts could be reduced with proper planning,[189] more development makes mitigation more difficult. Indeed, the Pennsylvania Department of Conservation and Natural Resources recently concluded that "zero" remaining acres of the state forests are suitable for leasing with surface disturbing activities, or the forests will be significantly degraded.[190]

These land disturbance effects will harm rural economies and decrease property values, as major gas infrastructure transforms and distorts the existing landscape. They will also harm endangered species in regions where production would increase in response to Cameron's exports. Harm to these species and their habitat is inconsistent with the profound public interest in land and species conservation, as expressed in the Endangered Species Act and similar statutes.

c) Gas Production Poses Risks to Ground and Surface Water

As noted above, most of the increased production that would result from Cameron's proposal will likely be from shale and other unconventional gas sources, and producing gas from these sources requires hydraulic fracturing, or fracking.[191] Hydraulic fracturing involves injecting a base fluid (typically water),[192] sand or other proppant, and various fracturing chemicals into the gas-bearing formation at high pressures to fracture the rock and release additional gas. Each step of this process presents a risk to water resources. Withdrawal of the water may overtax the water source. Fracking itself may contaminate groundwater with either chemicals added to the fracturing fluid or with naturally occurring chemicals mobilized by fracking. After the well is fracked, some water will return to the surface, composed of both fracturing fluid and naturally occurring "formation" water. This water, together with drilling muds and drill cuttings, must be disposed of without further endangering water resources.

(1) Water Withdrawals

Fracking requires large quantities of water. The precise amount of water varies by the shale formation being fracked. The amount of water varies by well and by formation. For example, estimates of water needed to frack a Marcellus Shale wells range from 4.2 to over 7.2 million gallons.[193] In the Gulf States' shale formations (Barnett, Haynesville, Bossier, and Eagle

[189] *See id.*
[190] Penn. Dep't of Conservation and Natural Resources, Impacts of Leasing Additional State Forest for Natural Gas Development (2011), attached to the Env. Protest of Cameron Apps. as Exhibit 64.
[191] *See* DOE, Shale Gas Production Subcommittee First 90-Day Report, *supra* n.103, at 8.
[192] The majority of hydraulic fracturing operations are conducted with a water-based fracturing fluid. Fracking may also be conducted with oil or synthetic-oil based fluid, with foam, or with gas.
[193] TNC, Pennsylvania Energy Impacts Assessment, *supra* n.182, at 10, 18; *accord* NY RDSGEIS, *supra* n.183, at 6-10 ("Between July 2008 and February 2011, average water usage for high-volume hydraulic fracturing within the

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Ford), fracking a single well requires from 1 to over 13 million gallons of water, with averages between 4 and 8 million gallons.[194] Fresh water constitutes 80% to 90% of the total water used to frack a well even where operators recycle "flowback" water from the fracking of previous wells for use in drilling the current one.[195] Many wells are fractured multiple times over their productive life.

Water withdrawals can drastically impact aquatic ecosystems and human communities. Reductions in instream flow negatively affect aquatic species by changing flow depth and velocity, raising water temperature, changing oxygen content, and altering streambed morphology.[196] Even when flow reductions are not themselves problematic, the intake structures can harm aquatic organisms.[197] Where water is withdrawn from aquifers, rather than surface sources, withdrawal may cause permanent depletion of the source. This risk is even more prevalent with withdrawals for fracking than it is for other withdrawals, because fracking is a consumptive use. Fluid injected during the fracking process is intended to be deposited below freshwater aquifers and into sealed formations.[198] Thus, the water withdrawn from the aquifer will be used in a way that does not recharge it.

(2) Groundwater Contamination

Fracturing poses a serious risk of groundwater contamination. Contaminants include chemicals added to the fracturing fluid and naturally occurring chemicals that are mobilized from deeper formations to groundwater via the fracking process. Contamination may have several causes, such as improper well siting, poor well design and construction, including casing and cementing; blow-outs and other catastrophic accidents; leaks in wells, pipes, and waste pits; spills of hydraulic fracturing chemicals and waste; fracturing operations that were inappropriately conducted near an improperly plugged well, fractures that grew out of zone, or a combination of these causes. Although information on groundwater contamination is

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Susquehanna River Basin in Pennsylvania was 4.2 million gallons per well, based on data for 553 wells."). Other estimates suggest that as much as 7.2 million gallons of frack fluid may be used in a 4000 foot well bore. NRDC, *et al.*, *Comment on NY RDSGEIS on the Oil, Gas and Solution Mining Regulatory Program* (Jan. 11, 2012) (Attachment 2, Report of Tom Myers, at 10), attached to the Env. Protest of Cameron Apps. as Exhibit 66. ("Comment on NY RDSGEIS").

[194] Jean-Philippe Nicot, *et al.*, *Draft Report – Current and Projected Water Use in the Texas Mining and Oil and Gas Industry*, 52-54 (Feb. 2011) (water use from 1 to over 13 million gallons), attached as Exhibit 45; Jean-Philippe Nicot, *et al.*, *Oil & Gas Water Use in Texas: Update to the 2011 Mining Water Use Report* 11-14 (Sept. 2012) (updated data presented as averages), attached as Exhibit 46. DOE's Shale Gas Subcommittee generally states that nationwide, fracking an individual well requires between 1 and 5 million gallons of water. DOE, Shale Gas Production Subcommittee First 90-Day Report, *supra* n.103, at 19.

[195] NY RDSGEIS, *supra* n.183, at 6-13; *accord* Nicot 2012, *supra* n.194, at 54.

[196] NY RDSGEIS, *supra* n.183, at 6-3 to 6-4, *see also* Maya Weltman-Fahs, Jason M. Taylor, *Hydraulic Fracturing and Brook Trout Habitat in the Marcellus Shale Region: Potential Impacts and Research Needs*, 38 Fisheries 4, 6-7 (Jan. 2013), attached as Exhibit 47.

[197] NY RDSGEIS, *supra* n.183, at 6-4.

[198] *Id.* at 6-5; First 90-Day Report, *supra* n.103, at 19 ("[I]n some regions and localities there are significant concerns about consumptive water use for shale gas development.").

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incomplete, the available research indicates that contamination has already occurred on multiple occasions.

One category of potential contaminants includes chemicals added to the drilling mud and fracturing fluid. The fluid used for slickwater fracturing is typically comprised of more than 98% fresh water and sand, with chemical additives comprising 2% or less of the fluid.[199] Chemicals are added as solvents, surfactants, friction reducers, gelling agents, bactericides, and for other purposes.[200] New York recently identified 322 unique ingredients used in fluid additives, recognizing that this constituted a partial list.[201] These chemicals include petroleum distillates; aromatic hydrocarbons; glycols; glycol ethers; alcohols and aldehydes; amides; amines; organic acids, salts, esters and related chemicals; microbicides; and others. Many of these chemicals present health risks.[202] Of particular note is the use of diesel, which the DOE Subcommittee has singled out for its harmful effects and recommended be banned from use as a fracturing fluid additive.[203] The minority staff of the House Committee on Energy and Commerce has determined that, despite diesel's risks, between 2005 and 2009 "oil and gas service companies injected 32.2 million gallons of diesel fuel or hydraulic fracturing fluids containing diesel fuel in wells in 19 states."[204]

Contamination may also result from chemicals naturally occurring in the formation. Flowback and produced water "may include brine, gases (e.g. methane, ethane), trace metals, naturally occurring radioactive elements (e.g. radium, uranium) and organic compounds."[205] For example, mercury naturally occurring in the formation becomes mixed in with water-based drilling muds, resulting in up to 5 pounds of mercury in the mud per well drilled in the Marcellus region.[206]

There are several vectors by which these chemicals can reach groundwater supplies. Perhaps the most common or significant are inadequacies in the casing of the vertical well bore.[207] The well bore inevitably passes through geological strata containing groundwater, and therefore provides a conduit by which chemicals injected into the well or traveling from the target formation to the surface may reach groundwater. The well casing isolates the groundwater from intermediate strata and the target formation. This casing must be strong enough to withstand the pressures of the fracturing process—the very purpose of which is to shatter rock.

[199] NY RDSGEIS, *supra* n.183, at 5-40.
[200] *Id.* at 5-49.
[201] *Id.* at 5-41.
[202] *Id.* at 5-75 to 5-78.
[203] DOE, Shale Gas Production Subcommittee First 90-Day Report, *supra* n.103, at 25.
[204] Natural Resources Defense Council, Earthjustice, and Sierra Club, Comments [to EPA] on Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels 3, (June 29, 2011) (quoting Letter from Reps. Waxman, Markey, and DeGette to EPA Administrator Lisa Jackson 1 (Jan. 31, 2001)) ("Comment on Diesel Guidance"), attached to the Env. Protest of Cameron Apps. as Exhibit 67.
[205] Shale Gas Production Subcommittee First 90-Day Report, *supra* n.103, at 21; *see also* Comment on NY RDSGEIS, *supra* n.193, attachment 3, Report of Glen Miller, at 2.
[206] Comment on NY RDSGEIS, *supra* n.193, attachment 1, Report of Susan Harvey, at 92.
[207] DOE, Shale Gas Production Subcommittee First 90-Day Report, *supra* n.103, at 20.

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Multiple layers of steel casing must be used, each pressure tested before use, then centered within the well bore. Each layer of casing must be cemented, with careful testing to ensure the integrity of the cementing.[208]

Separate from casing failure, contamination may occur when the zone of fractured rock intersects an abandoned and poorly sealed well or natural conduit in the rock.[209] One recent study concluded, on the basis of geologic modeling, that frack fluid may migrate from the hydraulic fracture zone to freshwater aquifers in less than ten years.[210]

Available empirical data indicates that fracking has resulting in groundwater contamination in at least five documented instances. One study "documented the higher concentration of methane originating in shale gas deposits . . . into wells surrounding a producing shale production site in northern Pennsylvania."[211] By tracking certain isotopes of methane, this study – which the DOE Subcommittee referred to as "a recent, credible, peer-reviewed study" determined that the methane originated in the shale deposit, rather than from a shallower source.[212] Two other reports "have documented or suggested the movement of fracking fluid from the target formation to water wells linked to fracking in wells."[213] "Thyne (2008)[[214]] had found bromide in wells 100s of feet above the fracked zone. The EPA (1987)[[215]] documented fracking fluid moving into a 416-foot deep water well in West Virginia; the gas well was less than 1000 feet horizontally from the water well, but the report does not indicate the gas-bearing formation."[216]

More recently, EPA has investigated groundwater contamination in Pavillion, Wyoming and Dimock, Pennsylvania. In the Pavillion investigation, EPA's draft report concludes that "when considered together with other lines of evidence, the data indicates likely impact to

[208] Comment on Diesel Guidance, *supra* n.204, at 5-9.
[209] Comment on NY RDSGEIS, *supra* n.193, attachment 3, Report of Tom Myers, at 12-15.
[210] Tom Myers, *Potential Contaminant Pathways from Hydraulically Fractured Shale to Aquifers* (Apr. 17, 2012), attached to the Env. Protest of Cameron Apps. as Exhibit 68.
[211] DOE, Shale Gas Production Subcommittee First 90-Day Report at 20 (citing Stephen G. Osborn, Avner Vengosh, Nathaniel R. Warner, and Robert B. Jackson, *Methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing*, Proceedings of the National Academy of Science, 108, 8172-8176, (2011), attached as Exhibit 48).
[212] *Id.*
[213] Comment on NY RDSGEIS, *supra* n.193, attachment 3, Report of Tom Myers, at 13.
[214] Dr. Myers relied on Geoffrey Thyne, *Review of Phase II Hydrogeologic Study* (2008), prepared for Garfield County, Colorado, *available at* http://cogcc.state.co.us/Library/Presentations/Glenwood_Spgs_HearingJuly_2009/(1_A)_ReviewofPhase-II-HydrogeologicStudy.pdf.
[215] Environmental Protection Agency, *Report to Congress, Management of Wastes from the Exploration, Development, and Production of Crude Oil, Natural Gas, and Geothermal Energy*, vol. 1 (1987), *available at* nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=20012D4P.txt, attached to the Env. Protest of Cameron Apps. as Exhibit 69.
[216] Comment on NY RDSGEIS, *supra* n.193, attachment 3, Report of Tom Myers, at 13.

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ground water that can be explained by hydraulic fracturing."[217] EPA tested water from wells extending to various depths within the range of local groundwater. At the deeper tested wells, EPA discovered inorganics (potassium, chloride), synthetic organic (isopropanol, glycols, and tert-butyl alcohol), and organics (BTEX, gasoline and diesel range organics) at levels higher than expected.[218] At shallower levels, EPA detected "high concentrations of benzene, xylenes, gasoline range organics, diesel range organics, and total purgeable hydrocarbons."[219] EPA determined that surface pits previously used for storage of drilling wastes and produced/flowback waters were a likely source of contamination for the shallower waters, and that fracturing likely explained the deeper contamination.[220] The U.S. Geological Survey, in cooperation with the Wyoming Department of Environmental Quality, also provided data regarding chemicals found in wells surrounding Pavillion.[221] Although the USGS did not provide analysis regarding the likely source of the contaminants found, an independent expert who reviewed the USGS and EPA data at the request of Sierra Club and other environmental groups concluded that the USGS data supports EPA's findings.[222] EPA stated that it would turn further investigation of contamination of Pavillion over to Wyoming, such that EPA will not finalize its draft report, but that EPA "stands behind its work and data" in the draft report.[223]

EPA also identified elevated levels of hazardous substances in home water supplies near Dimock, Pennsylvania.[224] EPA's initial assessment concluded that "a number of home wells in the Dimock area contain hazardous substances, some of which are not naturally found in the environment," including arsenic, barium, bis(2(ethylhexyl)phthalate, glycol compounds, manganese, phenol, and sodium.[225] Arsenic, barium, and manganese were present in five home

[217] EPA, Draft Investigation of Ground Water Contamination near Pavillion, Wyoming, at xiii (2011), available at http://www.epa.gov/region8/superfund/wy/pavillion/EPA_ReportOnPavillion_Dec-8-2011.pdf, attached to the Env. Protest of Cameron Apps. as Exhibit 70. EPA has not yet released a final version of this report, instead recently extending the public comment period to September 30, 2013. 78 Fed. Reg. 2396 (Jan. 11, 2013).
[218] *Id.* at xii.
[219] *Id.* at xi.
[220] *Id.* at xi, xiii.
[221] USGS, *Groundwater-Quality and Quality-Control Data for two Monitoring Wells near Pavillion, Wyoming, April and May 2012*, USGS Data Series 718 p.25 (2012), attached as Exhibit 49.
[222] Tom Myers, *Assessment of Groundwater Sampling Results Completed by the U.S. Geological Survey* (Sept. 30, 2012), attached as Exhibit 50. Another independent expert, Rob Jackson of Duke University, has stated that the USGS and EPA data is "suggestive" of fracking as the source of contamination. Jeff Tollefson, *Is Fracking Behind Contamination in Wyoming Groundwater?*, Nature (Oct. 4, 2012), attached as Exhibit 51. *See also* Tom Myers, *Review of DRAFT: Investigation of Ground Water Contamination near Pavillion Wyoming* (April 30, 2012) (concluding that EPA's initial study was well-supported), attached to the Env. Protest of Cameron Apps. as Exhibit 71.
[223] http://www2.epa.gov/region8/pavillion (last accessed Aug. 2, 2013), attached as Exhibit 52.
[224] EPA Region III, Action Memorandum - Request for Funding for a Removal Action at the Dimock Residential Groundwater Site (Jan. 19, 2012), available at http://www.epaosc.org/sites/7555/files/Dimock%20Action%20Memo%2001-19-12.PDF, attached to the Env. Protest of Cameron Apps. as Exhibit 72; EPA, *EPA Completes Drinking Water Sampling in Dimock, Pa.* (Jul. 25, 2012), attached to the Env. Protest of Cameron Apps. as Exhibit 74.
[225] EPA Region III Action Memorandum, *supra* n.224, at 1, 3-4.

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wells "at levels that could present a health concern."[226] Many of these chemicals, including arsenic, barium, and manganese, are hazardous substances as defined under CERCLA section 101(14). *See* 42 U.S.C. § 9604(a); 40 C.F.R. § 302.4. EPA's assessment was based in part on "Pennsylvania Department of Environmental Protection (PADEP) and Cabot Oil and Gas Corporation (Cabot) sampling information, consultation with an EPA toxicologist, the Agency for Toxic Substances and Disease Registry (ATSDR) Record of Activity (AROA), issued, 12/28/11, and [a] recent EPA well survey effort."[227] The PADEP information provided reason to believe that drilling activities in the area led to contamination of these water supplies. Drilling in the area began in 2008, and was conducted using the hazardous substances that have since been discovered in well water. Shortly thereafter methane contamination was detected in private well water. The drilling also caused several surface spills. Although EPA ultimately concluded that the five homes with potentially unsafe levels of hazardous substances had water treatment systems sufficient to mitigate the threat, [228] the Dimock example indicates the potential for gas development to contaminate groundwater.

The serious groundwater contamination problems experienced at the Pavillion and Dimock sites demonstrate a possibility of contamination, and attendant human health risks. Such risks are not uncommon in gas field sites, and will be intensified by production for export. FERC must account for these risks, as well, in its economic evaluation.

(3) Waste Management

Fracturing produces a variety of liquid and solid wastes that must be managed and disposed of. These include the drilling mud used to lubricate the drilling process, the drill cuttings removed from the well bore, the "flowback" of fracturing fluid that returns to the surface in the days after fracking, and produced water that is produced over the life of the well (a mixture of water naturally occurring in the shale formation and lingering fracturing fluid). Because these wastes contain the same contaminants described in the preceding section, environmental hazards can arise from their management and ultimate disposal.

On site, drilling mud, drill cuttings, flowback and produced water are often stored in pits. Open pits can have harmful air emissions, can leach into shallow groundwater, and can fail and result in surface discharges. Many of these harms can be minimized by the use of seal tanks in a "closed loop" system.[229] Presently, only New Mexico mandates the use of closed loop waste management systems, and pits remain in use elsewhere.

Flowback and produced water must ultimately be disposed of offsite. Some of these fluids may be recycled and used in further fracturing operations, but even where a fluid recycling program is used, recycling leaves concentrated contaminants that must be disposed of. The most

[226] *EPA Completes Drinking Water Sampling in Dimock, Pa.*, *supra* n.224.
[227] EPA Region III Action Memorandum, *supra* n.224, at 1.
[228] *EPA Completes Drinking Water Sampling in Dimock, Pa.*, *supra* n.224.
[229] *See, e.g.*, NY RDSGEIS, *supra* n.183, at 1-12.

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common methods of disposal are disposal in underground injection wells or through water treatment facilities leading to eventual surface discharge.

Underground injection wells present risks of groundwater contamination similar to those identified above for fracking itself. Gas production wastes are not categorized as hazardous under the Safe Drinking Water Act, 42 U.S.C. § 300f *et seq.*, and may be disposed of in Class II injection wells. Class II wells are brine wells, and the standards and safeguards in place for these wells were not designed with the contaminants found in fracking wastes in mind.[230]

Additionally, underground injection of fracking wastes appears to have induced earthquakes in several regions. For example, underground injection of fracking waste in Ohio has been correlated with earthquakes as high as 4.0 on the Richter scale.[231] Underground injection may cause earthquakes by causing movement on existing fault lines: "Once fluid enters a preexisting fault, it can pressurize the rocks enough to move; the more stress placed on the rock formation, the more powerful the earthquake."[232] Underground injection is more likely than fracking to trigger large earthquakes via this mechanism "because more fluid is usually being pumped underground at a site for longer periods."[233] In light of the apparent induced seismicity, Ohio has put a moratorium on injection in the affected region. Similar associations between earthquakes and injection have occurred in Arkansas, Texas, Oklahoma and the United Kingdom.[234] In light of these effects, Ohio and Arkansas have placed moratoriums on injection in the affected areas.[235] The recently released abstract of a forthcoming United States Geological Survey study affirms the connection between disposal wells and earthquakes.[236]

As an alternative to underground injection, flowback and produced water is also sent to water treatment facilities, leading to eventual surface discharge. This presents a separate set of

[230] *See* NRDC et al., Petition for Rulemaking Pursuant to Section 6974(a) of the Resource Conservation and Recovery Act Concerning the Regulation of Wastes Associated with the Exploration, Development, or Production of Crude Oil or Natural Gas or Geothermal Energy (Sept. 8, 2010), attached to the Env. Protest of Cameron Apps. as Exhibit 75.
[231] Columbia University, Lamont-Doherty Earth Observatory, Ohio Quakes Probably Triggered by Waste Disposal Well, Say Seismologists (Jan. 6, 2012), available at http://www.ldeo.columbia.edu/news-events/seismologists-link-ohio-earthquakes-waste-disposal-wells, attached to the Env. Protest of Cameron Apps. as Exhibit 76.
[232] *Id.*
[233] *Id.*
[234] *Id.*; *see also* Alexis Flynn, Study Ties Fracking to Quakes in England, Wall Street Journal (Nov. 3, 2011), *available at* http://online.wsj.com/article/ SB10001424052970203804204577013771109580352.html, attached to the Env. Protest of Cameron Apps. as Exhibit 77.
[235] Lamont-Doherty Earth Observatory; Arkansas Oil and Gas Commission, Class II Commercial Disposal Well or Class II Disposal Well Moratorium (Aug. 2, 2011), *available at* http://www.aogc.state.ar.us/Hearing%20Orders/2011/July/180A-2-2011-07.pdf, attached to the Env. Protest of Cameron Apps. as Exhibit 78.
[236] Ellsworth, W. L., et al., Are Seismicity Rate Changes in the Midcontinent Natural or Manmade?, Seismological Society of America, (April 2012), available at http://www2.seismosoc.org/FMPro?-db=Abstract_Submission_12&-recid=224&-format=%2Fmeetings%2F2012%2Fabstracts%2Fsessionabstractdetail.html&-lay=MtgList&-find, attached to the Env. Protest of Cameron Apps. as Exhibit 79.

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environmental hazards, because these facilities (particularly publicly owned treatment works) are not designed to handle the nontraditional pollutants found in fracking wastes. For example:

> One serious problem with the proposed discharge (dilution) of fracture treatment wastewater via a municipal or privately owned treatment plant is the observed increases in trihalomethane (THM) concentrations in drinking water reported in the public media (Frazier and Murray, 2011), due to the presence of increased bromide concentrations. Bromide is more reactive than chloride in formation of trihalomethanes, and even though bromide concentrations are generally lower than chloride concentrations, the increased reactivity of bromide generates increased amounts of bromodichloromethane and dibromochloromethane (Chowdhury, et al., 2010). Continued violations of an 80microgram/L THM standard may ultimately require a drinking water treatment plant to convert from a standard and cost effective chlorination disinfection treatment to a more expensive chloramines process for water treatment. Although there are many factors affecting THM production in a specific water, simple (and cheap) dilution of fracture treatment water in a stream can result in a more expensive treatment for disinfection of drinking water. This transfer of costs to the public should not be permitted.[237]

Similarly, municipal treatment works typically to not treat for radioactivity, whereas produced water can have high levels of naturally occurring radioactive materials. In one examination of three samples of produced water, radioactivity (measured as gross alpha radiation) were found ranging from 18,000 pCi / L to 123,000 pCi/L, whereas the safe drinking water standard is 15 pCi/L.[238]

d) FERC Must Consider Alternatives That Would Limit The Impacts of Induced Production

Thus, it is clear that the proposed Project would have significant adverse environmental effects resulting from inducement of additional gas production. FERC must consider alternatives that would limit these impacts. These include:

- An alternative that would limit the volume of exports, either from the Cameron project individually or from proposed exports collectively.
- Whether limitations on the sources of exported gas – e.g., limiting export from particular plays, formations, or regions – would help to mitigate environmental and economic impacts

[237] Comment on NY RDSGEIS, *supra* n.193, attachment 3, Report of Glen Miller, at 13.
[238] *Id.* at 4.

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- Whether conditioning export on the presence of an adequate regulatory framework, including the fulfillment of the recommendations for safe production made by the DOE's Shale Gas Subcommittee, would better serve the public interest by limiting the harm caused by increases in poorly regulated unconventional gas production.

B. Environmental Impacts of Increased Domestic Gas Prices

1. Cameron's Proposed Exports Will Raise Domestic Gas Prices

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Just as all observers agree that exports will increase gas production, all observes agree that exports will increase domestic gas prices. Cameron's application for authorization to export non-free trade agreement countries asserts that Cameron's proposed project, in isolation, will cause domestic gas prices to increase by roughly $0.16 / MMBtu.[239] Of course, Cameron's proposed exports cannot be considered in isolation, as NEPA requires consideration of context and cumulative impacts. As we explain below, FERC must consider the cumulative impact of additional pending export proposals. Consideration of cumulative impacts is especially important with regard to price increases, because at least one available study concludes that prices increase more than linearly with export volumes. That is, going from 4 to 6 bcf/d in exports, for example, may impact domestic prices more than going from 0 to 2 bcf/d.[240]

The EIA and NERA export studies modeled likely price increases, and DOE endorsed these predictions in its conditional authorization of Cameron's non-free trade agreement export application.[241] DOE agrees that "LNG exports would result in higher U.S. natural gas prices."[242] DOE summarized the NERA study as concluding that "Price increases that would be observed after five more years of potentially growing exports could range from $0.22 to $1.11 (2010$/Mcf)."[243] EIA, in modeling the effects of 6 and 12 bcf/d of demand created by exports (*i.e.*, 5.4 and 10.8 bcf/d of exports together with 0.6 and 1.2 bcf/d of demand for gas consumed by the liquefaction process) predicted in its reference case that 2025 Henry Hub price increases

[239] DOE Cameron Conditional Auth. at 19 (summarizing Cameron's application as predicting price increases in excess of $0.16/Mcf in response to Cameron's project), *supra* n.84. *See also* EIA, *Frequently Asked Questions: What are Ccf, Mcf, Btu, and therms? How do I convert prices in Ccf and Mcf to Btus and therms?* (explaining that 1 Mcf = 1.023 MMbtu), *available at* http://www.eia.gov/tools/faqs/faq.cfm?id=45&t=8.
[240] Robert Brooks, *Using GPCM to Model LNG Exports from the US Gulf Coast*, 5 (2012), available at http://www.rbac.com/press/LNG%20Exports%20from%20the%20US.pdf, attached as Exhibit 7. Deloitte MarketPoint has similarly predicted that doubling exports will more than double price impacts thereof. Deloitte Study, *supra* n.82, at 3, 24. One reason prices may increase this way is that domestic gas consumers differ in their ability to reduce gas consumption. Robert Brooks, *Using GPCM to Model LNG Exports from the US Gulf Coast*, 7. As export volumes increase, increasing numbers of inflexible domestic consumers are forced to compete with exports, further driving up prices. When export volumes are lower, by contrast, price-sensitive domestic consumers can respond to price increases by reducing their consumption, freeing gas supplies for exports and limiting price impacts. The Brooks study predicts significantly higher price increases than the EIA study. *Id.* at 5, 7.
[241] *See, e.g.*, DOE Cameron Conditional Auth., *supra* n.84, at 129, 131.
[242] *Id.* at 43.
[243] *Id.* at 34.

IP2-74: The commenter contends that increased exports of LNG will have economic harms such as raising domestic gas prices, eliminating jobs in manufacturing and other domestic industries, and transferring wealth from working class families to large corporations. The U.S. Department of Energy (DOE) has exclusive jurisdiction over the export of natural gas as a commodity. DOE has delegated to the FERC the authority to approve or disapprove the construction and operation of particular facilities, the site at which such facilities would be located, and with respect to natural gas that involves the construction of new domestic facilities, the place of entry for imports or exit for exports. However, the Secretary of the DOE has not delegated to the FERC any authority to approve or disapprove the import or export of the commodity itself or to consider the type of issues raised by the commenter as part of the FERC's public interest determination. Thus, the issue of whether the export of LNG will cause economic harm is beyond FERC's purview. Our authorization alone will not enable the export of any additional volumes of LNG.

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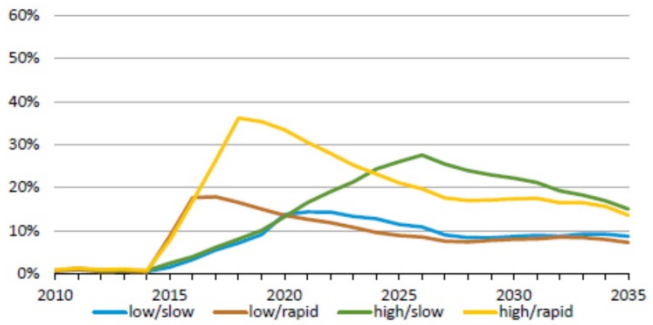
of 10 to 13 percent for the 6 bcf/d scenarios and 14 to 26 percent for 12 bcf/d.[244] EIA summarized its reference-case predictions in the following chart:

Figure 3: Natural Gas Wellhead Price Percentage Increases from the AEO 2011 Baseline under Four Export Scenarios[245]



The EIA and NERA price forecasts are, if anything, too low. These studies they failed to consider the level of exports currently proposed. They are also based on EIA's 2011 estimates of of total gas reserves, which EIA has since concluded were too high. The EIA Study was based on EIA's 2011 Annual Energy Outlook, which assumed total domestic reserves in excess of 2,500 tcf of natural gas, but EIA's subsequent 2013 Annual Energy Outlook reduced this estimate by nearly 7%, to 2,335 tcf.[246] Thus, compared to the scenarios discussed in these studies, present proposals would place greater demand on a smaller resource.

2. Increased Domestic Gas Prices Will Shift Electricity Generation from Gas to Coal, Increasing Air Pollution

The EIA Export Study predicts that exports, by causing natural gas prices to rise, will decrease natural gas powered electricity generation. Looking at this decrease in detail, EIA explains that "primarily" electricity producers will replace some gas fired generation with

[244] EIA Export Study, *supra* n.79, at table B1.
[245] *Id.* at 8.
[246] *See* Order Conditionally Granting Long-Term Multi-Contract Authorization To Export Liquefied Natural Gas By Vessel From The Freeport LNG Terminal On Quintana Island, Texas to Non-Free Trade Agreement Nations, DOE/FE Order 3357 at 118 (Nov. 15, 2013) (summarizing AEO 2011 and AEO 2013 data), attached as Exhibit 53.

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coal.[247] Specifically, EIA predicts that 72 percent of the decrease in gas-fired electricity production will be replaced by coal-fired production, with increased liquid fuel consumption, increased renewable generation, and decreases in total consumption (8, 9, and 11 percent, respectively) making up the remainder of the gap.[248]

The shift from gas- to coal-fired electricity generation will increase emissions of both traditional air pollutants and greenhouse gases. Gas-fired power plants generate less than a third of the nitrogen oxides and one percent of the sulfur oxides that coal-fired plants generate.[249] Thus, the EIA Export Study demonstrates that exports will harm the local environment by causing the opposite shift here.[250]

Coal-fired plants also release roughly twice the carbon dioxide combustion emissions as gas-fired plants, although, as discussed above, this combustion advantage is substantially offset by the greenhouse gases emitted during gas production. Nonetheless, the *EIA Export Study* concluded that under every scenario modeled, exports would produce a significant increase in domestic greenhouse gas emissions, as illustrated by the table below.

[247] EIA Export Study, *supra* n.79, at 6; *see also id.* at 17 ("[H]igher natural gas prices lead electric generators to burn more coal and less natural gas.").
[248] *Id.* at 18.
[249] EPA, Air Emissions, http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html (last visited Dec. 12, 2012), attached to the Env. Protest of Cameron Apps. as Exhibit 84.
[250] The NERA report did not examine shifts within the domestic power sector in detail, and the NERA study authors acknowledge that EIA uses a more sophisticated model that is better able to predict electricity sector responses to gas prices. The NERA report explains that "EIA's NEMS model has a detailed bottom-up representation of the electricity sector, while the electricity sector in the NERA model is a nested CES function with limited technologies. This means that NEMS allows for switching from natural gas-based generation to other technology types easily, while the possibility of switching out of natural gas is more limited and controlled in the NERA model." NERA Study, *supra* n.79 207 (appx. D, figs. 176-78 and accompanying text). Thus, although the NERA study predicts a smaller electricity sector response to gas prices than did the EIA, *id.*, FERC should rely on the more sophisticated EIA predictions.

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Table 3: Cumulative CO_2 Emissions from 2015 to 2035 With Various Export Scenarios[251]

Case	no added exports	low/slow	low/rapid	high/slow	high/rapid
Reference					
Cumulative carbon dioxide emissions	125,056	125,699	125,707	126,038	126,283
Change from baseline		643	651	982	1,227
Percentage change from baseline		0.5%	0.5%	0.8%	1.0%
High Shale EUR					
Cumulative carbon dioxide emissions	124,230	124,888	124,883	125,531	125,817
Change from baseline		658	653	1,301	1,587
Percentage change from baseline		0.5%	0.5%	1.0%	1.3%
Low Shale EUR					
Cumulative carbon dioxide emissions	125,162	125,606	125,556	125,497	125,670
Change from baseline		444	394	335	508
Percentage change from baseline		0.4%	0.3%	0.3%	0.4%
High Economic Growth					
Cumulative carbon dioxide emissions	131,675	131,862	132,016	131,957	132,095
Change from baseline		187	341	282	420
Percentage change from baseline		0.1%	0.3%	0.2%	0.3%

Source: U.S. Energy Information Administration, National Energy Modeling System, with emissions related to natural gas assumed to be consumed in the liquefaction process included.

As explained above, a substantial body of recent scientific evidence demonstrates that past estimates of emissions from natural gas production are too low. Thus, while commenters have no reason to doubt EIA's assessment of the extent to which LNG exports would cause US electricity producers to switch from gas to coal, FERC must take a hard look at whether EIA has overstated the greenhouse gas emissions that would result from this shift. The need for such additional analysis, however, merely underscores the importance of searching NEPA review.

C. Environmental Impacts of End User Consumption of LNG

IP2-75

The draft EIS's discussion of effects relating to end users' consumption of LNG is presented solely in discussion of the no action alternative. This discussion asserts that end users will use LNG in place of other fossil fuels, rather than conservation or renewables, and concludes that this substitution will provide environmental benefits. In discussing the no-action alternative, after the flawed discussion of other US LNG export proposals described in the preceding section, the draft raises an unsupported specter of adverse environmental consequences that could flow from importing countries' responses to the no-action alternative. Then, after two full pages of this discussion, the draft EIS states that "it is speculative and beyond the scope of this analysis to predict what action might be taken by policymakers or end

IP2-75: See response to comment IP2-11.

[251] From the *EIA Export Study*, *supra* n.79 at 19.

users in response to the No-Action Alternative." DEIS 3-4. This discussion is deficient in at least three regards. FERC must consider how either granting or denying the application will likely impact receiving markets. FERC's conclusion that the no-action alternative would likely lead to increased fossil fuel use in these markets is unsupported and contrary to the available evidence. Finally, even if LNG substitutes for other fossil fuels in these markets, this substitution is unlikely to provide significant, if any, climate benefit, because of the greenhouse gas emissions associated with natural gas production and the LNG export process.

1. NEPA Requires Consideration of The Environmental Effects of End Use of LNG Exports

IP2-75 (con't)

As a threshold matter, FERC cannot exclude these possible actions from the scope of analysis. As explained in part III.A above, NEPA requires consideration of indirect impacts, which include the reasonably foreseeable effects that are caused by an action but that are removed in time or distance. 40 C.F.R. § 1508.8(b). FERC offers no basis for its conclusion that end user responses to exports are "speculative," nor does FERC offer any other justification for excluding these responses from the scope of the EIS. It is self-evident that LNG exported from the US will be consumed. The effects of this consumption, and thus of exports, must be measured against a baseline of what would happen if exports did not occur, *e.g.*, the no-action alternative. NEPA requires "[r]easonable forecasting and speculation." *Scientists' Inst. for Pub. Info., Inc. v. Atomic Energy Comm'n*, 481 F.2d 1079, 1092 (D.C. Cir. 1973). Thus, FERC must attempt to assess the extent to which LNG exports will cause an increase in energy consumption (*i.e.*, a decrease in conservation), substitute one supply of natural gas for another, and/or displace alternative energy sources such as other fossil fuels or renewables.

2. FERC's Assumption That End Users Will Substitute LNG for Other Fossil Fuels Is Unsupported By Any Evidence and Contrary to Available Evidence

FERC's discussion of actions end users may take in response to the no-action alternative (and, by implicit converse, the actions of end users in response to project approval) emphasizes potential negative environmental impacts of the no-action alternative. FERC states that "if the No-Action Alternative is selected, it could result in a greater use of other fossil fuels and a potentially substantial increase of environmental impacts as compared to the use of natural gas" and that "[n]atural gas is cleaner burning than other fossil fuels and can also reliably serve as a backup fuel to renewable energy facilities, which often provide power intermittently." 3-2, 3-3. On the other hand, the draft EIS expressly yet inexplicably omits discussion of the extent to which these end users might conserve energy in response to the no-action alternative, and downplays the potential role of renewable energy. For example, the draft EIS contends that the development of wind power is likely to be "slow paced . . . due to the high cost of construction" and that "wind power cannot be used for constant and reliable energy production because of the variability in winds." DEIS 3-3. The draft EIS concludes that:

> it is possible that without the proposed Project, the energy needs may be met by alternative energy sources, likely resulting in impacts on the environment. Alternative energy forms such as coal and oil are available and could be used to meet increased demands for energy; however, natural gas is a much cleaner-burning fuel. These other fossil fuels emit greater amounts of particulate matter, sulfur dioxide (SO2), carbon monoxide (CO), carbon dioxide (CO_2), hydrocarbons, and non-criteria pollutants. The use of nuclear energy as replacement of other fuel sources also carries undesirable consequences, such as negative public perception of the safety of electric generation through nuclear plants and the disposal of waste products created. Renewable energies, such as solar, hydroelectric, and wind are not always reliable or available in sufficient quantities to support most market requirements and would not necessarily be an appropriate substitute for natural gas in all applications. Therefore, we have dismissed this alternative as a reasonable alternative to meet the Project objectives.

IP2-75 (con't)

DEIS 3-4. FERC's conclusions regarding the availability and suitability of renewables are unsupported and are contrary to the available evidence. Indeed, the only sources FERC cites in its discussion of renewables, portions of the International Energy Agency's 2012 World Energy Outlook, predict, as FERC acknowledges, a "rapid increase" in renewables, with renewables "becom[ing] the world's second-largest source of power generation by 2015, and are expected to close in on coal as the primary source by 2035." DEIS 3-3.[252] FERC cautions that the IEA prediction rests on continuing subsidies for renewables, but FERC offers no basis for doubting the IEA's predictions regarding the level of subsidies that various governments will provide. Other sources of information similarly predict massive increases in renewables and decreases in use of coal and other fossil fuels. For example, a June 2013 report by Bernstein Research predicts that in China, "wind and solar will expand from roughly 61GW and 8.3GW of installed capacity currently to 250GW and 200GW, respectively, by the end of the decade. In combination, wind and solar will account for roughly half of incremental power generation over the rest of the decade."[253] Forecasts for India are similar, with HSBC concluding that wind power is already at "parity," or cost-competitiveness, with new coal fired generation[254] and HSBC and KPMG predicting that photovoltaic power will reach parity between 2016 and

[252] FERC cites the Executive Summary to IEA's 2012 World Energy Outlook and a corresponding press release. The more recent 2013 World Energy Outlook provides similarly bullish forecasts for renewables. *Available at* http://www.worldenergyoutlook.org/media/weowebsite/2013/WEO2013_Ch06_Renewables.pdf and attached as Exhibit 54.

[253] Bernstein Research, *Asian Coal & Power: Less, Less, Less... The Beginning of the End of Coal*, 37 (June 2013), attached as Exhibit 55.

[254] Sophie Vorrath, *Wind at parity with new coal in India, solar to join by 2018: HSBC*, RenewEconomy (Jul. 11, 2013), available at http://reneweconomy.com.au/2013/wind-at-parity-with-new-coal-in-india-solar-to-join-by-2018-hsbc-14836 and attached as Exhibit 56.

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2018.[255] In Europe, renewables constitute 55% of new electric generating capacity installed since 2000, and 72% of new capacity installed in 2013, with wind power the single most installed power source in 2013.[256] Notably, China, India, and the European Union have been identified as some of the most likely markets for US LNG exports. Thus, there is no basis for FERC's assertion that for likely end users of exported US LNG, installation of wind or any other renewables is likely to be "slow paced" or present higher costs than fossil fuel powered electricity generation. Nor has FERC identified any evidence indicating that, at levels of installation that would exist absent approval of proposed US LNG exports, integration of marginal additional renewable electricity into the grids in these markets would present technical or reliability problems. Thus, there is no basis for FERC's implication that the no-action alternative would lead to relative increases in coal and other non-gas fossil fuel consumption in potential end use markets, causing net increases in emissions of "particulate matter, sulfur dioxide (SO2), carbon monoxide (CO), carbon dioxide (CO_2), hydrocarbons, and non-criteria pollutants" in these locales.

IP2-75 (con't)

While the evidence in the record does not support FERC's assumption that LNG exports would extensively displace other fossil fuels in end use markets, there is evidence indicating that LNG exports will displace renewables and conservation.[257] The International Energy Agency's *Golden Rules for a Golden Age of Gas* report predicts that international trade in LNG and other measures to increase global availability of natural gas will lead many countries to use natural gas instead of wind, solar, or other renewables, displacing these more environmentally beneficial energy sources instead of displacing other fossil fuels, and that these countries may also increase their overall energy consumption beyond the level that would occur with exports.[258]

FERC must recognize that electric sector competition between renewables and gas in the US is fundamentally different than competition between renewables and LNG in foreign markets. This is because liquefying, transporting, and regasifying gas for LNG exports is costly, making domestic gas much more price competitive than imported LNG. Thus, while EIA predicts that the US electricity sector's primary response to exports will be a switch to increased use of domestic coal rather than a switch to increased use of renewables and conservation, this prediction does not necessarily apply to markets such as China that heavily rely on imports for both coal and gas, making both relatively much more expensive than renewables.

[255] *Id.*, KPMG, *The Rising Sun: Grid parity gets closer*, (Sept. 2012), available at http://indiasmartgrid.org/en/knowledge-center/Reports/Rising-Sun-2%20%20KPMG%20Report%202012.pdf and attached as Exhibit 57.
[256] EWEA, *Wind in power: 2013 European statistics* (Feb. 2014), available at http://www.ewea.org/fileadmin/files/library/publications/statistics/EWEA_Annual_Statistics_2013.pdf and attached as Exhibit 58.
[257] Or, to view the conservation aspect differently, evidence indicates that LNG exports will cause end use markets to increase overall energy consumption.
[258] International Energy Agency, *Golden Rules for a Golden Age of Gas*, Ch. 2 p. 91 (2012), available at http://www.iea.org/publications/freepublications/publication/WEO2012_GoldenRulesReport.pdf, and attached to the Motion to Intervene, Protest, and Comments of Sierra Club and Gulf Restoration Network in Docket Nos. CP13-25 & 13-27 ("Env. Protest of Cameron Apps.") as Exhibit 85.

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Finally, we note that the draft EIS's discussion of end users' responses to the no-action alternative, coupled with the draft EIS's assertion that these responses are outside the scope of the analysis, makes it impossible to discern the reasoning underlying FERC's conclusion. The draft EIS states that the no-action alternative is being rejected *because of* the adverse effects of increased coal and non-gas fossil fuel use in end use markets. DEIS 3-4 (summarizing these effects and stating that "[t]herefore, we have dismissed this alternative as a reasonable alternative to meet the Project objectives"). If the only facts supporting FERC's conclusion are facts that FERC states are outside the scope of FERC's analysis, FERC has failed to articulate a "rational connection between the facts found and the choice made." *See Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (quoting *Burlington Truck Lines v. U.S.*, 371 U.S. 156, 168 (1962)).

3. FERC Cannot Assume That for End Users, LNG Has Lower Greenhouse Gas Emissions than Coal

Even where importing countries do substitute natural gas for coal or fuel oil, this substitution is likely to cause little, if any, reduction in global greenhouse gas emissions. As noted above, recent research indicates that natural gas production has significant greenhouse gas emissions, which drastically narrow gas's *combustion* climate advantage over coal. Any remaining climate advantage is further narrowed, if not completely overcome, by the additional greenhouse gas emissions inherent in the LNG export process. Liquefying natural gas is an energy intensive process. Additional energy is then consumed in the transportation of the LNG, with attendant greenhouse gas emissions. Finally, the LNG must be regasified at the import terminal, often through the use of heat generated by the burning of yet more natural gas. Paulina Jaramillo *et al.* have estimated that these operations drastically increase the lifecycle greenhouse gas emissions of LNG relative to traditionally delivered natural gas, adding between 13.85 and 51.7 pounds of CO_2e per MMBtu on top of the emissions inherent in gas production and the 120 pounds of CO_2e per MMBtu emitted by gas combustion.[259] Jaramillo's more narrow estimates

[259] Paulina Jaramillo, W. Michael Griffin, H. Scott Matthews, *Comparative Life-Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation*, 41 Environ. Sci. Technol. 6,290 (2007) ("Jaramillo 2007"), *available at* http://www.ce.cmu.edu/~gdrg/readings/2007/09/13/Jaramillo_ComparativeLCACoalNG.pdf, attached to the Env. Protest of Cameron Apps. as Exhibit 87. The cited estimate for the greenhouse gas emissions of liquefaction, transport, and regasification are derived by adding figures for these phases recorded in Figure 6S, p. 9 the supporting information for this article, which is available at http://pubs.acs.org/doi/suppl/10.1021/es063031o/suppl_file/es063031osi20070516_042542.pdf, and is attached to the Env. Protest of Cameron Apps. as Exhibit 88 ("Jaramillo Supporting Information"). An earlier, related report with some additional information is Paulina Jaramillo, W. Michael Griffin, H. Scott Matthews, *Comparative Life Cycle Carbon Emissions of LNG Versus Coal and Gas for Electricity Generation* (2005), available at http://www.ce.cmu.edu/~gdrg/readings/2005/10/12/Jaramillo_LifeCycleCarbonEmissionsFromLNG.pdf, and attached to the Env. Protest of Cameron Apps. as Exhibit 89. A more recent study reached a similar conclusion, suggesting that U.S. LNG may be about 15% more carbon-intensive than ordinary gas. Testimony of James Bradbury, World Resources Institute, Before the U.S. House of Representatives, Energy and Commerce Subcommittee on Energy and Power (May 7, 2013) at 15 (drawing on data from recent life cycle assessments),

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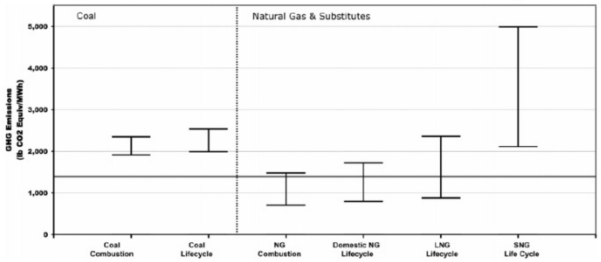
IP2-75 (con't)

put CO_2e the emissions attributable to LNG at 19% to 23% higher than non-liquefied gas.[260] Using what are now out-of-date estimates of traditional gas's lifecycle emissions, Jaramillo concluded LNG's lifecycle greenhouse gas emissions can bring LNG into parity with coal:

Figure 4: Life-Cycle Emissions of LNG, Natural Gas, and Coal in Electricity Generation[261]



Jaramillo's analysis understates LNG's lifecycle greenhouse gas emissions for at least two reasons. First, this analysis does not reflect recent studies that have raised estimates for emissions associated with natural gas production. Jaramillo used pre-shale-gas-boom estimates of gas's non-combustion, non-LNG-specific lifecycle emissions between 15.3 to 20.1 pounds CO_2e/ MMBtu.[262] As discussed above, the 2011 Worldwatch Report estimated this figure at 44 pounds CO_2e /MMBtu, and even that figure underestimates the likely volume of methane released and the global warming impact of that methane. Second, Jaramillo estimated lower transportation-related emissions than would result from US LNG exports. Jaramillo's study was concerned with the effects of imports of LNG to the US. As such, Jaramillo's estimates of transportation emissions assumed that the majority of imported LNG would come from Trinidad and Tobago, which are relatively nearby sources.[263] US LNG exports will almost exclusively go to more distant sources in Asia or Europe, entailing greater transportation emissions.

Whether by using Jaramillo's analysis as a template or by using some other methodology, FERC must take a hard look at emissions from the entire lifecycle of exported LNG. As we have explained, even if LNG exports displace coal in end use markets (an assumption that is uncertain at best), this is unlikely to reduce (and may increase) the lifecycle greenhouse gas emissions of those countries' energy use. Meanwhile, EIA modeling shows that exports are likely to increase

available at http://docs.house.gov/meetings/IF/IF03/20130507/100793/HHRG-113-IF03-Wstate-BradburyJ-20130507.pdf and attached as Exhibit 59.

[260] *See, e.g.*, Jaramillo Supporting Info, *supra* n.259, at 9.

[261] From Jaramillo 2007, *supra* n.259, at 6,295. "SNG," in the figure, refers to synthetic natural gas made from coal.

[262] Jaramillo Supporting Information, *supra* n.259, at 8.

[263] Jaramillo 2007, *supra* n.259, at 6,291.

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US greenhouse gas emissions. Thus, LNG exports may cause a net increase in global greenhouse gas emissions.

VIII. CUMULATIVE EFFECTS

FERC's cumulative impacts analysis improperly excludes cumulative effects from other proposed export terminals. FERC explains that "Generally, we believe that cumulative impacts could result only from the construction of other projects in the same vicinity and impacting the same resource areas as the proposed facilities." 4-188. As explained in part VII, the proposed project will have severe indirect effects on gas production throughout Texas and Louisiana (if not the nation as a whole), effects on air pollution from power plants throughout the United States, and may increase greenhouse gas emissions from end use markets. Accordingly, all proposed US export projects will impact the same resources, through the same effects, as the Cameron project. Consideration of these other proposals in a cumulative effects analysis is especially important because multiple projects may have synergistic effects on, for example, gas price increases, as explained above.

IP2-76

The cumulative impact analysis must therefore consider the total number of proposed export projects. Applications pending or approved by DOE amount to 35.58 bcf/d of exports.[264] For perspective, 35.58 bcf/d is almost 43% of current domestic gas production.[265] Multiple courts have held that agencies must consider the cumulative impacts of proposed projects together with other pending proposals. *See NRDC v. Callaway*, 524 F.2d 79, 87 (2d Cir. 1975) (holding that the cumulative impacts analysis for a proposed dredge spoil dumping project should have included another dredge spoil project that was still "subject to approval and funding by Congress"); *People ex rel. Van de Kamp v. Marsh*, 687 F. Supp. 495, 500 (N.D. Cal. 1988) (stating that, in cumulative impacts analysis, "[t]he agency must consider other proposals" and even "contemplated actions that are not yet formalized proposals"); *see also Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976) (holding, in a related context, that "when several *proposals* for . . . related actions that will have cumulative or synergistic environmental impact . . . are pending concurrently before an agency, their environmental consequences must be considered together") (emphasis added).

At a minimum, insofar as FERC maintains its implicit (and unlawful) definition of the purpose and need of the project as to provide for export of all gas for which project proponents have entered contracts,[266] FERC must consider the cumulative effects of all such exports. According to FERC's system alternatives analysis, such contracts have been entered for 10.32 bcf/d of gas in the Gulf Coast. In addition, at least 1.27 bcf/d of additional export capacity has been contracted for from Dominion's Cove Point and Southern Company's Elba Island

[264] US DOE, *Applications Received by DOE/FE to Export Domestically Produced LNG from the Lower-48 States* (as of Jan. 22, 2014), *supra* n.4.
[265] EIA, Monthly Natural Gas Gross Production Report (January 7, 2014), available at http://www.eia.gov/oil_gas/natural_gas/data_publications/eia914/eia914.html and attached as Exhibit 60. This report states that, for the month of October 2013, gross U.S. withdrawals (not limited to the lower 48) were 83.03 Bcf/d.
[266] See the discussion of system alternatives above.

IP2-76: See response to IP2-73.

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facilities.[267] Commenters further note that EIA's most recent Annual Energy Outlook forecasts 9.6 bcf/d of US LNG exports by 2029.[268]

IX. CONCLUSION

IP2-77

In conclusion, FERC's draft EIS fails to meet NEPA's requirements for the reasons described above. As a result, FERC must complete, at minimum, a new draft EIS and a new Biological Assessment for the Cameron LNG, LLC's and Cameron Interstate Pipeline, LLC's Liquefaction Project. Failing to do so will invalidate any federal agency decision to permit the proposed Project. Among other things, the new draft EIS must incorporate complete, consistent and up to date data to take a hard look at all available alternatives as well as direct, indirect, and cumulative impacts. Similarly, the new Biological Assessment must consider the best scientific and commercial data available.

Prepared In Substantial Part by:

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[267] Peter Bacqué, *Dominion Resources' Cove Point LNG export project: Right place, right time*, TimesDispatch.com (Jun. 10, 2013) ("Dominion Resources has contracts in hand with two large Asian companies to use all of Cove Point's 4.6 million tons of planned annual output."), *available at* http://www.timesdispatch.com/business/investment/dominion-resources-cove-point-lng-export-project-right-place-right/article_fef7232c-5e7a-56e5-8cd5-850e9119c05c.html, attached as Exhibit 61; Siana Mishkov, *Shell share price: Shell, Kinder Morgan start $500m expansion of US LNG project*, Invezz.com (Dec. 20, 2013) ("Shell . . . will subscribe to 100 percent of the plant's liquefaction capacity."), available at http://invezz.com/news/equities/7753-shell-share-price-shell-kinder-morgan-start-dollar-500m-expansion-of-us-lng-project, attached as Exhibit 62. The Dominion Cove Point and Southern Elba Island facilities are proposed for capacities of 0.77 and 0.5 bcf/d, respectively. US DOE, *Applications Received by DOE/FE to Export Domestically Produced LNG from the Lower-48 States (as of Feb. 11, 2014),* supra n.4.

[268] *See, e.g.* EIA, Annual Energy Outlook 2014 Early Release Overview, *supra* n.10, at 2.

IP2-77: We disagree and believe that the EIS is consistent with NEPA and meets CEQ requirements. As a result of our thorough analysis in the draft EIS, the FWS concurred with our determinations regarding threatened and endangered species and has implicitly accepted the EIS as the BA. As described above, we have taken a hard look at alternatives, and once it becomes clear that the alternative does not provide a significant environmental advantage, it is eliminated from further consideration. This reduces the length of our environmental documents, while coming to a reasoned conclusion. The final EIS incorporates revisions to the wetlands determinations of the COE that were not available when the draft EIS was being finalized and provides complete, consistent, and up-to-date data. We note that we had disclosed the impacts on wetlands in our draft, and that the major change to the wetlands section is the acreage of mitigation that is now being proposed, which would further offset environmental impacts than what was discussed in the draft EIS. Therefore, we conclude that those revisions do not substantively alter our assessments of impacts.

IP2-78: NOTE: The comment letter from the Sierra Club and the Tulane Environmental Law Clinic had 62 attachments that are available for review on the FERC website, www.ferc.gov, Docket No. CP13-25-000, Accession No. 2014030-5142.

LG1 – Cameron Parish Police Jury

KIRK QUINN
PRESIDENT

CURTIS FOUNTAIN
VICE PRESIDENT

RYAN BOURRIAQUE
ADMINISTRATOR

DARRELL WILLIAMS
SECRETARY-TREASURER

POLICE JURY

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DISTRICT 5
KIRK BURLEIGH

DISTRICT 6
JOE DUPONT

DISTRICT 7
DARRYL FARQUE

February 14, 2014

To: Federal Energy Regulatory Commission

RE: Cameron LNG Liquefaction Project

To whom it may concern:

As you may know, Southwest Louisiana has recently experienced a fortunate boom in energy resource production and will continue this occurrence into the near future with expansion projects located throughout Cameron and Calcasieu Parish. Our local workforce has been adequately prepared to assist the development of these businesses.

One such project expansion to take place is the Cameron LNG Liquefaction Project in the community of Hackberry in Cameron Parish. We have been afforded the opportunity to represent this area as the Police Jury Representatives for the Hackberry community. LG1-1

Therefore, we are formally requesting your acceptance of our comments as it relates to Cameron LNG's FERC process. The community of Hackberry and our Parish stand to receive a great deal of economic growth and stability from this project. Cameron LNG understands the value that being a good corporate neighbor bears for our area and is environmentally conscious as well.

Thank you for your time and support of this initiative.

Sincerely,

Curtis Fountain, District 1
CAMERON PARISH POLICE JURY

Anthony "Dino" Hicks, District 2
CAMERON PARISH POLICE JURY

THE HEART OF SPORTMANS'S PARADISE

LG1-1: Comment acknowledged.

FERC COMMENT MEETING

CAMERON LIQUEFACTION PROJECT

CAMERON LNG, LLC - DOCKET NO. CP13-25-000

CAMERON INTERSTATE PIPELINE, LLC - DOCKET NO. CP13-27-000

FEBRUARY 13, 2013
7:02 P.M.

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Cardno Entrix
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Seattle, WA 98104

REPORTED BY: Belynda Champagne, CCR-RPR

P R O C E E D I N G S:

MR. LAFFOON: Good evening. My name is Danny Laffoon. I'm an environmental project manager with Federal Energy Regulatory Commission. At the table with me tonight, is Bill Staeger with Entrix. Entrix was the third-party contractor that helped us in preparation of the Environmental Impact Statement for Cameron LNG and Cameron Interstate Pipelines proposed Liquefaction Project. The U.S. Army Corps of Engineers, U.S. Coast Guard, U.S. Department of Transportation, and U.S. Department of Energy cooperated in the preparation of this document and I would like to thank them for their continued efforts in that endeavor.

Jennifer Flathman is at the sign-in table out of the room. She's also with Entrix. Let the record show that the Sulphur comment meeting began at 7:02 p.m. on February 13th, 2014. On January 10th, 2014, we mailed out about 300 CD copies of the draft Environmental Impact Statement for EIS to those individuals on our environmental mailing list which includes Government agencies, local representatives,

local libraries and newspapers, landowners, and other stakeholders. If you did not receive a copy of the draft Environmental Impact Statement, then you are not on our environmental mailing list. Please provide us with your name and address just outside the room and we'll make sure to mail you a copy of the Environmental Impact Statement.

This is a project being proposed by Cameron Interstate Pipeline and Cameron LNG, not by the Federal Regulatory Commission. Cameron Interstate Pipeline and Cameron LNG filed applications under Section 7 and 3 of the Natural Gas Act to construct facilities, including three separate systems that liquefy natural gas, also known as trains; one LNG storage tank; 21 miles of 42-inch diameter pipeline; and one new 56,820-horsepower compressor station in Cameron, Beauregard, and Calcasieu Parishes, Louisiana.

The purpose of this meeting is for me at FERC to get your comments on the draft Environmental Impact Statement. We are in the mist of a 45-day comment period on the draft Environmental Impact Statement. The comment

period ends on March 3rd, 2014, which is in just a little bit over two weeks. All comments that we receive within the comment period will be addressed in the final Environmental Impact Statement. We have a speaker sign-up sheet just outside of the room and I will call up individuals to speak one at time. If you didn't sign up just outside of the room but you decide later that you want to speak, there will be an opportunity for that as well.

We take your environmental comments very seriously. We give equal weight to your comments whether you decide to speak tonight, mail your comments in or submit them electronically through the FERC web site as we revise the draft Environmental Impact Statement into a final.

Specific instructions on how to file a written or electronic comments are contained in the first couple of pages of the draft Environmental Impact Statement. If you have any questions about that, you can ask me after the meeting and I'll be glad to help you as best I can. The more specific your comments we receive, the better we can address your

concerns. General comments such as "I don't like the project" are not as helpful as specific comments.

Our job over the next couple of months is to revise our environmental analysis based on the type of comments we receive. If you received a copy of the draft Environmental Impact Statement, you will automatically receive a copy of the final. You don't need to sign up on another mailing list. Once we finish the final EIS and mail it out, we will forward that on to the presidentially appointed commissioners. The commissioners will consider our environmental analysis along with non-environmental issues to determine whether to authorize the project.

Thus, the EIS itself is just one tool in the process. It is not a decision making document. The preliminary statements are over and now it's time for me to turn the meeting over to all of you. Like I said, this is your chance to make comments on the draft EIS. If you have questions about the environmental review process, I will answer those. If you have very specific questions about regarding a

negotiation or an easement situation on your property, there are representatives of Cameron here tonight that can discuss those issues with you after the meeting. With that, we have how many people signed up?

MR. STAEGER: We have nine people and one broken microphone.

MR. LAFFOON: That's all right. We'll switch off here in a minute. We have nine people signed up to speak. After that -- after they have had their opportunity, I will ask if there are any additional comments regarding environmental issues of the Cameron Liquefaction Project.

You will notice that this meeting is being transcribed by a court reporting service to make sure that all the information gathered here tonight is on public record. To ensure your comments are addressed in the final EIS, please come to the podium, speak into the microphone, which will be this one, and state and spell your name, also give any affiliation that you may be with and define any acronyms you may use and that way your comments will be accurate for the record.

Who is the first speaker?

MR. STAEGER: The first speaker is Stephanie East. That's actually working now?

PM1-1 MS. EAST: Hello. My name is Stephanie East, S-t-e-p-h-a-n-i-e E-a-s-t. I'm a resident but I'm also a 20-year plus school teacher in the Parish. I would like to speak on how I feel they have impacted our community. My few words could never do justice to the support that Cameron LNG has provided our community since its inception in our parish. I'm a lifelong resident and can honestly say that I never experienced this type of commitment from any other corporate entity.

Just to briefly touch on a few examples, since it started in Cameron Parish, Cameron LNG has sponsored a yearly community Christmas event and a splash day to launch summer break that provides opportunities for the young and old alike to come together, share a meal, participate in activities and reconnect with those we don't see regularly. Also, every time our school has championship athletes, they honor them with state ring ceremonies. They

PM1-1: Comment acknowledged.

PM1-1 (con't)

generously sponsor each event providing the banquet to honor these students, their parents, their coaches, and all others who contributed to their successes.

Most importantly, after two devastating storms, I can honestly say that Cameron LNG has been and continues to be a good corporate neighbor helping with hurricane recovery, initiating and organizing community events, and supporting local organizations, especially those that benefit our youth. Every event they sponsor has aided in the renewal and safeguarding of our community spirit. My children as well as my grandchildren not only are have benefited firsthand from the goodwill of Cameron LNG, but they have learned how one company can contribute so much to the growth and success of our small community.

So, to be frank, what type of impact has Cameron LNG had on our community, nothing but positive. Thank you.

MR. STAEGER: Can you all hear the speaker in the back? Thank you. The next speaker will be Kathy Helmer.

MS. HELMER: My name is Kathy Helmer,

K-a-t-h-y, Helmer, H-e-l-m-e-r. I'm a resident of Hackberry, also a 26-year employee of Cameron Parish School Board. I've lived in the tiny town of Hackberry my entire life. I'm a fourth generation islander. Living in such close proximity to this plant, I truly have witnessed Cameron LNG's pledge to the protection of the environment. I've had the pleasure of touring the facility as it's coming online and I was quite impressed with the many measures taken to ensure the safety of the delicate ecosystem surrounding the plant now, the ship channel adjacent to the plant and equally important the residents of our community.

PM1-2

One such example of this commitment to our area and preserving our delicate ecosystem is their Annual Energized by the Environment Art Contest. It's open to students in both Calcasieu and Cameron Parishes. It allows students to explore the environment and make them more aware of the steward they need to be as well. I know I speak for many in my community in that we trust that Cameron LNG will comply completely and also exceed FERC's

PM1-2: Comment acknowledged.

PM1-2 (con't)

requirements. It's so exciting to foresee the future in our little town. Cameron LNG's promise to employ locally with other -- giving local islanders such as myself and others the employment opportunity to work at home. They currently employ several of my fellow residents and have proven not only to Hackberry but to all of Cameron Parish and Southwest Louisiana that they are truly great neighbors. They don't just talk the talk. They've walked the walk again and again and again. Thank you.

MR. STAEGER: Next speaker will be Bill Hankins.

PM1-3

MR. HANKINS: Good evening. I'm Bill Hankins, B-i-l-l H-a-n-k-i-n-s. I'm with the West Calcasieu Cameron Hospital Foundation as well as I'm currently the vice-president for business development. I'm former CEO of the hospital. I'm here tonight to share with you how Cameron LNG and Sempra have impacted West Calcasieu Cameron Hospital Foundation through generous donations of tens of thousands of dollars for numerous health related projects as well as how they have impacted the communities of Cameron and Calcasieu Parishes

PM1-3: Comment acknowledged.

PM1-3 (con't)

and how the Cameron LNG expansion will be beneficial to all of us.

Since 2007, as an involved interest corporate neighbor, Sempra and Cameron LNG have granted funds to the West Calcasieu Cameron Hospital Foundation to be used by the hospital for community outreach programs and services which promote the health and well-being of the members in the community. These programs have included safe sitters for 12- and 14-year-olds, disaster training for adults, fire safety training for school age children, first aid, CPR, et cetera.

Part of a 20,000-dollar grant went towards the purchase of generators for the hospitals which allowed the hospital to shelter in place by having all the electricity that we need to run the hospital, which is outstanding, especially with the nervousness we've had with the ice the last couple of weeks. Sempra LNG provides funds for temporary housing to the Hackberry Rural Health Clinics after both Hurricane Rita and Hurricane Ike. They were flooded.

The first time I was not the CEO of the

PM1-3 (con't)

hospital and they helped us when I came. We had "Ike" and they actually called us to see what if could do if they could do the same thing to provide temporary housing for our clinic so we can take care of the patients and they could have access to medical care.

After Hurricane Rita, they made provisions through a grant to provide tetanus shots for residents of Cameron Parish during the time of the clean-up and removal of the debris. They provided annual flu clinics for Cameron Parish residents at the Hackberry Rural Health Clinic, additional funds were granted to Genesis Therapeutic Riding Center, a part of our physical therapy department to expand our vision and therapy program to work with special needs and autistic children. Free community health screenings have also been conducted handling lipid profiles, glucose, and PSA and this money has been granted to us over the years.

Let me speak for a few moments about the impact and expansion of the Cameron LNG facility on Cameron and Calcasieu Parishes. Their proposed 6.7 million-dollar expansion for the purpose of its supporting domestically produced

PM1-3 (con't)

LNG will grow our economy by creating new jobs and providing support to small businesses in our communities.

We have commended them as well for their environmental efforts with this project. I reviewed the plans to mitigate the wetlands, to protect threatened and endangered species, to address any issues regarding air quality and noise, and preserve the fish habitat and I believe they have taken all the necessary precautions to protect and preserve both environment and wildlife in the area working to minimize any potential negative impact.

I'm confident that Cameron LNG will continue to be involved as a corporate neighbor. Receiving permission to initiate this expansion, will greatly increase our footprint in our two parishes and enable them to continue having a positive impact on our schools, hospitals, work force, our cities, communities and the environment. I've never heard of a negative comment coming from anybody with regard to the environment, their employees, and the way they act as a corporate citizen. Thank you for this opportunity to speak on their behalf.

MR. STAEGER: Thanks for your comments. The next speaker will be Kirk Quinn.

PM1-4 MR. QUINN: Good afternoon. I'm Kirk, K-i-r-k Q-u-i-n-n. I'm with the Cameron Parish Police Jury, president. I speak on behalf of the jury representing Cameron Parish. Ever since LNG has been here, it's been great and with this new expansion coming in, it's going to employ a good amount of permanent jobs and since the storms, they have really helped everyone. So, all I'm going to say is I would like to see them come in. It's very critical that they come at this time right now. Thank you.

PM1-4: Comment acknowledged.

MR. STAEGER: Thank you. The next speaker will be Kelly Cloud.

PM1-5 MR. CLOUD: Thank you. Kelly Cloud, K-e-l-l-y C-l-o-u-d. I'm with Cameron Parish Water Works District 2 that serves the Hackberry area. First, on behalf of Cameron Parish Water Works District 2, I would like to thank you for the opportunity to voice our support for the expansion project at the Cameron LNG facility. Our community, though small by numbers, is huge in that we live by

PM1-5: Comment acknowledged.

L-149

PM1-5
(con't)

and expect the most of what we are capable of doing for ourselves with our children being the center point of what we strive for.

Being that the base of Cameron Parish's economy for many years has been directly affected by the highs and lows of the oil industry, the location of Cameron LNG facility near our community brought about a renewed confidence to our residents that we still have a viable part in the big picture of things by the way of our location and an experienced work force.

With this having been said, we cannot at any time forego what has been brought to our community by Cameron LNG's presence. In the interest of our youth, Cameron LNG has far surpassed what we could have ever expected from a company that was not owned on a local level. The staff and personnel have set a new standard of community interest and participation while at the same time asking for nothing in return.

With the current facility, the proposed expansion creates additional employment opportunities by the way of long-term construction and on-line operations, which again

L-150

PM1-5 (con't)

provides for the community to prosper by way of its own means through salary and payroll. The positive effect on the community by those not seeking employment or not currently employed, this collection of taxes by way of inventory and flowed product by which each taxing body shall gain much needed revenue to help support and maintain the infrastructure within our community.

Having been with the Water District for 18 years, I'm familiar with nearly all residents here in our town. Over the years, since Cameron LNG has been a part of our community, I have only heard positive feedback when the topic turns to the LNG facility. The proposed expansion has only created a positive excitement among our residents. With Cameron's LNG excellent safety record and total commitment to our environment, Coastal preservation, we can without reservation offer our total support for current operations and expansion of the facility.

In closing, we can only hope that the approval of Cameron LNG's project is a swift process and we thank you very much.

MR. STAEGER: Thank you. Next speaker is R.B Smith.

MR. SMITH: Good evening. I'm R.B. Smith. That's R-B S-m-i-t-h. I'm from a poor family. We couldn't afford vowels. I'm vice-president of Work Force Development for the Southwest Louisiana Economic Development Alliance which is our regional economic development agency covering the parishes of Allen, Beauregard, Calcasieu, Cameron, and Jeff Davis. I'm very pleased to be here this evening to speak in support of Cameron LNG and the Environmental Impact Statement. We reviewed the statement. We know that this has been an excellent neighbor. I think that hearing from our friends here in Hackberry and Cameron Parish you understand that this is by far away a most welcomed addition to our area. We look forward to our friends at Cameron LNG. They carefully plan their work. The environmental impact is very, very miniscule, if at all, and they have a good mitigation plan for anything that's going forward. We welcome them to our area. We want to support them in their efforts and certainly from my

PM1-6

PM1-6: Comment acknowledged.

PM1-6 (con't)

standpoint, the area that I'm mostly keen on is the work force development. It provides for our current and future generations in Cameron Parish a way to bring good, well-paying career driven jobs to our local area that will secure a future for our area.

So, we offer our support and we hope that this program will move ahead very quickly. Thank you very much.

MR. STAEGER: Thank you. The next speaker will be Phillip Guzzino.

PM1-7

MR. GUZZINO: My name is Phillip Guzzino. P-h-i-l-l-i-p G-u-z-z-i-n-o. I just want to say that I'm a small business owner here in Lake Charles, Louisiana, and I also own property both north and south of the project. I just want to say we're looking forward to it and can't wait for it to move forward. Thank you.

PM1-7: Comment acknowledged.

MR. STAEGER: Thank you. So far the last speaker on our list is Charlie Atherton.

PM1-8

MR. ATHERTON: Good evening. My name is Charlie Atherton. C-h-a-r-l-i-e A-t-h-e-r-t-o-n. I want to pick up where I left off at prior meetings and address

PM1-8: See our response to comment IN1-1.

PM1-8 (con't)

specifically the unsafe conditions of the Sempra docks located on the side of the channel. The authorized width and depth of the Calcasieu River Waterway is only 400 feet wide and 40 feet deep and Cameron LNG ships are docked on the side of the channel at a 45-degree angle to the waterway.

Now, the Coast Guard's Waterway Suitability Assessment, WSA, for Cameron LNG is a critical part of this process. FERC is not even allowed to proceed forward in this permitting process until a current valid WSA is verified and included. We do not find that a current valid WSA under current Coast Guard guidance exists and is not present in this EIS nor is a letter of intent.

We believe that this FERC approval process should be stopped immediately until a new valid letter of intent and current WSA is required and presented. On page ES-6 under "Safety," we find that the Coast Guard's response to cover up to the fact that the original WSA was written in 2005 with very minimal Coast Guard guidance and does not fully address current navigation safety issues on the Calcasieu River waterway.

PM1-8
(con't)

We believe that if Cameron LNG was subjected to compliance of the currently required 2011 or later Coast Guard WSA standards that Cameron LNG would not be approved by the Coast Guard or FERC to operate. The original WSA that is being used is a WSA approved for this Cameron LNG project was written by Lieutenant Commander McCadden on April 7th, 2005, simply says that an LNG ship 200,000 cubic meters or less can make it up the channel from the Gulf of Mexico and back out to sea safely.

McCadden's WSA states, "I request that the FERC require Cameron LNG to complete a Waterway Suitability Assessment in accordance with the fourth coming navigation and vessel inspection circular guidance on assessing the suitability of a waterway for liquefied natural gas marine traffic once finalized. The security assessment should be completed and subject to review and validation by the Coast Guard before operation begins at the Cameron LNG facility."

That's what McCadden stated. His guidance was -- own guidance wasn't even official at the time. We have not found where McCadden's request was ever acted on or included in the

PM1-8 (con't)

record. McCadden's WSA does not address navigation safety issues officially raised by Citgo and other state codes in the Calcasieu River Harbor Safety Committee, including other large LNG and crew ships going upriver passing the Cameron LNG docks.

The information that I have shows that the Coast Guard safety standards referenced in this EIS were not even written until January 24th of 2011. On page 1-7 under public review and comments, it states, "We received comments from Mr. Charlie Atherton in regard to safety at the existing Cameron LNG terminal."

That's all it says. I have no follow-up, no answer, no response. I filed a FOIA request with the Coast Guard and FERC for a copy of the WSA used in this FERC permitting process and have never received a copy, totally stonewalled by the Coast Guard. I did not find a copy of the WSA being used and EIS attached or a Coast Guard letter intent attached to these proceedings in any form or fashion or this EIS. We do not find that our safety concerns have been responsibly addressed.

We believe that it's important to note that

PM1-8 (con't)

the Cameron LNG facility has only had one or two LNG ships ever at their docks and I believe the permit is for around 200 ships. The navigation negative safety impacts on existing channel users is totally unknown especially with new high volume LNG ship traffic projected to navigate past LNG ships at the Cameron LNG docks. We believe that this FERC Cameron LNG permitting process should require a new WSA that takes into account all of the existing and protected crew ships and new LNG traffic going upriver past and loaded LNG ships docked on the side of this very narrow waterway.

I thank you very much for your attention to the matter. Who would I give this information to? I wanted to leave a packet of information.

MR. STAEGER: We got that. Thank you.

MR. ATHERTON: Thank you, sir. Thank you for your time.

MR. LAFFOON: I believe that's all the speakers that we have signed up to speak tonight. Is there anybody else who wishes to speak.

PM1-9

MR. POOLE: My name is John, J-o-h-n P-o-o-l-e. I am a lifetime resident of

PM1-9 (con't)

Hackberry for 57 years if my arithmetic is right. Yeah, Cameron LNG has done great and wonderful things for our community, for the youth, for the community all the way around. As a community, we focus a lot on our youth. We like for them to be competitive. We like for them to have their heads up, their eyes open and know what's going on.

A lot of them have firsthand seen what Cameron LNG did to help out after the hurricane. They have a track record. I drive by the facility now, a 1.2 billion-dollar facility and it sits there and it's pristine and it's clean. They made a promise on their first Environmental Impact Study. They followed it and our ecosystem has benefited from it.

In my own concerns about Cameron LNG, they are top notch and they will be there for generations to come the way I see it because we, as citizens and residents of Hackberry, we're looking forward to seeing our children have jobs in Hackberry. We're looking forward to seeing our grandchildren living in Hackberry and that means a lot to a lot people who weren't able to come here and speak tonight. Thank you.

PM1-9: Comment acknowledged.

MR. STAEGER: Thank you. Is there anyone else who wishes to speak?

MR. FOUNTAIN: I think you missed me. I signed up.

MR. STAEGER: My apologies. I did. I put a check next to your name.

MR. FOUNTAIN: You didn't want to hear me.

MR. STAEGER: My apologies.

PM1-10 MR. FOUNTAIN: My name is Curtis Fountain, C-u-r-t-i-s F-o-u-n-t-a-i-n. I'm a lifetime resident of Hackberry and also vice-president of Cameron Parish Police Jury. Everybody, they say he's going to talk about the hurricane again. Yeah. What people don't understand is after the hurricane, we lost so much of -- so many of our businesses that it was ridiculous. Sempra came in. They moved forward. They stayed with their head in the air and just moved forward.

Like John said, they built a fine facility over here. It's pristine, extremely clean, and environmentally safe. It's a great place for the guys to work. A lot of our residents of Hackberry work there and as you heard from some

PM1-10: Comment acknowledged.

PM1-10 (con't)

of the other people here, a good five parish area that they support. So, I just feel that FERC should help them move forward in their move to build the rest of this plant.

I had a big speech made kind of like Kathy's, but I couldn't carry it in. Anyway, like I said, we're real pleased with Sempra. Sempra has been an ambassador to us ever since they moved in here and we would like -- I would like to ask you to help us move them forward. Thank you.

MR. LAFFOON: Anyone else?

PM1-11

MR. BOURRIAQUE: Ryan Bourriaque, R-y-a-n B-o-u-r-r-i-a-q-u-e. It's a fun one. I'm the Parish Administrator of the Cameron Police Jury. I was actually looking forward to coming to an event and not having to speak. Thank you, Ms. Kathy. I think it's important to note that in today's economic climate, there's a lot of uncertainty and some families kind of are struggling to know where to go from here. A lot of people like to harp on the fact that Cameron Parish has 6700 residents. That's how we like it. We barely like each other. We can't have to many people

PM1-11: Comment acknowledged.

PM1-11 (con't)

but when people harp on the number of individuals who reside in a civil parish, it makes me smile because we have some quality people. We really do. What we're doing is attracting some quality companies who are great corporate neighbors and Cameron LNG has made a big impact to the Hackberry community. You've heard it.

I don't live in Hackberry. God didn't bless me to grow up in Hackberry. I spent some nights in Hackberry and we're not going to put that on the record but, you know, I grew up in Creole and Grand Chenier. I grew up on the east side of the ship channel and I can say this, there aren't many entities who will sponsor students and events throughout a parish.

Cameron LNG has made a big impact on the Hackberry community, no doubt about it. I also don't want you to underestimate the impact they've had on our entire parish, all four schools, all quadrants of the parish. They have done a great job for us. I'm on some civic organization boards. They're constantly, "Tell us what we need, what do we need to do."

We have a -- LSU Ag Center does a wetland

PM1-11 (con't)

simulation program and I tried to -- now, this year, I'm going to get with Mr. Stevie again to try. We have students from throughout South Louisiana that come to Cameron Parish and they're going to assist us with that. I just volunteered for them right there. That's on the record. See how easy that was. I like this. I can keep talking.

At the end of the day, though, we're encouraged. As you can imagine, the population is limited but the spirit is high. We have quite a few number of acres of pristine wetland throughout the parish. We have some saltwater intrusion problems. The parish is going to work on that. One thing that we're looking at is the beneficial use of the dredge material. We think that has been accounted for in the impact statement but we would like to see the state take a bigger step and dedicate all the beneficial -- utilize all dredge material beneficially throughout the state. Cameron can certainly benefit from that.

I guess in closing, you know, everybody did a great job and I wish I would of had a piece of paper because it would have -- I shouldn't have

PM1-11 (con't)

given you my damn sheet because I had -- it's a lot more articulate when I wrote it down. It sounded a lot better on paper, I promise.

Anyway, thank you for this opportunity. I wish I could have welcomed you to downtown Hackberry, but I guess you have to deal with Sulphur. Thank you.

MR. LAFFOON: Anyone else?

MR. ATHERTON: Can't top that.

MR. LAFFOON: If not, I'll go ahead and close the formal part of the meeting. Anyone wishing to keep up with the official activities associated with the Cameron Liquefaction Project can use the FERC web site at www.ferc.gov. Within our web site, there's the eLibrary link where you can type in the docket number for this project. In this case it's CP13-25 and CP13-27. You can use eLibrary to gain access to everything on the public record concerning the project, including all the public findings by Cameron agencies and other concerned stakeholders.

As I stated earlier, representatives from Cameron will stay in the room for a little while after the meeting if you want to talk with them

SG1 – State of Louisiana Department of Wildlife and Fisheries

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DEPARTMENT OF WILDLIFE AND FISHERIES
OFFICE OF WILDLIFE

ROBERT J. BARHAM
SECRETARY

JIMMY L. ANTHONY
ASSISTANT SECRETARY

February 24, 2014

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First St., N.E., Room 1A
Washington, DC 20426

RE: *Docket Number: CP13-27-000*
Applicant: Cameron Interstate Pipeline, LLC
Notice Date: January 17, 2014

Dear Ms. Bose:

The professional staff of the Louisiana Department of Wildlife and Fisheries has reviewed the above referenced Draft Environmental Assessment for the Cameron Interstate Pipeline, LLC. Based upon this review, the following has been determined:

SG1-1 **Ecological Studies:**
The applicant shall develop a mitigation plan designed to off-set impacts to fish and wildlife resources. The mitigation plan shall be approved by the resource and regulatory agencies. The approved mitigation plan shall be incorporated as part of the conditions of the permit.

SG1-2 **Scenic Rivers:**
The proposed pipeline alignment crossed two Louisiana designated Natural and Scenic Rivers, Beckwith Creek and Hickory Branch. The applicant has obtained authorization for both stream crossings under Scenic River Permit Numbers #863 and #864 (see attachments). LDWF recommends that the applicant adhere to the conditions set forth in those permits.

SG1-3 **Fisheries:**
Water extracted from water bodies, as well as equipment, should be inspected for presence of invasive aquatic weeds, including but not limited to giant salvinia (*Salvinia molesta*), water hyacinth (*Eichhornia spp*), and Esthwaite Waterweed (*Hydrilla verticallata*), or aquatic animals, such as apple snails (Family Ampulariidae), before being brought to the site and before being moved from the site to prevent the transport and spread of such species.

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SG1-1: Sections 4.3, 4.4, 4.5, 4.6, and 4.7 of the EIS describe the impacts and mitigation methods Cameron would implement to minimize and avoid impacts on fish and wildlife. In addition, Cameron Interstate's implementation of its Wetland and Waterbody Construction and Mitigation Procedures would avoid, minimize, and mitigate impacts on wetlands. Further, the Department of the Army (DA) permit issued to Cameron LNG by the COE (see Appendix K), includes Cameron LNG's mitigation plan for wetlands that would reduce potential impacts on includes fish and wildlife. We anticipate that if the COE issues a DA permit to Cameron Interstate, it will also include required mitigation measures to protect wetlands and biological resources. Cameron Interstate's Migratory Bird Conservation Plan was approved by FWS and Cameron Interstate executed a written agreement to purchase 17.43 acres of mitigation from The Conservation Fund.

SG1-2: We agree and added a recommendation that Cameron Interstate should comply with the conditions set forth in the permits issued for these stream crossings (see sections 4.6.2.2 and 5.3).

SG1-3: We agree and added a recommendation that Cameron Interstate should inspect water extracted from water bodies, as well as equipment, for the presence of invasive aquatic weeds, including but not limited to giant salvinia or aquatic animals, such as apple snails, before being brought to the site and before being moved from the site to prevent their transport, and to destroy or remove those species from the equipment or water (see sections 4.6.2.2 and 5.3).

SG1 – State of Louisiana Department of Wildlife and Fisheries

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SG1-4 The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding this proposed activity. Please do not hesitate to contact Scenic Rivers biologist Chris Davis at 225-765-2642 or Fisheries Biologist Barry Hebert at 225-765-0233 should you need further assistance.

Sincerely,

Kyle F. Balkum
Biologist Program Manager

cd/bh

SG1-4: Comment acknowledged.

SG1 – State of Louisiana Department of Wildlife and Fisheries

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GOVERNOR

State of Louisiana

DEPARTMENT OF WILDLIFE AND FISHERIES
OFFICE OF SECRETARY

ROBERT J. BARHAM
SECRETARY

Louisiana Natural & Scenic River System
SCENIC RIVER PERMIT #863

Issue/Effective Date: September 16, 2013

Scenic River: Beckwith Creek

Recipient: Cameron Interstate Pipeline, LLC
2925 Briarpark Drive
Houston, Texas 77042

Description: HDD Installation of a 42" Natural Gas Pipeline.

This permit is issued by authority of Part II of Chapter 8, Title 56 of the LRS of 1950 as amended and re-enacted regarding the Louisiana Natural & Scenic Rivers System and the administrative procedures pertaining to the management of these watercourses designated as Scenic Rivers.

The permit is issued by the Administrator with the understanding that the recipient in implementation of the proposal will proceed in compliance with, and not significantly deviate from the provisions contained in the petition for the permit and any special conditions attached hereto. The permit holder is expected to minimize adverse impacts to the structural and functional integrity of the natural systems and aesthetics associated with the Scenic River where the activity is occurring so as to preserve the fundamental character and purpose for which the System was established.

The Administrator assumes no responsibility for or incurs no liability for any injury to persons or property caused by any act of the permit holder or his agent in the permission granted by this permit. In addition to the Department of Wildlife & Fisheries, the petition was given a full and thorough evaluation by the Louisiana Departments of Agriculture & Forestry; Culture, Recreation & Tourism; Environmental Quality; and the Office of State Planning and Budget. If during the review process objections were made to the proposed activity, those objections were either found to be insignificant or they have been included in the conditions of the permit.

This permit shall expire if the permitted activity has not begun within 18 months of the "Issue Date" indicated above.

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SG1 – State of Louisiana Department of Wildlife and Fisheries

SRP# 863
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Compliance with these conditions is necessary for this permit to be valid:

1) Adequate erosion/sediment control measures are to be taken during the implementation of this project to insure that no sediments or other construction/activity related debris are allowed to enter Beckwith Creek.

2) All other applicable permits not contingent upon this permit from governmental entities will be acquired and their conditions implemented with fidelity. Applicant has title to the property or permission from the landowner to implement the project.

3) If during project activity, any sensitive archaeological, biological or botanical element is encountered, activity will temporarily cease and the permit holder will contact the Administrator to determine the disposition of that element or artifact.

4) This project must be carried out in a manner consistent with the design that the applicant submitted during the permit process. Should significant physical modification to the project become necessary during implementation of the project or after its completion, the permit holder will submit a letter of explanation within one week of discovery to the Administrator to determine if another petition will be required.

5) There is to be no clearing of right-of-way above the directionally drilled segment of the pipeline.

6) Water utilized for hydrostatic testing and/or drilling operations is not to be allowed to directly discharge into Beckwith Creek. The Department of Wildlife and Fisheries (LDWF) reserves the authority to halt water withdrawals during times of low water if it is determined that such withdrawal is having an adverse impact on the river. The applicant shall contact the Louisiana Department of Natural Resources (LDNR) and comply with any additional requirements they may have concerning the withdrawal and use of surface water. The contact for LDNR is Dr. Thomas Van Biersel, (225-342-1813 or Thomas.VanBiersel@la.gov).

7) Western Acidic Longleaf Pine Savannah habitat is located between Hickory Branch and Beckwith Creek. Such sites are a priority of LDWF because they are extremely rare and imperiled. Therefore, LDWF recommends that the applicant adhere to the following to avoid, minimize and mitigate impacts to savannah habitat located between the two designated Natural and Scenic Rivers.

   The applicant should stack excavated soils separately (e.g., surface soil and subsoil) and later replace them in their original profile.

   The applicant should plant native seed (site appropriate native grass/forb mix) in all disturbed areas once pipeline construction is completed.

SG1 – State of Louisiana Department of Wildlife and Fisheries

SRP# 863
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Rutting and soil compaction shall be avoided. Should rutting occur, the applicant shall restore affected areas to their pre-project grade. Furthermore, LDWF recommends that construction take place during dry conditions.

The applicant shall thoroughly clean all mechanized equipment before mowing to prevent spread of exotic vegetation.

If you need any additional information, you may contact Mr. Keith Cascio, Scenic Rivers Coordinator, in the Monroe Office at (318) 343-4045.

Robert J. Barham
Administrator

SG1 – State of Louisiana Department of Wildlife and Fisheries

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Louisiana Natural & Scenic River System
SCENIC RIVER PERMIT #864

Issue/Effective Date: August 30, 2013

Scenic River: Hickory Branch

Recipient: Cameron Interstate Pipeline, LLC
2925 Briarpark Drive
Houston, Texas 77042

Description: HDD Installation of a 42" Natural Gas Pipeline.

This permit is issued by authority of Part II of Chapter 8, Title 56 of the LRS of 1950 as amended and re-enacted regarding the Louisiana Natural & Scenic Rivers System and the administrative procedures pertaining to the management of these watercourses designated as Scenic Rivers.

The permit is issued by the Administrator with the understanding that the recipient in implementation of the proposal will proceed in compliance with, and not significantly deviate from the provisions contained in the petition for the permit and any special conditions attached hereto. The permit holder is expected to minimize adverse impacts to the structural and functional integrity of the natural systems and aesthetics associated with the Scenic River where the activity is occurring so as to preserve the fundamental character and purpose for which the System was established.

The Administrator assumes no responsibility for or incurs no liability for any injury to persons or property caused by any act of the permit holder or his agent in the permission granted by this permit. In addition to the Department of Wildlife & Fisheries, the petition was given a full and thorough evaluation by the Louisiana Departments of Agriculture & Forestry; Culture, Recreation & Tourism; Environmental Quality; and the Office of State Planning and Budget. If during the review process objections were made to the proposed activity, those objections were either found to be insignificant or they have been included in the conditions of the permit.

This permit shall expire if the permitted activity has not begun within 18 months of the "Issue Date" indicated above.

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SG1 – State of Louisiana Department of Wildlife and Fisheries

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Compliance with these conditions is necessary for this permit to be valid:

1) Adequate erosion/sediment control measures are to be taken during the implementation of this project to insure that no sediments or other construction/activity related debris are allowed to enter Hickory Branch.

2) All other applicable permits not contingent upon this permit from governmental entities will be acquired and their conditions implemented with fidelity. Applicant has title to the property or permission from the landowner to implement the project.

3) If during project activity, any sensitive archaeological, biological or botanical element is encountered, activity will temporarily cease and the permit holder will contact the Administrator to determine the disposition of that element or artifact.

4) This project must be carried out in a manner consistent with the design that the applicant submitted during the permit process. Should significant physical modification to the project become necessary during implementation of the project or after its completion, the permit holder will submit a letter of explanation within one week of discovery to the Administrator to determine if another petition will be required.

5) There is to be no clearing of right-of-way above the directionally drilled segment of the pipeline.

6) Water utilized for hydrostatic testing and/or drilling operations is not to be allowed to directly discharge into Hickory Branch. The Department of Wildlife and Fisheries (LDWF) reserves the authority to halt water withdrawals during times of low water if it is determined that such withdrawal is having an adverse impact on the river. The applicant shall contact the Louisiana Department of Natural Resources (LDNR) and comply with any additional requirements they may have concerning the withdrawal and use of surface water. The contact for LDNR is Dr. Thomas Van Biersel, (225-342-1813 or Thomas.VanBiersel@la.gov).

7) Western Acidic Longleaf Pine Savannah habitat is located between Hickory Branch and Beckwith Creek. Such sites are a priority to LDWF because they are extremely rare and imperiled. Therefore, LDWF recommends that the applicant adhere to the following to avoid, minimize and mitigate impacts to savannah habitat located between the two designated Natural and Scenic Rivers.

   The applicant should stack excavated soils separately (e.g., surface soil and subsoil) and later replace them in their original profile.

   The applicant should plant native seed (site appropriate native grass/forb mix) in all disturbed areas once pipeline construction is completed.

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Rutting and soil compaction should be avoided. Should rutting occur, the applicant should restore affected areas to their pre-project grade. Furthermore, LDWF recommends that construction take place during dry conditions.

The applicant should thoroughly clean all mechanized equipment before mowing to prevent spread of exotic vegetation.

If you need any additional information, you may contact Mr. Keith Cascio, Scenic Rivers Coordinator, in the Monroe Office at (318) 343-4045.

Robert J. Barham
Administrator

SG2 – State of Louisiana Department of Wildlife and Fisheries

BOBBY JINDAL
GOVERNOR

State of Louisiana

DEPARTMENT OF WILDLIFE AND FISHERIES
OFFICE OF WILDLIFE

ROBERT J. BARHAM
SECRETARY

JIMMY L. ANTHONY
ASSISTANT SECRETARY

February 24, 2014

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First St., N.E., Room 1A
Washington, DC 20426

RE: *Docket Number: CP13-25-000*
Applicant: Cameron LNG, LLC
Notice Date: January 17, 2014

Dear Ms. Bose:

The professional staff of the Louisiana Department of Wildlife and Fisheries has reviewed the above referenced Draft Environmental Assessment for the Cameron LNG, LLC. Based upon this review, the following has been determined:

SG2-1 **Ecological Studies:**
LDWF has assisted the applicant in past years to create marsh from spoil material resulting from the dredge activities of the LNG berthing slip. These spoil disposal areas have resulted in appropriate marsh elevations and successful re-vegetation. Therefore, LDWF continues to support such efforts.

SG2-2 The applicant shall develop a mitigation plan designed to off-set impacts to fish and wildlife resources. The mitigation plan shall be approved by the resource and regulatory agencies. The approved mitigation plan shall be incorporated as part of the conditions of the permit.

SG2-3 **Fisheries:**
Water extracted from water bodies, as well as equipment, should be inspected for presence of invasive aquatic weeds, including but not limited to giant salvinia (*Salvinia molesta*), water hyacinth (*Eichhornia spp*), and Esthwaite Waterweed (*Hydrilla verticallata*), or aquatic animals, such as apple snails (Family Ampulariidae), before being brought to the site and before being moved from the site to prevent the transport and spread of such species.

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SG2-1: See response to comment SG1-1 in comment letter SG1.

SG2-2: See response to comment SG1-1 in comment letter SG1.

SG2-3: See response to comment SG1-3 in comment letter SG1.

SG2 – State of Louisiana Department of Wildlife and Fisheries

SG2-4 The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding this proposed activity. Please do not hesitate to contact Scenic Rivers biologist Chris Davis at 225-765-2642 or Fisheries Biologist Barry Hebert at 225-765-0233 should you need further assistance.

Sincerely,

Kyle F. Balkum
Biologist Program Manager

cd/bh

SG2-4: Comment acknowledged.