

## COVER SHEET

**Responsible Agency:** U.S. Department of Energy

**Title:** Texas Clean Energy Project *Final* Environmental Impact Statement (DOE/EIS-0444)

**Location:** Odessa, Ector County, Texas

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### Abstract:

This *final* environmental impact statement (EIS) provides information about the potential environmental impacts associated with the U.S. Department of Energy's (DOE) proposal to provide limited financial assistance (approximately \$450 million), through a cooperative agreement, to Summit Texas Clean Energy, LLC (Summit) for the proposed Texas Clean Energy Project (TCEP). The TCEP would use coal-based integrated gasification combined-cycle technology to generate electric power and would capture carbon dioxide (CO<sub>2</sub>) for use in enhanced oil recovery (EOR) and eventual sequestration. The plant would generate 400 megawatts (gross) of electricity, of which **130–213** megawatts would be provided to the power grid. It would also produce urea, argon, and sulfuric acid for sale in commercial markets. Because of its multiple production capabilities, the plant is referred to as a polygeneration (polygen) plant. DOE would provide approximately 26 percent of the project's total capital cost of at least \$1.73 billion (2009 dollars).

The polygen plant would be built on a 600-acre (243-hectare) oil field site in Ector County, Texas, north of the oil community of Penwell. Summit would design and construct the plant to capture approximately 90 percent of its CO<sub>2</sub>. During the demonstration phase of the plant's operations, the project would sequester approximately **2.5–3.0 million tons (2.3–2.7 million metric tonnes)** of CO<sub>2</sub> per year by transporting it in pipelines to existing oil fields in the Permian Basin of West Texas for use in EOR operations by third-party buyers of the CO<sub>2</sub>. Following the demonstration phase, the polygen plant would continue in commercial operation for 30–50 years.

DOE determined that the proposed TCEP constitutes a major federal action within the meaning of the National Environmental Policy Act of 1969, as amended. The *Federal Register* “Notice of Intent To Prepare an Environmental Impact Statement for Texas Clean Energy Project, Ector County, Texas” was published on June 2, 2010 (75 *Federal Register* 30800). DOE held a public scoping meeting at Odessa College in Odessa, Texas, on June 17, 2010. ***The Federal Register “Notice of Availability for the Draft Environmental Impact Statement for Texas Clean Energy Project, Ector County, Texas” was published on March 18, 2011 (76 Federal Register 14969). DOE published a second Notice of Availability in the Federal Register on March 22, 2011, to announce the date and location of the public hearing, which was held on April 5, 2011, in the city of Odessa, Ector County, Texas (76 Federal Register 15968). The public comment period began March 18, 2011, and ended May 2, 2011.***

This ***final*** EIS provides an evaluation of the environmental consequences that may result from Summit’s proposed project, including potential impacts on air quality and greenhouse gas emissions; climate; soils, geology, and mineral resources; ground water resources; surface water resources; biological resources; aesthetics; cultural resources; land use; socioeconomics; environmental justice; community services; utility systems; transportation; materials and waste management; human health, safety, and accidents; and noise and vibration. The ***final*** EIS also provides an analysis of the No Action Alternative, under which DOE would not provide financial assistance to the TCEP, with the assumption that without federal financial assistance, the project would not be constructed. ***DOE’s preferred alternative—to provide financial assistance to Summit’s proposed project—is identified in the final EIS.***

***In addition, the final EIS provides the comments received on the draft EIS, DOE’s prepared responses to those comments, revisions that were made in response to the comments, and changes that were made to the Proposed Action between the preparation of the draft EIS and final EIS. Vertical lines in the left margin of a page indicate where text in the draft EIS has been deleted, revised, or supplemented for this final EIS, except for Volume II, which contains the public comments on the draft EIS and DOE’s responses. This revised text in the Summary and Volume I is shown in boldface italics font (as in this paragraph).***

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## ABBREVIATIONS

24/7 - 24-hour/7-day-a-week	ft - foot
ac-ft - acre-feet	gal - gallon
C.F.R. - Code of Federal Regulations	GCA - Gulf Coast Waste Disposal Authority
CCPI - Clean Coal Power Initiative	I - individual
cm - centimeter	IGCC - integrated gasification combined-cycle
CO <sub>2</sub> - carbon dioxide	in - inch
CR - County Road (e.g., CR 1216)	km - kilometer
DOE - U.S. Department of Energy	L - liter
EIS - environmental impact statement	m - meter
EOR - enhanced oil recovery	mi - mile
ERCOT - Electric Reliability Council of Texas	MW - megawatt
F - federal governmental agency	NEPA - National Environmental Policy Act
FSH - Fort Stockton Holdings	NOA - notice of approval
PPA - power purchase agreement	TPWD - Texas Parks and Wildlife Department
ROD - record of decision	TWDB - Texas Water Development Board
S - state governmental agency	TxDOT - Texas Department of Transportation
TCEP - Texas Clean Energy Project	UPRR - Union Pacific Railroad
TCEQ - Texas Commission on Environmental Quality	WL - waterline option (e.g., WL1)
TDS - total dissolved solids	WWTP - waste water treatment plant
TL - transmission line option (e.g., TL1)	ZLD - zero liquid discharge

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## 1 INTRODUCTION

The U.S. Department of Energy (DOE) announced the availability of the Texas Clean Energy Project (TCEP) Draft Environmental Impact Statement (EIS) in a Notice of Availability (NOA) published in the *Federal Register* on March 18, 2011. DOE distributed the draft EIS on March 10, 2011 to the elected officials, agencies, Native American tribes, organizations, and members of the public identified in the TCEP distribution list (Chapter 9 of the EIS).

DOE published its own NOA of the draft EIS in the *Federal Register* on March 22, 2011, to announce the date and location of the public hearing, which was held on April 5, 2011, in the city of Odessa, Ector County, Texas. The hearing location was selected based on its proximity to the project, and convenience for potential attendees, as well as venue size and venue availability considerations. The public comment period began March 18, 2011, and ended on May 2, 2011.

In addition, DOE published advertisements for the draft EIS public hearing and comment period in several local newspapers in both English and Spanish. The English version was published in the *Odessa American* and the *Midland Reporter Telegram* on March 21, 2011; April 3, 2011; and April 4, 2011. The Spanish version was published on March 24, 2011, and March 31, 2011, in *El Editor*, a weekly bilingual newspaper with distribution in the Odessa–Midland area. Both versions of the advertisement provided the following information:

- Hearing time, date, location, and agenda
- Brief project description
- Internet location where interested parties could view or download an electronic copy of the draft EIS
- Physical location in Odessa where interested parties could view a hard copy of the draft EIS
- Process for registering to submit verbal comments during the hearing
- Alternative methods of comment submittal (toll-free telephone number, fax, email, U.S. Postal Service mail)
- Instructions for requesting assistance with the comment process (e.g., translation services)
- Comment deadline

The public hearing began with an informal open house from 4:00 to 7:00 pm (Central Daylight Savings Time) during which time attendees were given information packages about the project and were able to view project-related posters. DOE personnel and support staff were present to greet attendees and talk with them; outline the meeting agenda; answer questions about the draft EIS, National Environmental Policy Act (NEPA) process, and project status; and invite all attendees to then provide comments, either written or verbal, on the proposed project and draft EIS. Summit personnel were also available at displays illustrating various features of the proposed project.

Attendees wishing to provide verbal comments during the formal hearing portion of the meeting were given an opportunity to register. Anyone who wished to provide comments in writing was invited to do so by completing a comment form and giving it to a DOE team member at the public hearing or mailing in it in at a later date. The comment form provided information about all alternative methods of submitting comments as well as the comment deadline. Individuals could

obtain a copy of the draft EIS at the public hearing or request a copy of the draft EIS and/or the final EIS (either a hard copy of the entire EIS or a hard copy of the Summary plus a compact disk containing the entire EIS).

The formal public hearing followed the informal open house and ran from 7:00 and 9:00 pm; it comprised several formal presentations and the formal comment period. DOE led the presentations and presided over the hearing. The presentations included overviews of the DOE program for funding, the NEPA process, and Summit's proposed project. There was an overview of the alternative methods of submitting comments and the rules for the formal comment period that evening. A court reporter was present during the formal public hearing portion of the meeting to ensure that all verbal comments were recorded and legally transcribed. A total of five individuals presented verbal comments.

Collectively, 27 individuals attended the public hearing, including representatives from general public state agencies, media, as well as representatives from Summit Energy and its associated business entities.

## 2 METHODOLOGY

In preparing the final EIS, DOE considered all comments received on the draft EIS individually and collectively. An identification number was assigned to each originator of comments (i.e., per commenter), including those speaking at the public hearing. The identification number begins with the type of commenter, such as federal governmental agency (F), state governmental agency (S), or individual (I). Each specific comment by the same commenter was assigned a sequential comment number. For example, comment number F-3-2 refers to the second comment by the federal governmental agency assigned the identifier F-3, the U.S. Environmental Protection Agency. Comments that were received more than once from a commenter were treated as a separate originator and were provided a new identification number. A total of 11 individuals and agencies provided comments (some more than once) on the draft EIS and the proposed project, as follows:

- Three representatives of federal agencies (U.S. Environmental Protection Agency, U.S. Department of Interior, and U.S. Army Corps of Engineers)
- Three representatives of state agencies (Texas Department of Transportation [TxDOT], Texas Commission on Environmental Quality (TCEQ), and Texas Parks and Wildlife Department)
- Four representatives of local ranching and farming businesses (one person supplying both verbal and written comments) and one local member of the general public (supplying both verbal testimony and two sets of written comments)

DOE prepared responses to the comments and revised the draft EIS, as appropriate. The draft EIS was also revised based on changes in Summit's plans and DOE's internal technical and editorial review, which includes the changes made to the draft EIS that were not in response to a comment received. Most revisions were based on events that took place or information obtained in the time between the preparation of the draft EIS and the preparation of the final EIS (e.g., changing project alternatives for water treatment and field results associated with a pipeline corridor that was not completed in time to be included in the draft EIS). The final EIS (Volume 1) reflects the revisions made to the draft EIS.

Chapter 3 of this volume provides a summary of the comments received on the draft EIS, the proposed federal action, and Summit's proposed project. Transcripts of the public hearing and copies of the original comment documents are included in their entirety in Chapter 4 of this volume. The commenters and their comments are identified and labeled on each comment document beginning with the public hearing transcript. When a comment is identified in the comment document, DOE's response follows on the adjacent page to ensure context and readability are provided. All comment documents have been entered into the administrative record for the TCEP EIS.

### 3 SUMMARY OF COMMENTS AND IDENTIFICATION OF COMMENTERS

DOE received comments on the draft EIS at the hearing both verbally and through comment form, by letter, and by email. After reviewing the comments received, a list of issues was developed and is presented in Table 3.1.

**Table 3.1.** General Comments Received During the Draft EIS Public Comment Period

Issues	Description
Economy, Employment, and Income	Commenters expressed concern regarding the market for carbon dioxide (CO <sub>2</sub> ).
DOE's Proposed Action	Commenters requested consideration of other energy sources in the EIS beyond fossil fuels.
Summit's Proposed Project and Project Options	<p>Commenters expressed concern with the use of wet cooling technology and requested consideration of an alternative using only dry cooling technology.</p> <p>Commenters also provided suggestions regarding other alternative sources of water that should be analyzed in the final EIS: Pecos Alluvium Aquifer, Capitan Reef Complex Aquifer, construction of pipelines from East Texas, and use of produced water from oil fields.</p> <p>Commenters expressed a preference for the zero liquid discharge (ZLD) system technology option. Commenters questioned the rationale for the elimination of other locations for the TCEP from detailed analysis in the draft EIS.</p>
DOE's Purpose and Need	<p>Commenters expressed concerns about practicality of producing and using synthesis gas when natural gas is available already in the area.</p> <p>Commenters expressed concern about the likely success of the reported DOE programmatic goal of a net decrease in greenhouse gas emissions that could be triggered if the proposed technologies are successfully and widely deployed by industry.</p>
Summit's Purpose and Need	Commenters expressed concerns about a market for the energy to be produced by the project and the economic viability of the project.
Air Quality	Commenters expressed concern about impacts from coal dust from trains.
CO <sub>2</sub> Sequestration	Concerns were expressed regarding the sequestration of CO <sub>2</sub> , specifically the manner in which CO <sub>2</sub> stays underground, and the overall net decrease in CO <sub>2</sub> emissions though use in enhanced oil recovery (EOR).
Waters of the U.S.	Commenters requested clarification regarding impacts on waters of the U.S.
Water Use/Utilities	<p>Commenters expressed concern regarding the impact of the project on water supply and demand, particularly the potential use of potable water to meet process water needs.</p> <p>Commenters expressed concern about the availability of some of the process water options, due to over-commitment of water rights, potential for litigation, or other issues.</p>

**Table 3.1.** General Comments Received During the Draft EIS Public Comment Period

Issues	Description
Ground Water	<p>Commenters expressed concern regarding impacts to ground water, including</p> <ul style="list-style-type: none"> <li>• depletion of aquifers and ground water supplies,</li> <li>• increased salinity from discharge of waste water and its impact on local wells, and</li> <li>• impacts to aquifer recharge from reallocation of water from current uses to accommodate the TCEP.</li> </ul>
Surface Water	<p>Commenters expressed concern regarding impacts to surface waters. Concerns included</p> <ul style="list-style-type: none"> <li>• impacts from runoff from the polygen plant site,</li> <li>• increased flooding due to project-related discharges to local surface waters,</li> <li>• impacts from the discharge of saline waters into local surface waters,</li> <li>• impacts from the potential dewatering of local surface waters,</li> <li>• changes in surface water quality,</li> <li>• impacts to jurisdictional waters of U.S., and</li> <li>• impacts to playas from proposed waste water discharges and from direct surface disturbance.</li> </ul>
Traffic	<p>Commenters expressed concern regarding the proposed increase in railroad traffic.</p>
Vegetation	<p>Commenters expressed concern regarding impacts to riparian vegetation and wetlands from effluent discharge and/or direct surface disturbance.</p> <p>Commenters suggested the use of reclamation measures and best management practices to prevent growth of noxious weeds.</p>
Terrestrial Wildlife	<p>Commenters expressed concern regarding impacts to migratory birds, as well as impacts to wildlife from placement of certain linear facility options near playas.</p> <p>Commenters expressed concern about impacts to wildlife habitat as a result of changes in surface water quality.</p>
Cumulative Effects	<p>Commenters requested an update of reasonably foreseeable projects that would occur near the polygen plant site to include proposed TxDOT projects.</p> <p>Commenters expressed concern about impacts of climate change on future water availability, and consideration of those impacts in DOE project and funding plans.</p> <p>Commenters expressed concern about the likely success of the reported DOE programmatic goal of a net decrease in greenhouse gas emissions that could be triggered if the proposed technologies are successfully and widely deployed by industry.</p>
Coordination and Consultation	<p>Commenters requested that the EIS include all consultation request letters.</p>

Table 3.2 provides the list of commenters categorized by federal governmental agency, state governmental agency, or individual in the order in which their comments were received. The commenter's assigned identification number, affiliation, type of comment, date of the comments, and page number where their respective comments are addressed are also included in this table.



**Table 3.2.** Summary of Commenters who Provided Comments during the TCEP Draft EIS Comment Period (March 18–May 2, 2011).

Date	ID No.	Name	Title/Affiliation	Comment Type	Page No.
<b>Federal Governmental Agency</b>					
03/23/2011	F-1	Stephen L. Brooks	Chief, Fort Worth District Regulatory Branch, U.S. Army Corps of Engineers	Letter	89-94
04/25/2011	F-2	Stephen Spencer	Regional Environmental Officer, U.S. Department of the Interior	Letter	95-98
04/27/2011	F-3	Rhonda Smith	Chief, Office of Planning and Coordination, U.S. Environmental Protection Agency, Region 6	Letter	99-108
<b>State Governmental Agency</b>					
03/18/2011	S-1	Jim Harrison	Director, Intergovernmental Relations Division, TCEQ	Letter	109-110
04/29/2011	S-2	Dianna F. Noble	Director of Environmental Affairs, TxDOT	Letter	111-112
05/02/2011	S-3	Julie Wicker	Wildlife Habitat Assessment Program, Wildlife Division, Texas Parks and Wildlife Department	Letter	113-133
<b>Individual</b>					
04/05/2011	I-1	Brian Chandler	Private citizen	Verbal	45-50
04/05/2011	I-2	Schuyler Wight	Private citizen	Verbal	47-54
04/05/2011	I-3	Steven Schafersman	Private citizen	Verbal	53-75
04/05/2011	I-4	Michael McCulloch	Private citizen	Verbal	75-77
04/05/2011	I-5	Clark Franklin	Private citizen	Verbal	77-83
04/05/2011	I-6	Steven Schafersman	Private citizen	Comment Form	87-88
04/20/2011	I-7	Schuyler Wight	Private citizen	Letter	135-142
05/02/2011	I-8	Steven Schafersman	Private citizen	E-mail	143-154

## **4 COMMENTS AND DEPARTMENT OF ENERGY RESPONSES**

Comments and responses are organized in the following order:

- Draft EIS public hearing transcript containing verbal comments
- Comment forms received at the public hearing
- Documents from federal agencies, by date received
- Documents from state agencies, by date received
- Documents from all other commenters, by date received

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Deposition of Public Hearing

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10 U.S. DEPARTMENT OF ENERGY  
11 NATIONAL ENERGY TECHNOLOGY LABORATORY  
12 PUBLIC HEARING  
13 FOR THE  
14 TEXAS CLEAN ENERGY PROJECT  
15 TUESDAY, APRIL 5, 2011  
16 MCM ELEGANTE HOTEL, ODESSA, TEXAS  
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Deposition of Public Hearing

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1 MR. MCKOY: Welcome to US Department of  
2 Energy's Public Hearing on the Texas Clean Energy  
3 Project Draft Environmental Impact Statement. Let the  
4 record show that the hearing began on April 5th, 2011,  
5 at 7:04 p.m. at the MCM Elegante Hotel in Odessa, Texas.

6 As part of its compliance with the  
7 National Environmental Policy Act, DOE has produced a  
8 Draft Environmental Impact Statement or EIS. This  
9 document describes the potential environmental impacts  
10 of the proposed project and project alternatives. Both  
11 the document and the comments received should help DOE  
12 make a better-informed decision.

13 The Draft EIS has been distributed to  
14 persons who have previously expressed some type of  
15 interest in this project. If you previously requested a  
16 copy of the document and have not received it, please  
17 provide your mailing address to Olivia Munzer and  
18 indicate the form in which you would like to receive the  
19 document. Olivia is seated here, so please see her to  
20 receive a copy.

21 After the Draft EIS is distributed to the  
22 public, a public hearing is held to gather comments on  
23 the document and on the proposed federal action. More  
24 specifically, a public hearing provides an opportunity  
25 for the public to give us their input on the Draft EIS,

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1 and it's an opportunity for the DOE to listen to your  
2 concerns about the project. Whether those concerns are  
3 about environmental issues or economic impacts or social  
4 matters or safety and health concerns, the goal is to  
5 improve the EIS and facilitate public input into the  
6 decision-making process.

7                   For your convenience, there are comment  
8 sheets that can be used to submit your comments in  
9 writing. You can fill out the comment sheets and give  
10 them to us tonight, or you can send the comments to us  
11 at a later date. You can also use the comment sheets to  
12 request a copy of the Draft EIS and/or the Final EIS.  
13 The EIS is available in three forms. It's available as  
14 a hard copy of the entire document, as a hard copy of  
15 the summary with a CD, or you can request only the CD.  
16 Comment sheets are available at the tables to the back  
17 and on the right-hand side.

18                   During the informal session earlier this  
19 evening between 4:00 and 7:00 p.m., DOE and the  
20 environmental contractors, as well as representatives of  
21 the Texas Clean Energy Project were available to listen  
22 to your concerns and to attempt to answer your  
23 questions. We hope this session was as informative for  
24 you as it was for us.

25                   During the formal session tonight, we will

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1 briefly present the role of DOE and we will go over the  
2 relevant parts of the NEPA compliance process and the  
3 remaining NEPA schedule. And Summit Texas will briefly  
4 present an overview of their project. Then we will  
5 begin the formal comment session.

6 We will give priority to any elected  
7 officials who would like to go first, up to a limit, and  
8 then I will go down the sign-up list. Note that we do  
9 not answer questions during the formal comment period.  
10 However, we will talk with you individually after the  
11 formal comment period concludes and attempt to answer  
12 your questions then. We hope to continue the informal  
13 session for about an hour after the formal session  
14 concludes, so that you have time to talk with us  
15 individually.

16 Written comments are given equal weight  
17 with oral comments. You may provide written comments  
18 instead of or in addition to oral comments. Again,  
19 there are comment sheets available at the DOE table to  
20 the back. You fill out the sheets and submit them  
21 tonight or any time before the close of the comment  
22 period on May 2nd.

23 On tonight's agenda, there will be an  
24 overview of DOE's program that will provide partial  
25 funding for the project. This overview will be provided

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1 by Jason Lewis with the Department of Energy, and he's  
2 based in Morgantown. Then we will have an overview of  
3 the Texas Clean Energy Project, provided by Laura  
4 Miller, representing Summit Texas Clean Energy. And  
5 then I will provide an overview of the NEPA compliance  
6 process and where we are at in the process now. And  
7 finally, we will hear comments from you, the people who  
8 want to provide us information.

9           Visiting with us tonight and representing  
10 the U.S. Department of Energy, we have Jason Lewis, the  
11 project manager with the office of major demonstrations  
12 for DOE. And again, he's based in Morgantown. And we  
13 have Shelly Martin, a public affairs specialist with  
14 DOE, and Shelly is also based in Morgantown. And I am  
15 Mark McKoy, an environmental manager with DOE, based in  
16 Morgantown.

17           Representing the project, we have Laura  
18 Miller, Director of Projects for Texas, representing  
19 Summit Texas Clean Energy, Chris Kirksey, Director of  
20 Projects for Summit Power Group. There's Chris. Brian  
21 Sinn, a Project Director representing Siemens. Jurgen  
22 Velte, a vice president with Linde, Karen Warren, a  
23 project director the with Fluor Corporation. Ray  
24 Hattenbach, a vice president for Blue Source and Russell  
25 Martin, an executive vice president for Blue Source.



1 Randy Schultze, a vice president with CH2M Hill. Did we  
2 lose him? He's in the back. And those people that  
3 prepared the EIS and worked so hard on it, we have Jim  
4 Jones, a NEPA project manager with SWCA, and Kensley  
5 Greuder, an assistant NEPA project manager with SWCA.  
6 And a couple of other people on the team that helped  
7 prepare the EIS and I see them at the back, Olivia and  
8 Mercedes. And now it's time to present a few  
9 presentations to provide you with some information and  
10 background regarding the project.

11 First up, an overview of DOE's "Clean Coal  
12 Power Initiative" program. Jason Lewis with DOE.

13 MR. LEWIS: Thank you, Mark. And welcome  
14 everyone, to this important opportunity to provide  
15 comments on the Draft Environmental Impact Statement of  
16 the Texas Clean Energy Project. I will provide a brief  
17 overview of DOE's involvement, the programs associated  
18 with the project, and some status of projects involved  
19 in that, in those programs. The primary emphasis of the  
20 programs currently in the demonstration portfolio of the  
21 Department is the capture of carbon dioxide and storage  
22 of that molecules.

23 As I'm sure you're aware, the Department  
24 of Energy, on a broader perspective, has a number of  
25 offices, a number of programs, each of which is focused

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1 on certain technologies: Nuclear, solar, wind, and  
2 other technologies that support those areas. Each of  
3 those are mandated specifically by Congress. Each has  
4 their own appropriated funds. The funds that are  
5 supporting the program I represent are for clean coal.  
6 And those funds cannot be used for anything other than  
7 clean coal. It would be a misappropriation of funds and  
8 illegal to provide funds that were dedicated to solar or  
9 wind, for example, and apply those to coal, and vice  
10 versa.

11 I'm an employee of Office of Fossil Energy  
12 with a mission of demonstrating the commercial viability  
13 of a whole host of technologies that have been sponsored  
14 for several decades by the Department. Those  
15 technologies includes environmental controls, such as  
16 gas clean-up for the oxides, sulfur, and nitrogen, or as  
17 the emphasis is today on carbon dioxide, multi-product  
18 beneficiation, taking what would, in the past on  
19 traditional coal plants with emitted to the atmosphere  
20 or to the environment and converting those into  
21 marketable products instead of emissions. Advanced  
22 Energy Conversion Systems -- an example relevant to this  
23 project would be gasification, where we're converting  
24 the energy in the form of coal into synthesis gas.

25 As I said, the present focus on our

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1 programs are on CO2 capture and storage. There are  
2 three programs that are similar. The Clean Coal Power  
3 Initiative, which is based -- or funds provided for  
4 power facilities, Industrial Carbon Capture and Storage  
5 Program, which is funding for carbon capture and  
6 sequestration as applied to non-power facilities, and  
7 then FutureGen, which has had many iterations and in its  
8 current form, is a retrofit or a repower, I'm sorry, for  
9 oxy combustion.

10 A little more detail on the nature of  
11 funding provided by the Department of Energy and the  
12 Federal government. It's not financial assistance by  
13 regulation. It's co-funding. The recipients are  
14 required to provide cost sharing and in the case of  
15 Clean Coal Power Initiative, it's a minimum of  
16 50 percent cost share.

17 In the case of the Texas Clean Energy  
18 Project, it's much more than 50 percent. The DOE  
19 would -- on a favorable Record of Decision, if that  
20 comes about, would provide about 20 -- 26 percent of the  
21 total funding. That funding is authorized by specific  
22 act of Congress. It's intended for a public purpose, in  
23 this case, to provide -- meet national environmental and  
24 energy security objectives. The national environmental  
25 objective is to demonstrate a low emission coal-based

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1 power plant. The energy security objective that would  
2 be satisfied is to use CO2 for enhanced oil recovery,  
3 increasing domestic oil production and, in the  
4 long-term, reduce imports. This is not a grant,  
5 although it's similar to a grant. Along with the  
6 co-funding comes federal monitoring. The monitoring is  
7 to ensure that the recipient meets the objectives that  
8 are defined in the agreement between the Department of  
9 Energy and the recipient, to insure that federal funds  
10 are expended appropriately on the demonstration that is  
11 agreed upon, and that the project remains true to those  
12 objectives, the national objectives, the public purpose  
13 relative to its technical scope, costs and schedule.

14 Texas Clean Energy Project, like all the  
15 projects in the Department's portfolio and financial  
16 assistance were selected in a competitive process, and  
17 to compete against other projects that were proposed to  
18 the program by other offerers. Not every offerer is  
19 accepted.

20 Financial assistance in the Clean Coal  
21 Power Initiative is not a loan. There is no requirement  
22 to repay the money. It's not a loan guarantee. The  
23 Department has programs in other agencies of the  
24 Department that will guarantee public or private loans.  
25 This is not that. And it's not a tax credit, although

1 the IRS does have tax credit programs.

2                   Projects in the program remain private  
3 enterprise. They are required to report progress on  
4 project status to the federal government. They must  
5 accept some federal oversight. But the recipient  
6 manages the day-to-day activities, and they still have  
7 the right to pursue successful business ventures.

8                   I showed you this slide back in the public  
9 scoping meeting. It's a little bit different. It's the  
10 same set of projects in those three programs that I  
11 mentioned previously. The difference is that in this  
12 case at this time, only one of them is still being  
13 negotiated, and that's Basin Electric Power. This is  
14 the sum total of the Clean Coal Power Initiative, the  
15 Industrial Carbon Capture Program and FutureGen. It  
16 represents a host of the technologies being demonstrated  
17 that are commercial ready. Pre-combustion and  
18 post-combustion, the Texas Clean Energy Project is  
19 pre-combustion gasification of coal. It involves  
20 traditional coal-powered plants, boiler plants, if you  
21 will, or integrated gas cycle. FutureGen is oxy  
22 combustion. It involves green field plants from new  
23 facilities, retrofitted existing facilities and  
24 repowering existing facilities. A wide gamut of  
25 technologies, applications, to try to capture, to the

1 extent that we can, the diversity and the power  
2 industry, involving coal, and bringing forward new  
3 environmental technologies to the commercial  
4 marketplace.

5           The Texas Clean Energy project represents  
6 the Capstar project in the Department's portfolio. It  
7 represents the technologies that have been sponsored by  
8 the Department over decades, like 30 years. It  
9 integrates coal gasification, as illustrated by that  
10 first picture at the top. It's a Siemens gasifier,  
11 pre-combustion, gas clean-up technologies for  
12 particulate removal, the oxide to sulfur and nitrogen,  
13 mercury removal.

14           The emphasis today on carbon dioxide  
15 capture is represented in the bottom picture, which is  
16 Linde's Rectisol system.

17           And advanced high hydrogen combustion  
18 turbines and combined cycle power is represented in the  
19 middle picture, which is a representative of Siemens'  
20 power block.

21           It also incorporates what may become the  
22 paradigm for the future in the power industry as it  
23 involves coal, and that is to become a poly-generation  
24 facility that produces more than just power. The  
25 economics come from a host of products, in this case,

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1 power, carbon dioxide for enhanced oil recovery, urea  
2 for fertilizer, sulfuric acid for the chemicals industry  
3 and slag for the construction trades, which would be  
4 concrete and other materials.

5 That's all I have for you this evening.  
6 In closing, I want you to walk away with that these  
7 demonstrations that are co-funded by the Department of  
8 Energy are congressionally mandated. The funds are  
9 appropriated for specific purposes; in this case, coal.  
10 The Texas Clean Energy project was selected through an  
11 open competition, and it's a private venture. It's not  
12 a government asset.

13 And I just pulled a quote from a report  
14 from the EPA in July of 2006. It's the same quote I  
15 used in the public scoping meeting. As the EPA  
16 recognized integrated gasification combined cycle, which  
17 is the principal technology on the coal side of this  
18 project, it's "one of the most promising technologies in  
19 reducing environmental consequences of generating power  
20 through coal."

21 Thank you for the opportunity to speak to  
22 you today, and we look very much forward to hearing your  
23 comments.

24 (Applause)

25 MR. MCKOY: Next, there will be an

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1 overview of the Texas Clean Energy Project presented by  
2 Laura Miller with Summit Texas Clean Energy.

3 MS. MILLER: Thank you, very much. I'm  
4 Laura Miller with the Summit Power Project. I live in  
5 Dallas, Texas. Those of us who are here tonight from  
6 Summit, there are many, many people from around the  
7 country and around the world that are working on this  
8 project, and there are several of us tonight from Texas.  
9 Chris is from Austin, Barry is from Marble Falls. Hoxie  
10 Smith, you know, is here from Midland, and I live in  
11 Dallas. And we're all out here all the time and we're  
12 working on this wonderful project.

13 I'm going to take you through some high  
14 points about the project. Jason actually had this in  
15 the top left-hand corner of one of the last slides.  
16 This is a beautiful Siemens gasifier. Siemens will tell  
17 you that it's very beautiful. And this is what you  
18 actually put the coal into with some oxygen and you  
19 actually take the coal to such high temperatures, up to  
20 2600 degrees Fahrenheit, that it turns into a gas.

21 And by turning it into a gas, you're able  
22 to, more easily, to strip off the pollutants that  
23 normally, when you burn coal, go up the smoke stack.  
24 And that's why it's much, much better for the air  
25 quality in this country, if you can use gasification for



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1 your technology, and not burn the coal as you do in a  
2 pulverized coal plant.

3 For this project, Siemens will have two of  
4 these gasifiers, which I think are about two stories  
5 tall. How tall are they?

6 AUDIENCE MEMBER: Two stories is good.

7 MS. MILLER: Two stories tall, very large.  
8 One, a high hydrogen combustion to make electricity, and  
9 one, a steam turbine to make electricity. It's  
10 400 megawatts. One megawatt is generally able to fuel  
11 about a thousand homes. 400 megawatts is the capacity.  
12 We could make 400 megawatts. We will be making about  
13 377 megawatts. And of the 377, some of that electricity  
14 is used on the site. Some of it is used by the project  
15 internally, but some of the rest of the power is used to  
16 make urea, to compress CO<sub>2</sub>, and we will sell it to the  
17 oil fields. And so that's really a commercial load,  
18 because we incorporate the cost of that power into the  
19 product that we sell on the market.

20 So by the time we do all of that on the  
21 site, we have about 214 megawatts that actually goes to  
22 the grid and goes to homes and businesses around the  
23 state.

24 We are located, and we feel lucky to be,  
25 at the former FutureGen finalist site in Penwell. And

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1 we got to that site because at a CO2 conference in  
2 December of 2007, I met Hoxie Smith in Dallas. And it  
3 was two weeks before the FutureGen alliance named the  
4 community in this country that would get the FutureGen  
5 project. And as those of you who live here know, there  
6 were two sites in Texas that were finalists, and there  
7 were also one or two sites in Illinois. And the site  
8 that was picked for the project turned out to be  
9 Illinois, and not here in Penwell.

10                   And when I met Hoxie, I said to him, You  
11 are going to get the FutureGen project, because it's the  
12 best bid and it's the best for this type of program for  
13 this country. So when you get the FutureGen program,  
14 would you save a little bit of the space on that 600  
15 acres for us? Because we would like to come and do a  
16 project very similar to that project. It's such a great  
17 site for this kind of project.

18                   And FutureGen went to Illinois and at that  
19 point, we came out to Midland-Odessa and said we would  
20 like to build a project similar to FutureGen on that  
21 site and we would like it to be a commercially viable  
22 privately-owned project, and we think that it can be  
23 very successful. And then we competed for the federal  
24 money and we were chosen, because it was a good site and  
25 it was a good project, and that's why the Department of

1 Energy is here.

2 As I just said, we got \$350 million award  
3 from the federal government in December of 2009, an  
4 additional \$100 million awarded last August.

5 We are -- we launched the front-end  
6 engineering and design feed study in June of last year,  
7 and that is literally designing the project. We have a  
8 conceptual diagram in the back that we just got a few  
9 months ago we're very excited about, that actually shows  
10 where everything is on the site. I'm going to show you  
11 a version of it here. But the three companies that are  
12 doing that work are all here tonight. And it's Siemens,  
13 Linde, and Fluor. And they are doing various parts of  
14 the project, and they are all here to answer your  
15 questions tonight.

16 What's interesting about the project is  
17 that the components have all been proven scientifically  
18 before. And one thing that's -- and the reason, quite  
19 frankly, that they've been proven before is a lot to do  
20 with the Department of Energy and their projects.  
21 They've been pretty boilerplate about telling you about  
22 their programs over the years, but quite frankly, in  
23 this country, gasification for power plants wouldn't  
24 even be a reality without the Department of Energy.  
25 They are the ones who first gave award money, similar to

1 this project, for two power plants to be built using the  
2 coal gasification technology to get low emissions. One  
3 is in Tampa, Florida, and one is in Wabash, Indiana.  
4 And money was given, about 50 percent of those projects  
5 was given from the Department of Energy, and those  
6 projects are still making electricity today. But they  
7 were both built in the mid-nineties, so this project  
8 would take that to another level. It would combine the  
9 coal gasification with the carbon capture function.

10           There's actually a large scale commercial  
11 carbon capture facility in this country, not on any  
12 power plant. It's on a chemical plant that makes Syngas  
13 up in North Dakota. Again, a project that was started  
14 in the eighties by the Department of Energy. It's very  
15 successful. And they collect about the same amount of  
16 CO2 that we're going to collect, about 3 million tons a  
17 year. And they take that CO2 and capture it and  
18 compress it like we're going to, and put it in a  
19 pipeline, like we're going to, and they pipe it about  
20 250 miles north to Canada, and it's used for enhanced  
21 oil recovery, similar to what we're going to do.

22           And so we are taking the coal gasification  
23 technology developed by the Department of Energy with  
24 the project sector, and the carbon capture technology,  
25 developed by the Department of Energy with the private

1 sector, and we're combining them. So for the first time  
2 ever, you'll have a power plant that uses this  
3 gasification technology for low emissions and we'll be  
4 combining it with the carbon capture technology to do  
5 enhanced oil recovery in the Permian Basin.

6 So I want to say that I appreciate the  
7 Department of Energy for trying to figure out a way to  
8 take coal in this country and use it as cleanly as  
9 possible.

10 Luckily, Siemens, which has provided the  
11 gasifiers and combustion turbines, we're working closely  
12 with them to warrant the fact that they're going to work  
13 and they're going to work for 30 years, and they're  
14 going to make a lot of electricity, and that's a very  
15 important reason that we were selected for this award.

16 The old capture rate as I said is about  
17 3 million tons of CO2. Summit Power Group has been  
18 around about 20 years. The chairman of Summit is the  
19 former energy secretary for Ronald Reagan, and his  
20 number two at energy, Earl Gjelde, is the CEO of our  
21 company. They both live in Denver. So for the last 20  
22 years they have built mostly gas plants around the  
23 country. They have built, also, some wind projects.  
24 They are starting to do utility scale solar projects.  
25 They just did a deal with REC Silicone, which actually

1 makes the solar panels. They did a deal in California  
2 just outside Fresno for a \$75 million projects. This is  
3 the first project doing coal. And the reason they're  
4 doing it is because Don Hodel, the chairman, feels that  
5 it's very important for national security reasons, and  
6 energy independent reasons, to figure out a way to  
7 continue to use coal in the country, have it be  
8 environmentally acceptable, and be able to help us  
9 retain our independence in fossil fuels. And that's why  
10 this project is being done.

11                   It came about because Siemens' Board of  
12 Directors in Germany has become very close to Don Hodel  
13 and Earl Gjelde, because they have done a lot of plants  
14 together for 20 years. And a lot of the components,  
15 most of the components in the power plants that Summit  
16 has built has been with Siemens equipment. So they have  
17 talked for many years about a way to do coal  
18 gasification and do carbon capture, and that's how this  
19 project evolved. And they've been working on it about  
20 six years now.

21                   And that's why this project has done as  
22 well as it has because of all the work of many of us  
23 that keep believing that this is an answer to the  
24 future.

25                   Why Texas? Originally, Summit looked at

1 New Mexico, because of the Permian Basin, southeastern  
2 New Mexico and they looked at Texas. One reason they  
3 came to Texas originally was because environmentalists  
4 that were opposed to old technology pulverized coal  
5 asked Summit to come down and help develop a clean coal  
6 technology plant like this, that evolved from  
7 discussions that they had. Obviously, also, Texas is  
8 the perfect market to do a coal gasification plant that  
9 captures carbon and puts it in the ground, because of  
10 the revenue from the oil.

11                   And a lot of folks out here are very  
12 pleased about the fact that we will be helping to bring  
13 up a lot of oil. This project would not depend on any  
14 carbon legislation passing. It never envisioned carbon  
15 legislation happening when this project first started  
16 and if it didn't happen, it wouldn't affect the project  
17 at all.

18                   It also, unlike other IGCC plants that are  
19 proposed around the country that want to capture carbon,  
20 it doesn't require us to build a very long pipeline to  
21 put the CO2 in to do the enhanced oil recovery. Quite a  
22 few projects in the Midwest and other places, it's  
23 difficult for them. They don't have the Permian Basin  
24 sitting right underneath them.

25                   And I mentioned how Midland-Odessa had

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1 hoped to get a replacement project for FutureGen.

2                   This is a map of our site. There's our  
3 site. It's 600 acres. There is Interstate 20. Midland  
4 is over here, here is Odessa. If you exit right at the  
5 Penwell exit, you can't miss it. There are a bunch of  
6 old wooden tanks that I think are quite lovely, quite  
7 artistic, and then the entrance to the site.

8                   Ector County has agreed on the exit before  
9 that, FM 866. You take that exit, Ector County is going  
10 to build us a -- an entrance to the facility on the back  
11 side of the site, on the northern side of the site.  
12 We're also working with TxDOT in the hopes of getting an  
13 entrance right off of the Interstate 20 exit, because as  
14 you all know, along Interstate 20 runs the railroad. So  
15 we have to be able to cross the railroad. So we're  
16 talking to TxDOT about going under the railroad.

17                   One of the reasons why this was a good  
18 FutureGen site and why it's really good site for us,  
19 it's got all kinds of good power lines. There's the  
20 Moss substation there, where a lot of the transmission  
21 lines come together. The CREZ, as you know, the upgrade  
22 that the public utility commission approved for about \$6  
23 or \$7 billion worth of improvements is going to be built  
24 not too far from this area. There is a CO2 pipeline,  
25 Kinder Morgan pipeline that's near our site, and we also

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1 have got a natural gas line located just on the other  
2 side of the highway. So it's a very -- all in all, it's  
3 a very good site for a project like this.

4                   It's 600 acres, as I mentioned. And I  
5 mentioned all of the different parts of the site. We're  
6 doing zero liquid discharge. I will get into water  
7 usage in a minute. But we won't have large ponds where  
8 we have sludge coming off the plant and sitting in large  
9 ponds like they did do with some other parts of the  
10 country.

11                   This is a -- this was not Photoshopped by  
12 my 15-year-old son. It looks kind of green. It  
13 actually had a lot of rain last May when we were all out  
14 here and we were all just kind of dazzled and we have  
15 lots of pictures of greenery on the site. It's a little  
16 browner now, not as much rain has come. But it's a  
17 pretty -- it's a flat site. It's a large site. It's  
18 got some pretty desert-like vegetation, sometimes when  
19 it rains. And some oil derricks and leases that are on  
20 the property.

21                   This is the plant rendering that I  
22 mentioned that we have. We also have it in the back of  
23 the room. But Union Pacific Railroad, the trains of  
24 coal will come from Wyoming, and they will come here and  
25 we'll have track all the way around the site. And we'll

1 have quite a few layers of it, because you are going to  
2 have train cars of coal coming in, and you will have  
3 train cars of urea fertilizer going out. This is the  
4 coal pile and handling of the coal. This is the cooling  
5 tower that will -- that mainly is cooling the chemical  
6 manufacturing block of the plant.

7                   This is the air separation unit. When the  
8 air separation unit takes oxygen to go to the gasifier  
9 to gasify the coal, and this is the power block where  
10 the Syngas makes electricity.

11                   This is the urea storage, the granular  
12 urea made from production. The air separation unit also  
13 produces nitrogen that goes to the ammonia facility, and  
14 the ammonia facility then is used -- the ammonia  
15 facility is used to make the urea fertilizer.

16                   And Jason tells about how to make this  
17 electricity, and I will turn it inside out a bit. When  
18 you think about it, 50 percent of electricity is made,  
19 from this country, of coal, but it's made from old  
20 technology coal plants that are fairly cheaply made and  
21 they pollute a lot.

22                   If you build a coal plant that doesn't  
23 pollute a lot and is the cleanest coal plant ever built,  
24 which is what this will be, we got our permit, our air  
25 permit in December. It was the cleanest coal-fired

1 plant ever permitted in the state. And it will be, when  
2 it's operational, the cleanest in the country. Now, to  
3 make a -- to construct a plant like that, obviously you  
4 have to spend a lot more money on the pollution control  
5 equipment to make it so.

6 So how, then, do you have to spend so much  
7 more money to make a clean coal plant? How do you do  
8 that and make up the money for that? And as Jason said,  
9 about 26 percent of the cost of this project, which is  
10 \$2.2 billion plus, give or take, only 26 percent is the  
11 federal money. So how do you make up the rest of it  
12 with private money? And the way you do it is you  
13 produce more than electricity. You produce other  
14 products, which other coal plants in the country,  
15 pulverized coal plants, can't do, because they don't  
16 turn coal into gas to make other products.

17 So we are making about a half million tons  
18 a year of urea fertilizer. We are making compressed CO2  
19 to use in the oil fields, and we are making electricity.  
20 And each of those products is about a third of our  
21 revenue. And that's what makes the project viable, and  
22 that's why it's so very clean, because we sell the  
23 products to buy the equipment to make it clean.

24 I just mentioned the different products  
25 that we're doing. Powder River Basin coal from Wyoming,

1 I mentioned. The beauty of running a power plant on  
2 Syngas is that you can also use natural gas, if you need  
3 to. So during periods of start-up or back-up or during  
4 maintenance, we're able to use natural gas as a back-up  
5 fuel. And I mentioned the Siemens warranted high  
6 availability from their gasifiers and their turbines.

7 Water usage. And thank you to the  
8 ranchers that came tonight to talk to us about water  
9 usage and their questions about it that we're going to  
10 get back to them on, some of them.

11 We're going to use dry cooling for the  
12 power block, which basically means you use big fans to  
13 cool your plant down, as opposed to a lot of water. And  
14 by going to that, it's more expensive, but we're able to  
15 reduce the amount of water used by about 26 percent.

16 Dry cooling can't be used on the chemical  
17 block. And the chemical block is what's making the  
18 other products that I just mentioned. So the majority  
19 of the water that we'll be using on a daily basis are  
20 used in the chemical blocks for the sulfuric acid  
21 production, the ammonia production, the urea production,  
22 the air separation unit, and the CO2 compression. The  
23 total water used for the chemical block is just over  
24 4 million gallons a day on average. That's 4.2 million  
25 gallons a day on average. So in the hot, hot summer, it

1 will be more, and in the wintertime when it's cool, it  
2 will be less.

3 Our first choice for water supply is the  
4 cities of Midland and Odessa effluent. Effluent is  
5 sewage. It's what comes out of the toilet and the storm  
6 run-off that goes into the same system. And we would  
7 take that water, it would be treated at the Gulf Coast  
8 Waste Disposal Authority in Odessa, which is the old  
9 Odessa waste water treatment plant, and then it would be  
10 transported to us.

11 We're working with both Midland and Odessa  
12 to determine how much effluent we need and how much they  
13 have available and who we're going to contract with. We  
14 have been doing that for quite a while.

15 Chris has been working very hard to  
16 identify the right-of-way for the pipeline, and we've  
17 been working closely with the cities of Midland and  
18 Odessa and the counties of Midland and Ector, to work  
19 with them to use existing public right-of-way as much as  
20 possible.

21 We also, because of the -- some of the  
22 areas, the wetland areas that we would be going through,  
23 we would do horizontal boring and not trenching that  
24 would not disturb those wetland areas.

25 The back-up options that we're also

1 looking at, in case we can't come to terms and get  
2 enough of the effluent are a couple of things. One,  
3 we're talking about doing de-sal -- desalination of the  
4 Capitan reef water that Oxy Permian owns west of us.  
5 And we're talking to some companies that do de-sal and  
6 we're giving them specs and giving them prices to do  
7 desalination.

8                   We also have been talking to lots of  
9 different ranchers that call us and tell us that they  
10 have available water and ask us to come look at it.  
11 That included -- that also includes Fort Stockton  
12 Holdings, which as you all know, has been written about  
13 in the newspaper. At this point, they don't have a  
14 permit to do it and so that's not a short-term available  
15 option for us.

16                   We have very low air emissions. As I  
17 mentioned, the TCEQ already gave us our air permit. Our  
18 sulfur removal from the coal is 99 percent. The mercury  
19 removal is greater than 95 percent, and the capture rate  
20 for CO2 is 90 percent.

21                   Because we capture so much CO2, we are  
22 cleaner than a natural gas plant. If we were capturing  
23 65 percent of our CO2, it would be equivalent of the CO2  
24 that comes off a natural gas plant. But because we're  
25 capturing 90, we actually have cleaner than the natural

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1 gas plant, in terms of quite a bit cleaner than the  
2 natural gas plant.

3                   This is just a slide I show a lot when I  
4 go in the community and talk about our project, just to  
5 give you an idea. This black here is sulfur, and the  
6 spotted column is NOx, which creates smog and the PN-10  
7 is a particulate matter, the grit that comes off these  
8 power plants.

9                   This is the 1979 Martin Lake plant.  
10 Martin Lake plant is a giant plant in East Texas near  
11 Caddo Lake. And that is the sulfur that comes off that  
12 project and that's the NOx and that's the PM.

13                   This one is Oak Grove. If you remember  
14 the big fight with TXU for the plants that they were  
15 going to build a couple of years ago, they were going to  
16 build 11 coal-fired plants all at one time. They did a  
17 deal with the environmental community, and only built  
18 three. Of the three that they built, two are Oak Grove  
19 and those are the -- that one just went operational a  
20 year ago. So there you've got their sulfur, their NOx  
21 and their PM, their particulate matter.

22                   This is the Morgan Creek plant that was  
23 proposed for this area by TXU back when all the other  
24 projects were proposed. That was never built. That was  
25 part of the environmental settlement not to build it.

1 That would have been their emissions had they been  
2 built. This is the Las Brisas plant down near Corpus.  
3 This is the White Stallion plant. Both of these  
4 received permits and they have not been built yet. They  
5 just received permits in the last six months.

6 This is Tenaska Trailblazer, Sweetwater  
7 which is less than any of these pulverized coal plants.  
8 Tenaska Trailblazer, as you know, is proposed in  
9 Sweetwater. It's a pulverized plant. They also plan to  
10 capture 85 to 90 percent of the carbon. And that, if  
11 you will just look at the bars alone, you will see how  
12 much, much cleaner this technology is than the  
13 pulverized coal plant over here.

14 A more dramatic slide is the CO<sub>2</sub>, carbon  
15 dioxide. Again, this is the 1979 plant, this is the Oak  
16 Grove plant that was built, this is the one that was  
17 withdrawn, the CO<sub>2</sub> that would have come off that project  
18 here in the Midland area. And then this is Tenaska, and  
19 here we are way over here. So again, the CO<sub>2</sub> emissions  
20 are much, much smaller than these other projects.

21 And then for those of you who later want  
22 to come up with your reading glasses, this is -- this is  
23 everything without a bar chart. So it's just harder to  
24 read, but all the exact numbers from the permits are  
25 there for you. And it includes one other thing, which



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1 is mercury. And that was not on the bar charts and that  
2 is right here, and you can see, again, ours is much,  
3 much smaller than most of the others.

4 Blue Source is here. Blue Source is based  
5 in Houston. They are going to handle our CO2 sales for  
6 us in the Permian area. They will also be helping us  
7 certify our verifiable emissions reduction credits,  
8 voluntary credit to get in the market for lowering your  
9 carbon footprint.

10 The Texas Commission for Natural Geology  
11 down in University of Texas and Austin, they have worked  
12 a long time with DOE on all kinds of demonstration  
13 projects to show that you can take CO2 and you can put  
14 it in the ground, and it doesn't hurt anything. And  
15 they, according to a State law that was passed that we  
16 were involved helping draft two years ago, they'll have  
17 to come up with a very strict model for how we put that  
18 CO2 in the ground to make sure it stays there. The  
19 State standard is the toughest in the nation. You put  
20 CO2 in the ground, it has to stay there for a thousand  
21 years, and 99 percent of it has to stay in the ground.  
22 And that is our standard by law in Texas that we have to  
23 meet.

24 We're also creating a carbon management  
25 advisory board. We've already put together the 15

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1 people that will be on it, as well as environmentalists  
2 that do carbon capture storage around the country. We  
3 hope to have our first meeting here in October. The  
4 whole point of doing it where it will be funded by a  
5 third party so that we're not -- Summit Power is not  
6 paying for it, but the whole point of it is to let  
7 people who understand carbon capture and sequestration  
8 and they want to learn more about it, and  
9 environmentalists who want to understand that clean coal  
10 does exist and carbon capture storage does exist. We'll  
11 have meetings on a regular basis with them and let them  
12 be inside our project with our EPC contractors, so they  
13 can go out and say this project works and the science is  
14 valid.

15                   Finally, we're just pleased -- we have  
16 gone up to Washington a lot and met with EPA and talked  
17 to them about how CO2 used for EOR is safe and reliable  
18 and West Texas has been doing it for 30 years and if  
19 anyone wants to learn how to do it, they need to come  
20 down here.

21                   Job creation is important, obviously.  
22 We'll be creating at least 1,500 construction jobs. We  
23 estimated groundbreaking at the end of this year.  
24 That's moved to fourth quarter now, end of this year.  
25 150 full-time plant jobs, 200 additional personnel every

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1 three years for major maintenance and then all together  
2 when you look at all the different ancillary jobs around  
3 the country that will be created by all the vendors on  
4 this project, there's about 8,000 jobs.

5 And one of the reasons we want to get this  
6 project going so quickly is that about 211 of the \$450  
7 million award is stimulus money. We want to get the  
8 ground broken quickly and get moving, as we all folks  
9 know.

10 That's my cell phone number unfortunately,  
11 so be sure to call me if you would like to. Thank you  
12 very much.

13 (Applause)

14 MR. MCKOY: Thank you, Laura. I'm going  
15 to give you a brief overview of the NEPA compliance  
16 process and where we are at in that process at this  
17 point in time. NEPA stands for the National  
18 Environmental Policy Act. It is a major federal statute  
19 that became effective January 1st, 1970. It applies to  
20 all federal agencies. It does not apply to state  
21 agencies or local government agencies or private  
22 individuals. But if those other entities apply to the  
23 federal government for permit, financial assistance or  
24 otherwise require a decision by the federal government,  
25 that can trigger the compliance of NEPA.

1                   It's often referred to as the National  
2 Charter for Protection of the Environment. And that's  
3 because it's broad-based. It covers environmental  
4 issues, social issues, economic issues. The federal  
5 government is required to consider all of those issues  
6 and concerns before making a final decision on a  
7 project. Basically, the law requires and promotes  
8 environmental considerations in the decision-making  
9 process.

10                   The mandate is to provide high quality  
11 information that is available to the public and  
12 available to the federal decision-makers before  
13 decisions are made. The information must be based on  
14 good data and sound scientific analyses. There must be  
15 an opportunity for governmental agencies with  
16 jurisdiction by law or special expertise to provide  
17 comment on the EIS and on the project. And there must  
18 be an opportunity for public involvement.

19                   The typical content of an EIS is that it  
20 must include a statement of purpose and need for the  
21 federal agency action. And that purpose and need could  
22 be much different than the purpose and need for the  
23 applicant for financial assistance in this case. But  
24 there must be a clear statement of why the federal  
25 government would undertake its particular action. There

1 must be a clear statement of what the federal action  
2 would be -- in this case, it's co-funding of the  
3 project -- and reasonable alternatives that exist for  
4 the government to meet its purpose and needs, which are  
5 typically established by congressional mandate or some  
6 legislation that provides funding. There must be a  
7 description of the proposed project and the options that  
8 are under consideration, a description of the  
9 environment that would be affected by the project and  
10 for the proposed project and options and the  
11 alternatives. There must be a description of the  
12 environmental consequences, should we decide to go  
13 forward with any those. And there must be a list of the  
14 agencies, organizations, and persons contacted.

15           The purpose of the public hearing, which  
16 we're having tonight, first and foremost, is to obtain  
17 comment on the Draft EIS. We have prepared the Draft  
18 EIS. We have been trying to distribute that to  
19 interested persons, and get their input. We also would  
20 like to receive input or comment on DOE's proposed  
21 action, the co-funding of the project, and on Summit's  
22 proposed project and any particular mitigation measures  
23 that maybe need to be used to reduce the impacts.

24           Please tell us about your concerns so that  
25 you can help us in making a final decision that is based

1 on relevant information and taking into account the  
2 concerns of the people.

3           We are at the middle of the process,  
4 meaning that we have put the Draft EIS out to the  
5 public. We will take the comments that we receive and  
6 use that to help us revise the document to prepare a  
7 Final EIS that goes to the public, and it helps us to  
8 decide what mitigation measures might be used, if we  
9 decide to go forward with the project.

10           The proposed federal action in this case  
11 is to provide financial assistance to the Texas Clean  
12 Energy Project, and that financial assistance would  
13 occur in the form of a cost share. It is proposed for  
14 the Federal government to provide \$450 million, which  
15 would be approximately 26 percent of the development and  
16 capital costs that are currently recognized under the  
17 cooperative agreement. The money would be disbursed as  
18 a share of the planning, designing, construction, and  
19 the operational costs; and, of course, a portion of the  
20 money can be spent on the environmental studies.

21           Summit's proposed project was just  
22 described by Laura. And it includes the design,  
23 construction, and operation of the proposed polygen  
24 plant. From the DOE perspective, what we want to  
25 achieve is a demonstration of integrated gasification

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1 combined cycle technology that is coupled with carbon  
2 capture and storage of that carbon through enhanced oil  
3 recovery.

4                   This slide shows the schedule, starting in  
5 May of last year. We are now at the point of putting  
6 the Draft Environmental Impact Statement out to the  
7 public. We had originally planned to have that document  
8 out in October. The middle column indicates the goal.  
9 The column on the right side indicates where are we are  
10 at.

11                   We made the document available March 18th,  
12 and we would like to have the Final EIS out to the  
13 public in July. And if the Department decides to go  
14 forward with providing co-funding, a Record of Decision  
15 could be then issued in August.

16                   DOE does appreciate your attendance here  
17 tonight. We do want your participation. In addition to  
18 the opportunity to provide oral comment tonight, you can  
19 provide written comment up until the close of the  
20 comment period on May 2nd. Send your written comments  
21 to me, Mark L. McKoy, to DOE-NETL -- and I apologize  
22 that this is not readable -- P. O. Box 880, Morgantown,  
23 West Virginia, 26507-0880. You can send e-mails to me  
24 at mmckoy@netl.doe.gov. Again, this is available on the  
25 green comment sheets that are available there at the DOE

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1 table.

2 A few rules for the oral comments tonight:  
3 Please try to keep your initial comments to five  
4 minutes. I realize we don't have very many people here.  
5 Usually, we limit it because we're expecting more people  
6 to provide comment, but I hope to certainly be able to  
7 give everybody two opportunities to come up if they want  
8 to come up again. If you really feel you need more than  
9 five minutes, let me know up front.

10 I don't know if we have any elected  
11 government officials to go first. Arlene says no. So I  
12 will go down the list of pre-registered speakers. A  
13 transcript is being made. We have a transcriptionist  
14 here, making a transcript for the record, so speakers  
15 should state their name, spell their name, and speak  
16 clearly to facilitate production of the record. And  
17 again, if you prefer to provide written comments rather  
18 than oral comments, the comment sheets are available at  
19 the back or you can just write a letter or send an  
20 e-mail. You can even give me a call, but I can't  
21 capture the comments as well if you give me a call. So  
22 sending them in writing helps.

23 Okay. So this is the time to begin the  
24 formal comment period when the public is invited to  
25 provide oral comments regarding the Draft EIS, DOE's



1 proposed action, and Summit's proposed project.

2                   Again, we do not answer questions during  
3 the formal comment period. However, we will talk with  
4 you individually after the formal comment period  
5 concludes. Keep in mind that written comments are given  
6 equal weight with oral comments. And again, you can  
7 provide the written comments instead of or in addition  
8 to oral comments. Again, we have the comment sheets, if  
9 you want to use those. Those are strictly for  
10 convenience. But back at the back, you can indicate on  
11 those if you would like to receive a copy of the Final  
12 EIS or a copy of the Draft EIS. You can indicate on  
13 here if you wish to receive a hard copy of the whole  
14 document or a hard copy summary plus a CD, or just a CD.  
15 And provide your mailing address so that we can mail  
16 that to you. If you have any particular comments, there  
17 is space on the sheet so that you can write your  
18 comments on there. Again, the comment period closes on  
19 May 2nd.

20                   At this point, I'm going to start going  
21 down the list of registered speakers. I would like for  
22 the speakers to come up to the front, so that you can  
23 take advantage of the microphone and be able to address  
24 the audience, as well as DOE. Jason and Shelly and I  
25 will both be making notes of the comments that you

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1 provide, and we will soon have the transcript available  
2 for us, too.

3 The first registered speaker that I have  
4 is Brian Chandler. Brian, would you like to come up and  
5 provide some comments?

6 MR. BRIAN CHANDLER: I'm Brian Chandler.  
7 I farm and ranch in Midland County, and I'm not used to  
8 speaking to groups. So y'all just have to bear with me.  
9 My comment is going to be on the water and the water  
10 usage that, where the water is coming from to use in the  
11 plant.

12 And what I understand is the first option  
13 is to bring the waste water from Midland County and  
14 bring it to a Gulf Coast Waste Authority sewer plant in  
15 Odessa and clean it up and take the salt and the  
16 salinity out of it and then move it to the plant, to the  
17 coal plant at Penwell.

I-1-1 18 What they're suggesting is sending up to  
19 21 million gallons a day from the Midland sewer plant to  
20 this Gulf Coast Waste Authority plant. And the plant  
21 that you're talking about here is only going to use from  
22 3-1/2 million to 5-1/2 million gallons of water. And my  
23 question is what are you going to do with all of the  
24 remaining sewer water coming from Midland? And I think  
25 what the proposal is, is to dump it down Monahans Draw.

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**I-1-1:** The current industrial waste water permit for the Gulf Coast Waste Disposal Authority (GCA) Odessa South Facility allows for an average discharge of 5.6 million gallons (gal) (21.2 million liters [L]) per day with a maximum of 7.0 million gal (26.5 million L) per day. In anticipation of receiving waste water from the city of Midland waste water treatment plant (WWTP) to support TCEP's needs, GCA recently requested approval from TCEQ to increase their discharge limits to an average of 10.6 million gal (40.1 million L) per day with a maximum of 12.0 million gal (45.4 million L) per day. Currently, GCA discharges an average of 2.8 million gal (10.6 million L) per day and a maximum of 5.4 million gal (20.4 million L) per day of treated effluent to Monahans Draw.

Based on information obtained since the draft EIS was issued, Summit is considering an additional waterline option, Waterline Option (WL) 5. WL5 is a modification of WL1 and is Summit's preferred GCA waterline option. Under the WL5 option, the city of Midland WWTP would supply raw effluent to the GCA Odessa South Facility at a flow volume of approximately 6.0 million gal (22.7 million L) per day. Midland's remaining effluent would continue to be processed through primary treatment and then discharged through the city's existing agricultural-use, land disposal system. The city of Midland WWTP currently has an average flow volume of municipal waste water that is 10.0–12.0 million gal (37.9–45.4 million L) per day.

The approximately 6.0 million gal (22.7 million L) per day that would be pumped and piped from the city of Midland WWTP to the GCA Odessa South Facility would be processed through the GCA Odessa South Facility (both primary and secondary treatment) and would constitute the approximate maximum amount that would be used by TCEP (5.6 million gal [21.1 million L] per day during the summer months). The excess over TCEP's usage would be added to GCA's discharge, increasing GCA's average discharge by approximately 0.4–1.4 million gal (1.5–5.3 million L) per day (annual average would be 0.75 million gal [2.8 million L] per day), with the greater amounts discharged during the winter months when the power plant would need less water for cooling.

The average increase in discharge to Monahans Draw would represent a 27 percent increase over the current average discharge from the GCA Odessa South Facility. The impacts may include an increased distance of downstream surface water flow during typical conditions. The increase in downstream distance of flow under normal conditions may not be 27 percent, but would be affected by many factors, such as the downstream contributions to and withdrawals from the stream flow and seasonal variation in effluent discharges and evapotranspiration along the stream. During periods of little rainfall, GCA's increase in effluent being discharged into Monahans Draw would contribute to the combined discharged waste water from the GCA Odessa South Facility and city of Odessa Derrington WWTP into the draw. For example, during the spring months (April and May), the increase in effluent at the GCA outfall could contribute up to 13 percent of waste water discharge occurring in the draw and at most, stream flow could be present further down the draw by as much as 1.5 miles (mi) (2.4 kilometers [km]), reaching up to 12.5 river mi (20.1 river km) downstream. This increase in effluent during dry periods would have negligible impacts to the conditions along Monahans Draw.

I-1-1  
contd.

1 The draw is already overflowed and full, and it has like  
2 a 7-million gallon discharge rate in it right now and  
3 this is going to quadruple the rate of discharge in this  
4 Monahans Draw. So I think it's going to be really  
5 devastating to the farm and ranches down in the back  
6 part of the draw.

7 I want to thank the DOE people. This EIS,  
8 this Environmental Impact Statement, this book is real  
9 informative. It has a lot of stuff in it and we learned  
10 a whole lot from it.

I-1-2

11 Also, I just want to make a -- there's not  
12 anybody else here from the community that I know of. I  
13 want to make a statement on the railroad traffic. It's  
14 going to increase the train volume significantly going  
15 through downtown Midland and downtown Odessa, and I  
16 think that's something that the community needs to the  
17 look at. So I could talk -- we could talk all night  
18 about what I think we need to do, but that's my main  
19 concerns is what are they going to do with this waste  
20 water and how are they going to handle the water and  
21 where's it going to go when they're through it with.

22 Thank you.

23 MR. MCKOY: Thank you, Brian. The next  
24 registered commenter is Schuyler Wight. Schuyler?

25 MR. SCHUYLER WIGHT: My name is Schuyler

**I-1-1 ctd:** Depending on the terms of the agreement to be negotiated with the city of Midland, during any extended outage at TCEP, the Midland flows could be curtailed and allowed to be treated and disposed of by the city of Midland WWTP in the current fashion. Otherwise, when TCEP is not operating, the entire 6.0 million gal (22.7 million L) per day sent from the city of Midland WWTP to the GCA Odessa South Facility would be treated and discharged to Monahans Draw, along with GCA's other discharge. The release of the full 6.0 million gal (22.7 million L) per day to Monahans Draw would occur infrequently, such as when the TCEP is not operational for maintenance or upset conditions. At most, shutdowns would occur up to 10 times per year for up to four hours during the first year(s) of operation and four to five times per year for up to two hours during subsequent operational years. During flood conditions, a rare, full release would contribute approximately 0.3 percent of the flood flow volume in the draw and would not represent a significant impact to flood flow volume, flood elevations, or frequency of flooding in Monahans Draw (Summit 2011).

Visual observations conducted during the recent evaluation of Monahans Draw (May 2011) by Associated Consulting Engineers, Inc. (conducted in response to public comments) revealed no evidence of surface water flows in Monahans Draw where it crosses County Road (CR) 1210, approximately 25 river mi (40 river km) downstream of the GCA outfall. This observation occurred on a day when the GCA was discharging at approximately 3.0 million gal (4.8 million L) per day and the city of Odessa Derrington Water Reclamation Plant was discharging at approximately 2.5 million gal (4.0 million L) per day (according to GCA and the City of Odessa records). Additionally, there was no evidence of surface water flow in Monahans Draw where it crosses CR 1325, approximately 4.5 river mi (7.2 river km) downstream of the GCA outfall.

**I-1-2:** When at full operating capacity, the TCEP would require an average of four to five 150-car unit trains per week. This represents a 3–4 percent increase over existing rail traffic of 119 trains per week along the Union Pacific Railroad (UPRR) line near the proposed polygen plant site and would not represent an increase that would exceed system capacity or cause delay to existing railway operations. Each additional train added to the UPRR system would have the potential to delay traffic attempting to cross an at-grade rail crossing by approximately three to five minutes. UPRR is aware of the rail transport needs of the TCEP and has included them in company forecasts (Union Pacific Corporation 2009). Please see Section 3.16.5.3 of the final EIS, which addresses the impacts to rail transportation.

With regard to safety, there are at least seven hospitals or medical centers in downtown Odessa that are located within 0.5 mi (0.8 km) of in-town at-grade crossings. The potential traffic delays caused by the increase in train traffic would result in adverse impacts to general health and safety by impeding emergency vehicles. TCEP's supply and product transport would also contribute to rail safety issues. The additional rail miles that TCEP would contribute to the coal delivery route from the Powder River Basin would result in less than 1 (0.83) accident annually (about 25 rail accidents over the life of the project). The additional rail miles that TCEP would contribute from rail transport of one train per week for urea and two trains per week for other materials (argon and sulfuric acid, and slag) to the Midwestern U.S. would result in fewer than one (0.33) accident annually (approximately 10 rail accidents over the life of the project). However, given the overall low frequency of hazardous material spills on railroads, the risk of a release of TCEP materials during rail transport would be low. Please see Section 3.18.5.2 of the final EIS, which addresses transportation safety impacts.

I-2-1 1 Wight. Our family has been ranching here in this area  
2 since the late 1800s, since before Odessa was here. My  
3 main concern is with the water, but before I get into  
4 that, I want to -- there's a couple of other things that  
5 strike me as kind of funny about this project. You  
6 know, they're going to haul this coal from half way  
7 across the country down here to West Texas, and guess  
8 what they're going to do with it? They're going to make  
9 natural gas out of it. That doesn't make any sense to  
10 me, because West Texas has plenty of natural gas and if  
11 they want natural gas, they ought to go talk to  
12 Sandridge. Sandridge has got a whole bunch of it down  
13 there they'd like to get rid of.

I-2-2 14 Another thing I want to talk about is the  
15 main criticism of wind farms, and our family has a very  
16 tiny interest in this wind farm out at Notrees. The  
17 biggest -- one of the biggest criticisms of wind farms  
18 is that they generate electricity constantly. They  
19 generate electricity when you need it, but they also  
20 generate electricity when you don't need it. They're  
21 talking about this plant running 24/7, producing  
22 electricity all the time, whether we need it or not.  
23 That, to me, seems like a pretty dumb idea to spend this  
24 much money to generate electricity when we don't need  
25 it.

**I-1-2 ctd:** Rail traffic noise levels already exist from trains and railcars traveling along the tracks through Odessa and Penwell, and the sensitive receptors closest to the existing UPRR rail line are already being impacted by this type of noise. There would be an adverse, minor increase in noise impacts to receptors within 1,000 feet (ft) (305 meters [m]) of the rail line used for TCEP transport due to the approximately 3–4 percent increase in rail traffic. Please see Section 3.19.5.2 of the final EIS, which discusses noise impacts from TCEP operations.

**I-2-1:** The purpose of the DOE's proposed action is to demonstrate the commercial feasibility of the proposed combination of technologies, particularly a coal-fueled integrated gasification combined-cycle (IGCC) power plant with CO<sub>2</sub> capture and sequestration of the CO<sub>2</sub> that would otherwise be emitted to the atmosphere. Thus, providing funding for a natural gas plant would not meet DOE's purpose and need for action.

Summit selected a site in the Permian Basin because the region has an existing market for CO<sub>2</sub>, which is used in EOR. No other area of the United States has an established market for CO<sub>2</sub> to be used for EOR. Sales and use of the CO<sub>2</sub> is important for demonstrating the commercial feasibility of a power plant to capture and sequester CO<sub>2</sub>. Thus, Summit decided to locate the plant near existing oil fields that could use CO<sub>2</sub> for EOR, rather than to build a power plant near a fuel source that would require the construction of a long CO<sub>2</sub> pipeline.

TCEP would produce synthesis gas or "syngas," not "natural gas." Raw natural gas is 80 percent methane with the remainder consisting of other hydrocarbons and trace contaminants. Before natural gas can be used as a fuel, it must undergo processing to remove almost all materials other than methane. The syngas produced from the gasification of coal by the TCEP would consist predominantly of hydrogen gas, not natural gas. TCEP's syngas would consist of 91 percent hydrogen gas, 6 percent nitrogen gas, less than 3 percent carbon monoxide, and trace amounts of other substances such as methane. This syngas would be used to produce electricity and urea. The production of syngas results in the formation of pressurized, concentrated CO<sub>2</sub>, which can be separated and used for EOR. The combustion turbine would be fueled with the cleaned, high-hydrogen syngas. The primary combustion product of hydrogen gas is water vapor. TCEP would be an important commercial demonstration of long-term, commercial turbine operation on clean burning, high-hydrogen syngas. Please see also the response to I-3-3.

**I-2-2:** The power produced by the TCEP would be sold under a power purchase agreement (PPA) where the price is set and the power purchaser agrees to take the contracted amount of power regardless of market conditions. A PPA would be in accord with Electric Reliability Council of Texas's (ERCOT) current and projected need for base-load power on a 24-hour/7-day-a-week (24/7) basis.

Base-load power plants can generate electricity at full output 24/7. Wind and solar farms are not base-load plants because they do not generate 24/7 and because the wind and solar energy fluctuates.

I-2-3 1                   The main thing, though, that really  
2 strikes me as funny about this, is that this project, if  
3 this project is really, truly a viable project, we  
4 wouldn't have to put \$450 million of our money into it.  
5 If this project would stand on its own, Summit would  
6 have built this thing a long time ago. If it -- if this  
7 beautiful Siemens whatever that turns this coal into gas  
8 was such a great idea, Summit would have built this  
9 plant years ago and we wouldn't be going through all  
10 this, because we wouldn't need the federal money for  
11 this. So that right there ought to tell you that this  
12 plant is really not a viable operation.

13                   But to top it all off, what they want to  
14 do is take this water that we really and truly don't  
15 have excess of here in the desert and they want to feed  
16 this plant with it. My concerns are the same as  
17 Brian's. Number one, they still have this Ft. Stockton  
18 Holdings thing as an option on here. To me, it makes no  
19 sense to take our most precious resource here in the  
20 desert and use it for this boondoggle. It just makes no  
I-2-4 21 sense.

22                   We don't have excess water in the desert.  
23 We need to take care of our water, because years from  
24 now, there's going to be more people here than there are  
25 today and we're going to need this water in the future.

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**I-2-3:** The TCEP would be a first-of-a-kind project to demonstrate the integration of coal-fueled IGCC power generation, urea production, and CO<sub>2</sub> capture and use in EOR. Typically, first-of-a-kind projects are more risky and expensive than subsequent projects that build the same thing. As a result, it is more difficult to get sufficient funding from the commercial/private sector for the construction and demonstration of first-of-a-kind power plants.

Furthermore, first-of-a-kind projects can have higher financial risks for investors and lenders. Thus, absent strong incentives, they would choose to build low-cost, standard technology power plants that would provide the maximum short-term return on investment with the least risk. They may favor environmental improvements, but not at significantly higher costs or risks

In contrast to the commercial sector's tendencies, the government's objective is to transition the nation's existing fleet of electric power generating plants to a next generation of more efficient, environmentally superior, and cost-competitive facilities.

DOE invests taxpayer dollars in a broad portfolio of projects (cleaner use of coal, energy efficiency, renewable energy sources, and nuclear energy) as a means of encouraging and developing the nation's ability to meet its energy needs while limiting its environmental impacts. During the proposal selection process, DOE considers the financial risks and the potential for successful demonstrations of selected technologies, along with the potential for environmental and socioeconomic impacts. Through DOE's proposal selection process and subsequent oversight of the investment of tax dollars in chosen projects, DOE aims to limit the risks in the investment of taxpayer dollars to a level that is commensurate with the governmental objects of technology demonstration and infrastructure improvement, as expressed under the Clean Coal Power Initiative (CCPI).

**I-2-4:** Summit is considering several options for obtaining process water for the proposed TCEP. Using water from the Fort Stockton Holdings (FSH) pipeline project, if it were to be constructed, is one of the options. However, Summit has indicated that using treated municipal sewage water is Summit's preferred alternative (see Section 2.4.5.3). Please see response to I-3-13.

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1                   The other concerns are the same as what  
2 Mr. Chandler has. They're going to take water that's  
3 already brackish, they're going to clean it up, take the  
4 goody out of it, use it in this plant, and then they're  
5 going to discharge the brine water that's left over on  
6 to the ground.

I-2-5

7                   You know, the oil companies in this area  
8 spend a lot of time, lot of money, and have a great  
9 capital expenditure in getting rid of this brine water.  
10 Why are we running more brine water out on the ground?  
11 It makes no sense. The ground in this -- the soil in  
12 this area is high. It has elevated salinity levels all  
13 over the place. It makes no sense to dump more salt  
14 onto this ground, just absolutely makes no sense.

15                   But I go back to the -- one of my biggest  
16 problems with this plant, I go back to that, and that's  
17 this \$450 million of our money that we're putting into  
18 this. If this plant was a viable economic unit, Summit  
19 would have already built this thing without our money.  
20 So that right there tells me that this plant is totally  
21 off the chart. That's all I've got to say.

22                   MR. MCKOY: Thank you, Schuyler. Those  
23 are all questions that we need to answer. The next  
24 registered commenter is Steven Schafersman.

25                   MR. STEVE SCHAFERSMAN: Good evening,

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- I-2-5:** Reverse osmosis brine waste water from the raw water treatment system would be handled using a combination of on-site, lined solar evaporation ponds and on-site deep injection wells. No brine water from the raw water treatment system's reverse osmosis process or any other waste water would be discharged to the ground surface. The final EIS addresses these brine water handling systems in Section 2.4.3.4.

1 everybody. My name is Steven Schafersman. I'm a former  
2 university professor, science professor. I've taught  
3 geology, biology, environmental science, petroleum  
4 geology. I've also worked in the petroleum industry.  
5 I'm a consulting scientist. I followed this project  
6 closely over the years. I have several comments to  
7 make.

8 First, let me thank the two previous  
9 people who spoke. Their comments were excellent. Yes,  
I-3-1 | 10 there will be vastly increased railroad traffic. Yes,  
I-3-2 | 11 there will be open coal cars with coal dust flying along  
| 12 the line. They are going to be making Syngas, when we  
I-3-3 | 13 obviously have very cheap natural gas now to provide  
| 14 electricity.

15 Also, where is the market for the  
16 electricity? There isn't a lot of heavy industry here.  
I-3-4 | 17 It will be transmitted elsewhere. Those plants should  
| 18 be built near the market for the electricity. We  
| 19 don't -- we have plenty of electrical-generating plants  
| 20 here.

21 I have mixed feelings about the project,  
22 the Summit Power Texas Clean Energy Project. First of  
I-3-5 | 23 all, the Environmental Impact Statement is fine. I have  
| 24 no objection to it. It was done fairly and competently.  
I-3-6 | 25 Also, I have no objection to the concept of an IGCC

**I-3-1:** When at full operating capacity, the TCEP would require an average of four to five 150-car unit trains per week. This represents a 3–4 percent increase over existing rail traffic of 119 trains per week along the UPRR line near the proposed polygen plant site and would not represent an increase that would exceed system capacity or cause delay to existing railway operations. Each additional train added to the UPRR system would have the potential to delay traffic attempting to cross an at-grade rail crossing by approximately three to five minutes. UPRR is aware of the rail transport needs of the TCEP and has included them in company forecasts (Union Pacific Corporation 2009). Please see Section 3.16.5.3 of the final EIS, which addresses the impacts to rail transportation.

With regard to safety, there are at least seven hospitals or medical centers in downtown Odessa that are located within 0.5 mi (0.8 km) of in-town at-grade crossings. The potential traffic delays caused by the increase in train traffic would result in adverse impacts to general health and safety by impeding emergency vehicles. TCEP's supply and product transport would also contribute to rail safety issues. The additional rail miles that TCEP would contribute to the coal delivery route from the Powder River Basin would result in less than 1 (0.83) accident annually (about 25 rail accidents over the life of the project). The additional rail miles that TCEP would contribute from rail transport of one train per week for urea and two trains per week for other materials (argon and sulfuric acid, and slag) to the Midwestern U.S. would result in less than 1 (0.33) accident annually (about 10 rail accidents over the life of the project). However, given the overall low frequency of hazardous material spills on railroads, the risk of a release of TCEP materials during rail transport would be low. Please see Section 3.18.5.2 of the final EIS, which addresses transportation safety impacts.

Rail traffic noise levels already exist from trains and railcars traveling along the tracks through Odessa and Penwell, and the sensitive receptors closest to the existing UPRR rail line are already being impacted by this type of noise. There would be an adverse, minor increase in noise impacts to receptors within 1,000 ft (305 m) of the rail line used for TCEP transport due to the approximately 3–4 percent increase in rail traffic. Please see Section 3.19.5.2, which discusses noise impacts from TCEP operations.

**I-3-2:** Coal that is transported by train is generally crushed into small, gravel-sized chunks with finer particles in between. As a standard practice, a coal dust suppressant would be applied to the surface of the load in coal train cars prior to transport to the coal storage pile at the polygen plant site. As a result, coal dust emissions from rail transportation and from the on-site coal storage are expected to be minor. Section 3.3.5.2 (Project Emissions) in the final EIS has been updated to reflect this information.

**I-3-3:** Although the plant may be located in a region where natural gas is abundant and relatively inexpensive at the present time, the region is also one where the CO<sub>2</sub> to be captured by the plant can be readily sold on an existing market, transported primarily through existing pipelines, and sequestered as a result of its usage in an existing industry.

Summit is not attempting to build a substitute for a natural gas plant. Instead, the TCEP is a demonstration plant, which would establish the use of coal in an environmentally sensitive and commercially viable way (see Section 1.3.2 of the final EIS, which addresses Summit's purpose and need). Not only would the plant be located near a

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I-3-6  
contd.

1 plant. My objections are to the plant proposed here,  
2 because it has several problems that people should be  
3 aware of.

4 Any IGCC plant, integrated gasification  
5 combined cycle coal-powered electricity generating  
6 plant, is preferable to a traditional coal-powered  
7 plant. 90 percent of the CO2 will be captured and  
8 10 percent released. This will certainly be better than  
9 a hundred percent of the CO2, which is the case now.

10 The captured 90 percent CO2 should be permanently  
11 sequestered underground immediately. In this case, it  
12 will not be. Unfortunately, some CO2 will remain  
13 underground and some will be released during enhanced  
14 oil recovery. And all of it will be used to produce  
15 additional oil by enhanced oil recovery or tertiary  
16 recovery. This oil will eventually be refined and used  
17 as fossil fuel, thus releasing more CO2 to the  
18 atmosphere.

I-3-7

19 After all this, there will indeed be a net  
20 decrease in the total amount of CO2 released compared to  
21 a traditional plant, but not a traditional plant -- not  
22 an IGCC plant where everything is sequestered. But the  
23 amount sequestered is not significant, incrementally  
24 significant, and certainly not enough to justify  
25 spending the enormous amount of money on a partially

I-3-8

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**I-3-3 ctd:** critical market (the only such CO<sub>2</sub> market in the United States), the choice of fuel would be based on long-term economic considerations. Over the planned life of the power plant, coal would have much less price variability than natural gas. Recent history has shown that natural gas prices can vary greatly, causing plants using natural gas to cease operations (and even close) when the price of natural gas goes too high. Throughout the 1990s, plants fueled by natural gas were built in response to the low prices for the relatively abundant natural gas at that time. The widespread deployment of these plants resulted in the demand exceeding the supply to a degree that caused a large increase in the prices of natural gas. As a result, natural gas plants were put on standby or closed. High prices for natural gas eventually triggered more exploration and production of natural gas, which led to a decline in natural gas prices; however, the price volatility has caused a fear among long-term investors and lenders regarding the opportunities to participate in such proposed plants today. In general, plants fueled with coal are much easier to finance under long-term arrangements.

Please see also the response to comment I-2-1.

**I-3-4:** The primary purpose for locating the plant at this site is to take advantage of the market and demand for CO<sub>2</sub> to be used in EOR. The power produced by the TCEP would be sold under a PPA, in which the price would be set and the power purchaser would agree to take the contracted amount of power off the grid at another location.

**I-3-5:** Comment noted.

**I-3-6:** Comment noted.

**I-3-7:** As with coal-fueled power plants, CO<sub>2</sub> is produced when fossil fuels, including the petroleum obtained using EOR, are burned. However, approximately 90 percent of the CO<sub>2</sub> from the TCEP would be captured and either used in the production of urea or injected underground for use in EOR. The domestic production of urea will reduce the CO<sub>2</sub> emitted from the transport of urea to the United States. Almost all of the CO<sub>2</sub> used for EOR would be sequestered and would not be released to the atmosphere. Some of the CO<sub>2</sub> injected for EOR would come to the surface as dissolved gas in the produced oil and would then be degassed, re-captured, and then recycled by reusing it in further EOR. The oil and natural gas produced by the EOR, when burned, would release its carbon in the form of CO<sub>2</sub> to the atmosphere.

It is likely that the oil and natural gas produced by EOR would displace oil and natural gas from other sources, so it is not clear that EOR-produced fuel would result in a net addition of CO<sub>2</sub> to the atmosphere. Furthermore, the domestic production of urea will reduce the CO<sub>2</sub> emitted from the transport of urea to the United States. Please see also the responses to comments I-8-6 and I-8-7.

**I-3-8:** The polygen plant would capture approximately 90 percent of the CO<sub>2</sub> it generates, and Summit would sell most of this CO<sub>2</sub> for use in EOR by oil field operators. Oil and natural gas recovered as a result of EOR using CO<sub>2</sub> would then be processed into fuels that would be combusted in engines, combustion turbines, steam boilers, space heaters, etc. and the carbon in these fuels would be released to the atmosphere in the form of CO<sub>2</sub>. However, the process does result in a net benefit compared to a situation where no CO<sub>2</sub> is captured and stored from a fossil fuel power plant, and the oil and natural gas are produced by other means.

I-3-8  
contd.

I-3-9

I-3-7  
and  
I-3-8  
contd.

1 federally-financed initiative to generate electricity,  
2 especially when today, cleaner, less expensive ways  
3 exist, such as solar and wind, and a cleaner, equally  
4 expensive way exists, and that would be modern forms of  
5 nuclear energy. And I say modern forms. The  
6 traditional plants that we have in Texas or in Japan are  
7 not the plants of the future. Those plants are obsolete  
8 and will never be used again, hopefully. There are more  
9 modern designs which are far safer, proliferation proof,  
10 far more efficient, and again, far safer than the  
11 traditional plants.

12 We should be looking at that source of  
13 energy. Now, I am aware that this will be a  
14 demonstration plant, and for that reason, it may be  
15 acceptable. This is why the federal government is  
16 partially financing it. It's a demonstration plant.  
17 The ecometrics are not fully known now and, frankly,  
18 cannot be known until the plant is constructed and  
19 things are measured. I'm not sure what will eventually  
20 come out of this, whether enough CO2 will be permanently  
21 sequestered during enhanced oil recovery. I still have  
22 not gotten straight figures about the excess amount of  
23 CO2 that is released from the fossil fuels produced by  
24 the EOR. After all, all that oil, which would normally  
25 not be produced without the carbon dioxide tertiary



**I-3-8 ctd:** In EOR, the CO<sub>2</sub> that comes to a wellhead with the oil is degassed from the oil, recompressed, and returned to the pipelines going to the CO<sub>2</sub> injection wells. For the TCEP, oil field operators would be subject to a contract provision with Summit that requires recycling of CO<sub>2</sub> degassed from the produced oil and requires monitoring, verification, and accounting with oversight by the Texas Bureau of Economic Geology. Both Summit and the oil field operators would receive tax incentives for the quantity of sequestered CO<sub>2</sub> that is certified by the Texas Bureau of Economic Geology as being permanently sequestered. Thus, there is substantial incentive, beside the value of the CO<sub>2</sub>, for not releasing TCEP's CO<sub>2</sub> to the atmosphere.

**I-3-9:** The nation's energy security requires the use of a variety of energy sources. DOE implements a wide-ranging portfolio of separate and distinct programs, each of which is focused on specific energy technologies. These include wind, solar, nuclear, and fossil energy. Each program is mandated by congress and receives its own appropriated funding. The proposed TCEP is being considered under DOE's CCPI program; such funds focus on advanced coal utilization technologies and are not available for wind, solar, or nuclear energy power plants.

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I-3-7  
contd.

1 recovery is produced and it's turned into gasoline and  
2 other fuels and burned as fossil fuel to create more  
3 CO2. I do understand there will be a net decrease, but  
4 I don't think it's that much.

5 Now, let me turn to the major problem of  
6 this plant. I haven't even discussed that yet. As you  
7 recall, we had a plant proposed several years ago, the  
8 FutureGen plant. Our bid failed, and I knew it would  
9 fail, and I told everyone this. Nobody believed me  
10 around here ahead of time for two reasons.

11 First, the CO2 was going to be sequestered  
12 at university lands near Ft. Stockton. University lands  
13 was obliged to charge an enormous amount of money to  
14 permanently store that CO2, and in underground  
15 reservoirs that still had oil in them, it was going to  
16 be millions a year, I believe. Plus they would have to  
17 construct a huge pipeline to transport the CO2 there.  
18 That alone would be enough to kill the FutureGen plant  
19 here. But there was an even more severe problem, and  
20 that was the lack of fresh water that is needed for the  
21 cooling. I knew that would be a problem.

22 Now, the first problem is, of course,  
23 eliminated. They're going to sell the carbon dioxide  
24 for enhanced oil recovery and it will actually be an  
25 income producer. So that's a positive. But the second

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1 problem remains. Now, you've heard already some  
2 presentations about where that water is coming from.  
3 Frankly, you're not getting the whole story.

4 First, the primary source would be  
5 municipal water supply of waste water effluent from  
6 Odessa and Midland. Odessa's waste water, a lot of it  
7 comes down Monahans Draw right now and is released.  
8 People don't know this, but all of that water is  
9 contracted for. People have contracts on it. Odessa  
10 has been selling it. Not everyone is using it, though.  
I-3-10 11 The people who have contracts obviously aren't using it  
12 all. But they could. So Odessa cannot sell its  
13 effluent waste water to Summit Power, because it has no  
14 more to sell. It's all spoken for. Now, Summit could  
15 go negotiate with the people who have the contracts and  
16 aren't using it now and that may be a source. They may  
17 do that. I don't know how much that's going to cost,  
18 but it's going to cost a lot.

19 What about Midland? Midland also has an  
20 equivalent amount of waste water effluent. It's  
21 currently piped to a field near Spraberry where it's  
I-3-11 22 used to irrigate crops that are not used for human  
23 consumption. These are hay crops for cattle and so  
24 forth, not used for human products.

25 That water is not under contract, but

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- I-3-10:** Summit is currently considering the purchase of treated waste water from either the city of Odessa or the GCA Odessa South Facility as a backup water supply source only. Although the city of Odessa has fully committed their reuse water to other water rights holders, they do have excess water that discharges into Monahans Draw in the winter months. Summit could purchase secondary or tertiary water rights as a backup water supply during these months. The final EIS also addresses primary water source options (WL1 and WL5) consisting of transferring part of the untreated sewage effluent from the city of Midland to the GCA Odessa South Facility where it would receive primary and secondary treatment prior to delivery via pipeline to the polygen plant site.
- I-3-11:** DOE's understanding, based on communication between Summit representatives and representatives of the city of Midland and the GCA, is that the city of Midland would continue sending nearly half of its waste water to Midland's spray irrigation fields for disposal even if Midland does provide waste water to the TCEP. Midland does have plans for a small percentage of its waste water to be processed to higher quality through a small WWTP (to be installed at or near the point of use). This cleaned waste water would then be used for landscaping and lawn maintenance by Midland College and perhaps another entity. However, accounting for this application, there would be sufficient waste water remaining to meet the needs of the TCEP and to continue the spray irrigation of hay. DOE understands that Midland's current rate of spray disposal exceeds the optimal land irrigation rates for crops, and that diversion of excess waste water to the TCEP would be beneficial to the spray disposal system currently in use by Midland without reducing the production of crops.

Although Midland and Odessa may have to begin treating municipal waste water for reuse as potable water in the future, currently there are impediments to this, both with the public perception of drinking treated municipal waste water and with the technical and cost aspects of treating municipal waste water to a socially acceptable level of cleanliness. During the life of the polygen plant, it is likely to remain socially more acceptable to treat and use other water (for example, saline water) for potable water supplies.

I-3-11  
contd.

1 Midland had plans for it and they've had plans for it  
2 and plans are in effect for it right now. Half of it is  
3 going to be used to be treated by a new plant that is  
4 going to be constructed in Midland that waste water will  
5 be turned into gray water and used to irrigate the lands  
6 of Midland College and MISD. It's going to be used for  
7 turf irrigation, landscaping irrigation, which, of  
8 course, is a perfect use for it. Right now, it only  
9 undergoes primary treatment and then it's piped to  
10 Spraberry, which is a pretty simple treatment. It can  
11 go under -- there are several different stages of  
12 treatment, I won't get into this, but they will treat it  
13 a little bit better to clean it up even more to  
14 something that's much better, and use it for Midland  
15 College landscaping, and also MISD.

I-3-11  
contd.

16 They could even treat it more and make it  
17 drinkable. It would be actually safe to drink as it  
18 would be, but they're going to not do that part. What  
19 about the rest? Well, Midland could contract that out,  
20 but I would definitely advise against it. People don't  
21 realize how short we are of water right now. We are  
22 going to be needing that waste water effluent. It's  
23 going to have to be treated in the future to be used for  
24 landscape irrigation, as Midland plans, but also for  
25 producing potable water. The traditional sources of

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I-3-11  
contd.

1 water, the reservoirs and the ground water fields and  
2 the lakes, these are drying up. First, the lakes, and  
3 the rivers. People expect a heavy rain, a good rain to  
4 fill these up again. I don't think it's going to  
5 happen.

6 A lot of -- one of the ironies of the IGCC  
7 is that it's being built because we have an  
8 anthropogenic climate change problem. Our emissions are  
9 causing global warming, human-caused global warming.  
10 Now, the irony is that half the geologists and  
11 geological engineers -- excuse me, petroleum engineers  
12 in Midland don't even believe in global warming that is  
13 occurring or that humans are causing it.

I-3-12

14 And I think a lot of the politicians think  
15 the same. But they're all in favor of this new plant  
16 coming in, because, of course, it provides jobs and  
17 capital influx into the community. There are people  
18 here in the audience who don't believe in anthropogenic  
19 climate change. What can I say? I'm a scientist. Of  
20 course, it's true. The current investigations have  
21 shown that we have come into a drought condition that's  
22 not going to end. You know, we've traditionally gone  
23 through cycles, ten years wet, ten years dry. We've now  
24 been in a dry cycle, a drought cycle for 20 years. It's  
25 not going to change. The reason is climate change.



**I-3-12:** DOE recognizes that West Texas is experiencing drought conditions and has for some time. DOE also recognizes the need to take into account climate change and the need to mitigate the impacts of climate change to the extent possible.

Both DOE and Summit have recognized since the FutureGen Project that water is the dominant environmental concern for the Odessa–Midland area with regard to the siting and operation of a new power plant. Therefore, both entities have given considerable emphasis in the planning process to minimizing the potential for impacts to potable water supplies in the region. For various options, Summit has considered the availability, technical feasibility, and economic feasibility of alternative water supplies along with the potential for adverse impacts to regional potable water supplies and the environment.

DOE recognizes that climate change could affect the availability of potable water supplies in the region, with the result that water supply plans may require adjustment to account for this factor. Climate change may reduce future supplies of potable water to levels below those currently forecast. Because of this additional factor of uncertainty, potentially potable water supplies (i.e., those supplies of marginal quality that could be used after moderate amounts of treatment) would be given a greater level of value and consideration by DOE as its decision-making process continues.

I-3-12  
contd.

1 We're not going to get those rains that will refill our  
2 reservoirs. So we're not going to get the water that we  
3 have expected.

I-3-12  
contd.

4                   What about the aquifers? All of the  
5 area's aquifers in West Texas are being mined. Every  
6 one of them. What does that mean? That means they're  
7 being extracted at non-sustainable rates. The water  
8 table is dropping and that's a permanent drop. This is  
9 a disaster, believe me. And scientists have warned  
10 people, you just can't pump water that much, but it's  
11 happening anyway. We're not going to be able to use  
12 ground water for the clean water that the plant needs.  
13 We're not -- we are going to need that effluent, even  
14 within ten years, Midland and Odessa are going to need  
15 to start treating their waste water effluent. So those  
16 sources are not going to be available, realistically, to  
17 the power plant. And I'm surprised that they're still  
18 listed on your posters as option number one.

I-3-13

19                   What about options number two and three  
20 and all those? Those are even less realistic.  
21 Ft. Stockton Holdings. You may know enough, as I do,  
22 that this is going to go through years of litigation  
23 before anything is resolved. And in fact, Mr. Clayton  
24 Williams is relying on a Texas ground water law called  
25 the Rule of Capture, which is one of the worst laws in

- I-3-13:** The potential environmental impacts of obtaining process water from FSH are analyzed in the final EIS. This analysis did not consider whether the FSH pipeline would be constructed or whether any litigation might ensue. DOE understands that all permit requirements and other project-related hurdles would have to be cleared before the FSH water supply pipeline could be used by the TCEP. The environmental acceptability of this option, either as a primary water supply or as a backup water supply, would be considered by DOE during DOE's deliberations leading to a record of decision (ROD). Furthermore, the extent to which this water would be available in the time period needed for the TCEP may be a factor in DOE's decision making with respect to TCEP funding for subsequent phases of the project (e.g., detailed design and construction). DOE expects that Summit would also factor the availability of potential process water sources into Summit's decision making.

1 history. It's one of the worst policies in our state.  
2 Every other state has abandoned it. The rule came into  
3 effect when people back in the Spanish colonization  
4 times, when people did not understand the nature of  
5 ground water or water rights.

6                   The Rule of Capture says that Mr. Williams  
7 can pump as much water as he wants from his land and use  
8 it and sell it if he can get a permit. But in fact,  
9 that water flows in from his neighbor's lands, as it has  
10 for decades now, and of course, Comanche Springs dried  
11 up long ago due to the pumping of the Clayton Williams  
12 family.

13                   It's going to go through litigation. It's  
14 likely, I really predict, that there will be a  
15 tremendous fight in court to get rid of the Rule of  
16 Capture. And the last state that has that law, it will  
17 be gone. The underground water, aquifer groundwater  
18 will have to be regulated by the State, as the surface  
19 water is, quite favorably, in Texas. We do a wonderful  
20 job that way. This also will apply to neighboring  
21 ranchers. You said you wanted to get ground water from  
22 neighboring ranches. I don't think that's going to  
I-3-14 23 happen. As soon as people start pumping that water,  
24 it's going to be at nonsustaining rates that will cause  
25 the groundwater districts to take an interest in it. It

**I-3-14:** As with most arid regions in the country, the demand for surface and ground water is high, and recharge rates are low. In general, aquifers in arid regions are managed for acceptable levels of depletion relative to pre-production conditions, and this is true across West Texas (Texas Water Development Board [TWDB] 2011). Regardless of whether the TCEP is constructed and operated, the challenge for water managers is to meet projected demand with additional supply, which is likely to come from recycled waste water, additional surface reservoirs, and/or desalination of ground water sources that are currently considered nonpotable (TWDB 2011). Summit is considering three alternatives that would use nonpotable water, including recycled waste water (WL1 and WL5, the latter of which is Summit's preferred option) and the desalination of nonpotable ground water (WL2). WL3 and WL4 would involve a different, but not an additional, use of ground water and would only be feasible if the FSH pipeline project is be constructed.

I-3-14  
contd.

1 will go to court, and the Rule of Capture will be  
2 litigated and so forth.

I-3-15

3                   The only sorts of water I can see are the  
4 produced oil field waters, called brines, oil field  
5 waters. These are very salty waters that can be cleaned  
6 up through desalinization on an industrial scale, just  
7 like people are desalinating (inaudible) water for fresh  
8 water in the Middle East. Israel is a pioneer in this.  
9 There are other companies in this country that do this  
10 on an industrial scale. It's expensive, but it can be  
11 done. That water might be available to use.

12                   If all you need is 4 million gallons a  
13 day, you might be able to get 4 million gallons of brine  
14 a day and clean it up. I don't know. But anyway, it's  
15 going to be years before the source of water is going to  
16 be -- is going to be reasonable. So this is a major  
17 problem.

I-3-16

18                   This is one of the two problems that  
19 affected the FutureGen plant and it's going to be a  
20 problem that affects this plant. I just don't see where  
21 that water is going to come from for the cooling of the  
22 chemical blocks. I was surprised to see that the power  
23 block is going to be air-cooled. That's terrific. I  
24 think that's a positive. Maybe you can get the  
25 technology to cool the chemical blocks, too, using air

**I-3-15:** Summit seeks to use nonpotable water that can be economically treated for use at the proposed TCEP. Water co-produced along with oil and natural gas contains both petroleum contaminants and high concentrations of dissolved mineral constituents. Processing of this water would be much more costly than for ground water from shallower depths where the water is less saline (but too saline for human or animal consumption) and does not have the petroleum contaminants and even higher concentrations of dissolved minerals typically found in the waters from oil reservoirs.

Furthermore, in most cases, it is preferable to re-inject into the oil reservoirs the water that is pumped to the ground surface along with the oil. This is a common procedure for handling the produced water, and it serves some beneficial purposes: 1) maintenance of fluid pressures in reservoirs to assist the migration of oil toward producing wells; 2) a sweep effect (as in a water flood of a reservoir) to push oil toward the production wells; and 3) maintenance of pore pressures that, in some reservoirs, minimize the compaction of the reservoir materials and associated land surface subsidence. For these reasons, produced waters from surrounding oil fields may not be the best choice.

**I-3-16:** The overall project has been designed using good engineering practices to optimize efficiency and minimize water use. Two types of cooling systems, wet and dry cooling, would be used at the polygen plant site. The power block would use dry cooling via the air-cooled condenser, whereas the chemical process would use wet cooling when certain processes would require cooling to temperatures below what can be achieved through dry cooling alone. The use of dry cooling alone for all chemical processes is not practicable based on the design optimization required for the economic viability of the project. If dry cooling were to be used on those chemical process units that require wet cooling, it would reduce the overall efficiency of the project to a level that would no longer be economically viable. The polygen plant would instead use dry cooling for the entire power block and portions of the chemical process when practicable, which would significantly reduce the overall water demand for the project, compared to the traditional approach of using all wet cooling.

I-3-16  
contd.

1 cooling. Of course, by the time we get that technology,  
2 we'll probably have nuclear technology advanced enough  
3 that we don't need to burn coal anyway.

4 Thank you.

5 (Applause)

6 MR. MCKOY: Thank you, Steven. The next  
7 commenter is Michael McCulloch.

8 MR. MICHAEL MCCULLOCH: Hi, I'm Michael  
9 McCulloch, M-C-C-U-L-L-O-C-H. My family's landowners in  
10 Brewster County, Pecos County, Midland County, and Ector  
11 County. And fortunately, as the prior two speakers have  
12 already shared all my concerns, but what I would like to  
13 see is, I would like to see Ft. Stockton Holdings  
14 eliminated as a source of water. I'd also like to see  
15 the project look at the Pecos alluvial water if they're  
16 going to be looking at water.

I-4-1

17 Steven already's talked about production  
18 water. I really think the technology is out there now.  
19 My alma mater, A&M, has been looking at de-sal and  
20 production water, and I think that would be a better  
21 source of water. The Pecos Alluvium is right down in  
22 Pecos County on the river. The aquifer is a thick  
23 shallow aquifer. The TDSS are quite high, but I think  
24 if this project is to go forward, using federal funds,  
25 that using that water and de-salting that water would be



**I-4-1:** The Pecos Alluvium Aquifer is of major regional importance and has been widely used for irrigation purposes. In central Ward County, it is also under production for municipal and industrial purposes. Production rates greatly exceed recharge rates and aquifer drawdown has approached 200 ft (61 m) in some areas of Reeves, Pecos, and Ward Counties. The aquifer is also highly variable in production quality and quantity and is subject to water quality and quantity impacts in areas where production is occurring. If TCEP were to use this option, impacts to the aquifer's water quality and quantity would likely be significant within the region of the drawdown surrounding the project's water supply wells. Impacts to potential water supply opportunities in the region of the Pecos Alluvium Aquifer may be greater than under the options discussed in the draft EIS.

Based on the commenter's suggestion, Summit did make limited further inquiry and investigation into an opportunity to use water from the Pecos Alluvium Aquifer. One large property holder was contacted, and the possibility of tapping the Pecos Alluvium Aquifer on this property was investigated. After initial inquiry, this opportunity was dismissed from further consideration because of the lack of an existing well field and pipeline infrastructure, the aquifer's slow recharge rate, thinness of the aquifer, and the potential use of this aquifer by municipalities. Section 2.3.3 (Linear Facility Options) in the final EIS has been updated to explain Summit's preliminary investigation into the availability of Pecos Alluvium Aquifer water.

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I-4-1  
contd.

1 a prudent thing to do.

2 Thank you.

3 MR. MCKOY: Thank you, Michael. The next  
4 commenter on the list is Clark Franklin.5 MR. CLARK FRANKLIN: Good evening. My  
6 name is Clark Franklin. I'm representing the Horton  
7 Ranch. As far as the plant, I don't have much concerns  
8 on that. I'll let you college boys take care of that  
9 problem. My main interest is water and what it's going  
10 to do to the land when the effluent water comes down the  
11 draw. We've already got problems with that part of it  
12 now, and there's a lot of salt lakes on that Midland  
13 draw that some of them are dry, some of them are not,  
14 from the water that is being put down there now.

I-5-1

15 Now, I'm getting about tired of building  
16 fences in these draws and stuff to -- because of the  
17 salt content in the water. The biggest problem that I  
18 can see on some of the -- on some of our country is  
19 these -- when it rains and this water comes down, too,  
20 with that other water, it fills these lakes up, spreads  
21 out, so you have to take your cattle off or get them  
22 away from it. But they're not going to drink it. And  
23 normally, cattle, we can run about 12 head per section,  
24 maybe, and if this water comes down and takes that  
25 country in, then we're going to have to take them off,

Permian DepoTexas, LLC

**I-5-1:** After inquiry to the commenter, DOE understands the commenter was referring to Monahans Draw, not Midland Draw. DOE's response reflects that understanding. The proposed project would not directly impact Midland Draw, except that any irrigation runoff to Midland Draw may decrease as a result of the reduction in quantity provided. DOE realizes that ephemeral stream valleys or "draws" occasionally flood to varying degrees, resulting in occasional flooding in the playa lakes and dry lake beds intersected by the draws. This occasional flooding of the draws and playa lake beds from heavy rainfall is a natural process.

For the proposed TCEP, the question is whether natural flooding could be made worse by waste water discharges to the draws and human influences on rainwater runoff. The diversion or conveyance of water into a draw when that water would not otherwise drain into the draw can make flooding incrementally worse in proportion to the amount of water that is diverted into the draw. Likewise, the conveyance of rainwater to a draw more quickly than would have occurred naturally can cause flood peaks to be incrementally higher. Waste water discharges and urban runoff during and after rainfall events add to the volume of water flowing in a draw. Frequent or continuous waste water discharges into a draw occupy channel and pond storage and also saturate soils along the draw, thereby reducing rain water infiltration and soil storage of water.

Under either WL1 or WL5, a portion of the waste water from the city of Midland WWTP would be piped to the GCA Odessa South Facility for processing, and the processed water would be piped to the TCEP for use as process water for the plant. Recent negotiations between city of Midland officials and GCA Odessa South Facility operators have settled on approximately 6.0 million gal (22.7 million L) per day, to be delivered to the GCA Odessa South Facility for treatment, with most of that quantity of water then being delivered to TCEP (the rate would be sufficient to meet TCEP's cooling needs, plus the quantity of reject water from the desalination process at polygen plant site). Most of the time, excess waste water (an average of 0.75 million gal [2.8 million L] per day) processed for TCEP would be discharged into Monahans Draw by GCA. This average increase of 27 percent would have negligible impacts to stream flow conditions in Monahans Draw. Only when the polygen plant shuts down would all the acquired waste water, having been processed for use by TCEP, be discharged to Monahans Draw. At most, shutdowns would occur up to 10 times per year for up to four hours during the first year(s) of operation and four to five times per year for up to two hours during subsequent operational years. This approach should minimize the risk of an additional 6.0 million gal (22.7 million L) per day discharge of this waste water to Monahans Draw at the same time when a flood-causing rainfall event occurs. It should also minimize adverse impacts on stream channel and pond storage, soil storage, and salt accumulation.

It is possible that GCA could accept from the city of Midland WWTP more waste water than is needed for TCEP, with the GCA Odessa South Facility providing a waste water treatment and disposal service for the city of Midland. Such an arrangement would be subject to negotiation and contract between these two entities and would not involve the TCEP. It should also be noted that during flood events (events in excess of the 10-year storm return frequency), the dominant flow regime of Monahans Draw is derived from rainfall runoff. The contribution from GCA's proposed peak discharge flow rate (12.0 million gal [45.4 million L] per day) represents less than 1 percent of the flood flow condition, and would not constitute a measureable effect on the maximum water

I-5-1 contd.	1	so we lose a little bit more of production.
	2	The other problem is weeds. All your
	3	weeds, cockleburs, goldenrod, whatever the case may be,
	4	comes down the draw. But it always -- there's already
I-5-2	5	been a lawsuit a few years ago, Anderson versus Odessa,
	6	on when they let this effluent water out over here at
	7	Odessa that came down and ruined a bunch of country down
	8	there. And Anderson won the case because of that.
	9	But that's our main concern is the water.
	10	And what is it going to do to the water table? That
	11	water's got to go somewhere. It's going to be leached
	12	out from the sunlight. It's also going to go in the
	13	ground. And our wells are about 90-foot deep. And that
I-5-3	14	water will go to it.
	15	So right now, even on these oil wells and
	16	stuff that we're -- have got on the place, we're having
	17	to check all of our water, keep them checked every year
	18	to see if they get worse or better. Now I've got a
	19	bunch of salt water I'd sure like to sell somebody. But
	20	that's our main concern.
	21	The other part that I'm hearing is that
	22	this is a private entity, but yet, I keep hearing about
I-5-4	23	EPA, the government paying so much money. So how is it
	24	private if the government is going to pay for part of
I-5-5	25	it? And what's going to happen if our federal

**I-5-1 ctd:** surface elevation during the flood.

**I-5-2:** Monahans Draw and other intermittent and ephemeral waterways in the region convey rainwater runoff during and after heavy rainfall events and long-term rainy periods. These waterways exist as a result of the conveyance of rainwater runoff over geologic time. Flooding results from periods of excessive rainfall, with the severity of the flooding being proportional to the amount and intensity of rainfall.

For example, in describing an event that further compelled the city of Odessa's adoption of a water reuse program, McReynolds (2006) wrote: *"In 1986, Odessa received approximately 34" of rainfall over a relatively short time period. The runoff from these rains overwhelmed Monahans Draw and flooded farms, structures and equipment that had been established in the normally dry playa lakes along the Draw. As a result of the flooding, three lawsuits were filed by downstream landowners. The City was unable to convince the juries which heard these cases that the flooding was caused by the unusually high rainfall and not due to its discharges to Monahans Draw. The potential for additional lawsuits expedited the City's decision to move forward with expansion of its reuse program."*

Flow levels that are above the levels created by normal waste water discharges are caused by two factors: 1) normal rainwater runoff (major source) and 2) storm water directed to the draws via municipal sewer systems (usually a minor source) and drainage ditches. Urban, residential, and agricultural development in a drainage shed tends to increase rainwater runoff and flood potential. Likewise, such development in the district of a municipal sewer system tends to increase the volume of waste water discharges, absent reuse. As described in the response to comment I-5-1, natural flooding is made incrementally worse both by waste water discharges to the draws and by human influences on rain water runoff.

Normally, over most of the length of Monahans Draw, the streambed is dry. WWTP effluent is usually observed flowing in the streambed only in the uppermost section of the draw, immediately downstream of the two WWTPs that serve Odessa. According to the Sibley Nature Center, the effluent flows as far east as State Highway 1788 during most years; during the winter and during periods of rain, it flows many miles and has occasionally reached Soda Lake (Sibley Nature Center 2011).

The high salt content in surface water runoff, waste water discharge, ground water discharge, soil, and bedrock all combine with the high evaporation rates from these draws during warmer and sunny weather to contribute to the perpetually high salinity of water in these draws and the associated problems. Invasive salt cedar (*Tamarix* sp.) has exacerbated the salinity problem (by causing higher evaporation rates and salt bioaccumulation) as well as created other problems typical of invasive species (e.g., cocklebur [*Xanthium strumarium*] or goldenrod [*Solidago canadensis*]), including the occupation of ranch land and the displacement of native species and cultivated species.

If the TCEP uses Midland's municipal waste water, it would cause a decrease in the disposal of this water via spray irrigation fields and a smaller increase in the discharge to upper Monahans Draw (see response to comment I-5-3). For waste water diverted to the polygen plant, salt would be removed at the TCEP plant site to make the water suitable for use in the plant. This salt would either be precipitated in lined evaporation ponds or be injected deep underground in strata just above (or below) the oil- and gas-

producing strata at Penwell. Summit investigated the potential to provide the brine waste water to local oil field operators, and due to the lack of opportunity, this option was dismissed from the current evaluation. If Midland's municipal waste water is used, the load of salt delivered to spray irrigation fields and to Midland Draw should be reduced, whereas the load to upper Monahans Draw would increase to a lesser degree as a result of the addition of excess Midland waste water (beyond that quantity sent to the TCEP) to the outfall of the GCA Odessa South Facility (see response to comment I-5-3). The total loading of salt to the surface water drainage-ways of Monahans Draw and Midland Draw combined, however, should be reduced by an amount that equals the quantity of salt disposed of at the TCEP.

- I-5-3:** If the GCA Odessa South Facility receives an average of 6.0 million gal (22.7 million L) per day of waste water from the city of Midland WWTP, an annual average of 0.75 million gal (2.8 million L) per day would be discharged into Monahans Draw along with the GCA's other discharge, currently 2.8 million gal (10.6 million L) per day. This would be an increase of 27 percent, as an annual average, over current discharge rates from the GCA Odessa South Facility. Because the potable water supplies are about the same for Midland and Odessa, the salinity of the potable water supplies and of the waste water should be about the same. The result is that GCA's discharge of salt to Monahans Draw would increase by approximately 27 percent.

The perpetually high salinity of water in Monahans Draw can be attributed to the high salt content in surface water runoff, waste water discharge, ground water discharge, soils, and bedrock in combination with high evapotranspiration rates during warm weather and from invasive saltcedar. The fact that playa lakes and ancient salty alluvium exist at various locations along the draw shows that salt accumulation is a process that has been occurring for as long as the flows in this water course have been ephemeral—long before recorded history. A list of the various sources and quantities of salt loading to the draw is not currently available and cannot be quickly developed.

Decreasing the accumulation of salt in the draw, large storm water runoff events dissolve some of the salt and flush that salt along with the rainwater down the length of the stream course. Floods can have a cleansing effect.

Some of the water traveling down the draw percolates downward and outward carrying dissolved salt through the nearby soil, alluvium, and bedrock, wherever and whenever there is a pressure drive or hydraulic gradient. The concentration of salt in this water may be higher or lower than the concentration in the ambient ground water. Locally, the salt concentration of ground water may increase or decrease depending on whether the pre-existing ground water at that location was lower or higher in salt concentration. As a result of the TCEP, water wells that draw water from streambed or alluvium of Monahans Draw could experience some effect on water quality, adverse or beneficial, depending on a variety of factors.

In addition, water well data indicate that wells in the location of concern to the commenters produce water from the Ogallala Aquifer (TWDB 2011). The chemical quality of the water in the Ogallala Aquifer is generally fresh; however, both total dissolved solids (TDS) and chloride concentrations increase from north to south. The Odessa–Midland area is located at the southern tip of the Ogallala Aquifer where the saturated thickness is generally less than 25 ft (7.6 m). In this area, the chemical quality

(including salinity) is influenced by upward leakage and subsequent mixing of water from the underlying Cretaceous aquifers. Only approximately 1 inch (in) (2.5 centimeters [cm]) of the precipitation actually recharges the Ogallala Aquifer annually, because rainfall is minimal, the evaporation rate is high, and the infiltration rate is slow (TWDB 2011). These aquifer characteristics suggest that increases in salinity at the surface of Monahans Draw are unlikely to impact the quality of what is essentially fossil water found at depth.

- I-5-4:** TCEP would be owned by its equity stakeholders and would not be co-owned by the federal government. Congress provided for competitively awarded federal cost-shared funding for CCPI demonstrations. The terms for funding under the CCPI program do not allow for the government to participate in the project as a co-owner. The government does obtain certain rights to information about the project. In contrast to other federally funded activities, CCPI demonstrations are not federal projects seeking private investment; instead, they are private projects seeking federal financial assistance. Under the CCPI funding opportunity announcements, industry proposes projects that meet its needs (and the needs of its customers for reliable but relatively inexpensive electricity) yet further national goals and objectives embodied in the CCPI. Demonstrations accepted into the CCPI program become private-public cost-shared partnerships that satisfy a wide set of industry and government needs. Industry satisfies its short-term need to retrofit or re-power a facility or develop new power generating capacity and other commercial products within the constraints of market prices and business practices. By providing financial incentives to industry, the government supports its long-term objective of changing the nation's existing fleet of electric power generating plants to the next generation of more efficient, cleaner, cost-competitive facilities.
- I-5-5:** The federal deficit is not anticipated to have an adverse impact on funding for the TCEP. All federal cost-shared co-funding consists of prior year appropriations that are not likely subject to rescission.

Deposition of Public Hearing

57

I-5-5 | 1 government decides to curtail a bunch of projects  
2 because we're broke? The Federal government is broke.  
3 So what are they going to do then? What are y'all going  
4 to do then? You're going to have to get money from  
5 somewhere to run. So that's our main concern is the  
6 land, what's happening to the land and what it's going  
7 to do to the land. You can get along with a rancher  
8 pretty good until you make him mad. Anyway, that's our  
9 main concern.

10 MR. MCKOY: Thank you, Franklin.

11 According to my list, all of the registers commenters  
12 have now had a chance to speak. If you registered and I  
13 failed to call your name, please let me know now.

14 Okay. We can hear from any unregistered  
15 commenters, anyone who didn't sign up to speak, but who  
16 would like a chance to speak.

17 Do we have anyone who has had one  
18 opportunity to speak who would like to speak further?  
19 I'll give you just a second while I grab a piece of  
20 paper. I know it's difficult to come up here and  
21 provide oral comment, and I do appreciate people who  
22 have come and provided comment. You know, people often  
23 feel that if they come up and they provide oral  
24 comments, that the comments won't be taken seriously,  
25 that we won't really listen to the comments, that we

Permian DepoTexas, LLC



1 won't really try to do anything or change anything. We  
2 will listen to your comments. We will take a look at  
3 what mitigation measures could be employed. We will  
4 have to make a decision, ultimately, on whether to even  
5 fund the project. The federal government has not made  
6 that decision at this point in time, and cannot, under  
7 the law, until we consider all of the environmental  
8 factors that should be considered.

9           Again, do we have anyone who would like to  
10 provide further comment? Seeing no more indications of  
11 desire to comment, I want to say thank you for your  
12 comments and participation. Remember that you may  
13 submit comments until May 2nd. The informal session  
14 will continue around the posters at the back. DOE and  
15 project people will attempt to answer your questions  
16 informally in one-on-one conversations.

17           This concludes the formal session of the  
18 Public Hearing for the Texas Clean Energy Project's  
19 Draft EIS. Let the record show that the hearing  
20 adjourned at 8:36 p.m. Thank you.

21  
22  
23  
24  
25

1 THE STATE OF TEXAS )

2 COUNTY OF MIDLAND )

3 I, Jane McGill, Certified Shorthand Reporter  
4 Number 1759 for The State of Texas, do hereby certify  
5 that the facts stated by me in the caption hereof are  
6 true, and that I did, in computerized stenotype  
7 shorthand, report said proceedings and that the above  
8 and foregoing pages contain a full, true and correct  
9 computer-assisted transcription of my computerized  
10 stenotype shorthand notes taken on said occasion.

11 I further certify that I am neither counsel  
12 for, related to, nor employed by any of the parties in  
13 the action in which this proceeding was taken, and  
14 further that I am not financially or otherwise  
15 interested in the outcome of the action.

16 Witness my hand this 8th day of April, 2011.

17

18

19

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23

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\_\_\_\_\_  
JANE MCGILL, CSR  
CSR No. 1759 - Expires 12/31/11  
Permian Court Reporters, Inc.  
P.O. Box 10625  
Midland, Texas 79702  
TEL: 432-683-3032  
FAX: 432-683-5324

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U.S. Department of Energy

National Energy Technology Laboratory



**TEXAS CLEAN ENERGY PROJECT  
DRAFT ENVIRONMENTAL IMPACT STATEMENT**

<p>Name and Mailing Address:  <u>Steven Schafersman</u>  <u>6202 Driftwood Dr</u>  <u>Midland, TX 79707</u>                  Phone: <u>(432) 352-2265</u></p>	<p>Do you wish to receive a copy of the Draft EIS?  <input checked="" type="checkbox"/> Yes    <input checked="" type="checkbox"/> No</p> <p>Do you wish to receive a copy of the Final EIS?  <input checked="" type="checkbox"/> Yes    <input type="checkbox"/> No</p> <p>If yes, which media would you prefer? <i>both</i>  <input checked="" type="checkbox"/> Hard Copy    <input type="checkbox"/> CD    <input checked="" type="checkbox"/> Summary &amp; CD</p>
<p>Name of Organization or Agency and your position:                  _____                  _____</p>	<p>Whom are you representing?  <input checked="" type="checkbox"/> Self    <input type="checkbox"/> Organization    <input type="checkbox"/> Other  <input type="checkbox"/> Federal, state, or local government agency</p>

Comments:

I am in favor of an IGCC Plant but significant  
 I-6-1 problems obtaining water remain. Midland will not  
 sell the TCEP all the municipal waste water TCEP wants.  
 Odessa's municipal waste water is fully under contract  
 I-6-2 to various entities (perhaps TCEP can get one or more  
 of those to release their contracted amounts to TCEP).  
 I-6-3 The Fort Stockton Holdings water will not be available  
 for many years - if ever. It will be tied up  
 in litigation and the rule of capture may be  
 ruled illegal for several reasons by the court.

All submissions will be made available for public review in their entirety. Comments will not be kept confidential.

Additional comments and information can be sent separately to the address provided on the front of this form.

Comments **MUST BE POST MARKED** by  
**May 2, 2011**

- I-6-1:** *Repeat of the Comment: Midland will not sell the TCEP all the municipal waste water TCEP wants.*

Based on communication between Summit representatives and representatives of the city of Midland and the GCA, the city of Midland would continue sending nearly half of its waste water to Midland's spray irrigation fields for disposal, even if Midland does provide waste water to the TCEP. Midland does have plans for a small percentage of its waste water to be processed to higher quality through a small WWTP (to be installed at or near the point of use). This cleaned waste water would then be used for landscaping and lawn maintenance by Midland College and perhaps another entity. However, accounting for these applications, there would be sufficient waste water remaining to meet the needs of the TCEP.

- I-6-2:** *Repeat of the Comment: Odessa's municipal waste water is fully under contract to various entities (perhaps TCEP can get one or more of those to release their contracted amounts to TCEP).*

Summit is currently considering the purchase of treated waste water from either the city of Odessa or the GCA Odessa South Facility as a backup water supply source only. Although the city of Odessa has fully committed their reuse water to other water rights holders, they do have excess water that discharges into Monahans Draw in the winter months. Summit could purchase secondary or tertiary water rights as a backup water supply during these months.

- I-6-3:** *Repeat of the Comment: The Fort Stockton Holdings water will not be available for many years – if ever. It will be tied up in litigation and the rule of capture may be ruled illegal for several reasons by the court.*

The potential environmental impacts of obtaining process water from FSH are analyzed in the EIS. This analysis did not consider whether the FSH pipeline would be constructed or whether any litigation might ensue. DOE understands that all permit requirements and other project-related hurdles would have to be cleared before the FSH water supply pipeline could be used by the TCEP. The environmental acceptability of this option, either as a primary water supply or as a backup water supply, would be considered by DOE during DOE's deliberations leading to a ROD. Furthermore, the extent to which this water would be available in the time period needed for the TCEP may be a factor in DOE's decision making with respect to TCEP funding for subsequent phases of the project (e.g., detailed design and construction). DOE expects that Summit would also factor the availability of potential process water sources into Summit's decision making.



**DEPARTMENT OF THE ARMY**  
FORT WORTH DISTRICT, CORPS OF ENGINEERS  
P.O. BOX 17300  
FORT WORTH, TEXAS 76102-0300

March 23, 2011

Planning, Environmental, and Regulatory Division  
Regulatory Branch

SUBJECT: Project Number SWF-2011-00140, Texas Clean Energy Project Construction and Operation

Mr. Mark L. McKoy  
Environmental Manager  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road M/S B07  
P. O. Box 880  
Morgantown, West Virginia 26507-0880

Dear Mr. McKoy:

Thank you for your letter received March 14, 2011, concerning a proposal by the Department of Energy to design and build an advanced commercial integrated gasification combined-cycle power plant located in Ector County, Texas. This project has been assigned Project Number SWF-2011-00140. Please include this number in all future correspondence concerning this project.

We have reviewed this project in accordance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. Under Section 404, the U. S. Army Corps of Engineers (USACE) regulates the discharge of dredged and fill material into waters of the United States, including wetlands. Our responsibility under Section 10 is to regulate any work in, or affecting, navigable waters of the United States. Any such discharge or work requires Department of the Army authorization in the form of a permit. For more information on the USACE Regulatory Program, please reference the Fort Worth District Regulatory Branch homepage at [www.swf.usace.army.mil/regulatory](http://www.swf.usace.army.mil/regulatory).

F-1-1

We are unable to determine from the information that you provided in your letter whether Department of the Army authorization will be required, and if so, in what form. The proposed construction activities may be authorized by general permit, such as Nationwide Permit 12 for Utility Line Activities or Nationwide Permit 14 for Linear Transportation Projects. We have enclosed copies of these general permits for your reference. If the project does not meet the terms and conditions of a general permit, an individual permit would be required for authorization.

- F-1-1:** DOE would not submit a permit application to U.S. Army Corps of Engineers because Summit is the owner and operator of the project. Summit has yet to determine whether the jurisdictional waters traversed by the proposed project may be impacted, thus requiring Section 404 permitting. Once the method of construction along jurisdictional waters has been determined, Summit will seek the appropriate permits.

So that we may continue our evaluation of your proposed project, we request that you provide us with the following information:

1. A map (or maps) showing the entire route of the project.
2. The proposed pipeline route(s) on 8 ½ by 11-inch copies of 7.5-minute United States Geological Survey (USGS) quadrangle maps, national wetland inventory maps, published soil survey maps, scaled aerial photographs, and/or other suitable maps. Identify all base maps, (e.g. "Fort Worth, Texas" 7.5-minute USGS quadrangle, Natural Resources Conservation Service Tarrant County Soil Survey sheet 10). Clearly mark (such as by circling) and number the location of each proposed utility line or linear transportation crossing of a water of the United States and any appurtenant structure(s) in waters of the United States on the map. Waters of the United States include streams and rivers and most lakes, ponds, mudflats, sandflats, wetlands, sloughs, wet meadows, abandoned sand and gravel mining and construction pits, and similar areas.
3. For each potential utility line or linear transportation crossing or appurtenant structure in a water of the United States, the following site specific information when applicable:
  - a. 7.5-minute USGS quadrangle map name, Lat / Lon coordinates (NAD 83), county or parish, waterway name;
  - b. a brief characterization of the crossing area (stream, forested wetland, non-forested wetland, etc.) including the National Wetland Inventory classification and soil series;
  - c. distance between ordinary high water marks;
  - d. proposed method of crossing (trench, bore, span, bridge, culvert etc.);
  - e. length of proposed crossing;
  - f. width of temporary and permanent rights-of-way;
  - g. type and amount of dredged or fill material proposed to be discharged;
  - h. acreage of proposed temporary and permanent adverse impacts to waters of the United States, including wetlands; and
  - i. a typical cross-section.

Please refer to the enclosed guidance for Department of the Army submittals for additional details about what you should submit for this and future linear projects. Additional information, including more detailed jurisdictional determination data, may be needed to complete our evaluation of your project in some cases. We encourage you to consult with a qualified specialist (biologist, ecologist or other specialist qualified in preliminary jurisdictional determinations) who is familiar with the Great Plains Regional Supplement to the 1987 Corps of Engineers Wetlands Delineation Manual and the USACE Regulatory Program (33 CFR Parts 320-331).



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-3-

F-1-2 | We encourage you to avoid and minimize adverse impacts to streams, wetlands, and other waters of the United States in planning this project. Please forward your response to us as soon as possible so that we may continue our evaluation of your request. Please note that it is unlawful to start work without a Department of the Army permit when one is required.

Thank you for your interest in our nation's water resources. For your information, please reference the Fort Worth District Regulatory Branch homepage at <http://www.swf.usace.army.mil/regulatory> and particularly guidance on submittals at <http://www.swf.usace.army.mil/pubdata/enviro/regulatory/introduction/submittal.pdf>, and mitigation at [http://www.usace.army.mil/CECW/Pages/final\\_cmr.aspx](http://www.usace.army.mil/CECW/Pages/final_cmr.aspx) that may help you supplement your current request or prepare future requests. If you have any questions concerning our regulatory program, please contact Mr. Eric Dephouse, Project Manager, at the address above or telephone (817) 886-1820.

Sincerely,



Stephen L. Brooks  
Chief, Regulatory Branch

Enclosures

**F-1-2:** DOE will state in its ROD whether it will require any particular mitigation or avoidance measure if it decides to provide funding for the construction and operation of Summit's project.



## United States Department of the Interior

OFFICE OF THE SECRETARY  
Office of Environmental Policy and Compliance  
1001 Indian School Road NW, Suite 348  
Albuquerque, New Mexico 87104



ER 11/252  
File 9043.1

April 25, 2011

Mark L. McKoy, Environmental Manager  
U.S. Department of Energy  
National Energy Technology Laboratory  
P.O. Box 880  
Morgantown, West Virginia 26507-0880

Dear Mr. McKoy:

The U.S. Department of the Interior has reviewed the Draft Environmental Impact Statement for the Department of Energy's Texas Clean Energy Project in Ector County, Texas, and offers the following general comments.

### GENERAL COMMENTS

#### Migratory Birds

**F-2-1** The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Many birds may nest in trees, brush areas, or other suitable habitat. The U.S. Fish and Wildlife Service recommends you avoid conducting activities that require vegetation removal or disturbance during the nesting period of March through August. In addition to this nesting season, your project area may have nesting harris hawks and owls outside of this period. If project activities must be conducted during this time, we recommend surveying for nests prior to commencing work. If a nest is found, and if possible, the FWS recommends a buffer of vegetation (= 164 feet [ft] for songbirds, ≥ 328 ft for wading birds, and ≥ 590 ft for terns, skimmers and birds of prey) remain around the nest until young have fledged or the nest is abandoned. A list of migratory birds may be viewed at: <http://www.fws.gov/migratorybirds/RegulationsPolicies/mbta/mbtandx.html>.

#### Beneficial Landscaping

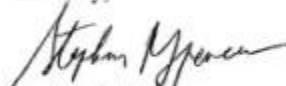
**F-2-2** In accordance with Executive Order 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping, where possible, any landscaping associated with project plans should be limited to seeding and replanting with native species. A mixture of grasses and forbs appropriate to address potential erosion problems and long-term cover should be planted when seed is reasonably available. Although Bermuda grass is listed in seed mixtures, this species and other introduced species should be avoided as much as possible. The FWS also recommends the use of native trees, shrubs and

- F-2-1:** Summit plans to limit to the extent practicable all land-clearing activities to periods outside of the nesting season. However, if land-clearing activities occur during the nesting season, Summit would take measures to avoid nesting migratory birds to the extent practicable. Please see Section 3.8.6 (Mitigation) in the final EIS for details. DOE will state in its ROD whether it will require any particular mitigation or avoidance measure as a condition for funding the construction and operation of Summit's project, beyond those imposed by the Migratory Bird Treaty Act.
- F-2-2:** Summit intends to implement a plan that includes planting or seeding areas disturbed by the construction or operation of the TCEP with native vegetation (see Section 3.8.6 of the EIS). DOE will state in its ROD whether it will require any particular mitigation or avoidance measure as a condition for funding the construction and operation of Summit's project,, beyond those imposed by the Executive Order.

**F-2-2**  
**contd.** herbaceous species that are adaptable, drought tolerant, and conserve water. In addition, Best  
**F-2-3** Management Practices should be employed to avoid the spread of invasive species during project  
implementation.

We appreciate the opportunity to provide comments on this project in the pre-planning stages. If you have any questions, or require further assistance, please contact Aimee Roberson, Fish and Wildlife Biologist, FWS Ecological Services Trans-Pecos Sub-Office, Alpine, Texas, at 432-837-0747.

Sincerely,



Stephen R. Spencer  
Regional Environmental Officer

**F-2-3:** Summit has not yet decided on methods for preventing or minimizing the spread of noxious non-native vegetation. It intends to implement the following practices to minimize and avoid the spread of invasive species during construction and operation:

- Develop an invasive species monitoring and control plan.
- Inspect and clean construction equipment.
- Use invasive species-free mulches, topsoil, and seed mixes.
- Plant native species after construction and as landscaping.
- Use chemical and mechanical eradication of non-native or invasive species to reduce the potential for the introduction or spread of non-native or invasive species (see Section 3.8.6 of the final EIS).

DOE will state in its ROD whether it will require any particular mitigation or avoidance measures would be required as a condition for DOE funding.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

April 27, 2011

Mark L. McKoy  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880  
Morgantown, WV 26507-0880

Dear Mr. McKoy:

In accordance with our responsibilities under Section 309 of the Clean Air Act (CAA), the National Environmental Policy Act (NEPA), and the Council on Environmental Quality (CEQ) regulations for implementing NEPA, the U.S. Environmental Protection Agency (EPA) Region 6 office in Dallas, Texas, has completed its review of the Draft Environmental Impact Statement (DEIS) prepared by the U.S. Department of Energy for the Texas Clean Energy Project (TCEP), Ector County, Texas. Summit Texas Clean Energy, LLC (Summit) proposes to design and build an advanced commercial integrated gasification combined-cycle (IGCC) coal-fired power plant that would capture approximately 90 percent of the carbon dioxide (CO<sub>2</sub>) in its syngas.

EPA rates the DEIS as "EC-2" i.e., EPA has "Environmental Concerns and Requests Additional Information in the Final EIS (FEIS)". Detailed comments are enclosed with this letter which more clearly identify our concerns and the informational needs requested for incorporation into the FEIS.

EPA appreciates the opportunity to review the DEIS. Please send our office two copies of the FEIS when it is sent to the Office of Federal Activities, EPA (Mail Code 2252A), Ariel Rios Federal Building, 1200 Pennsylvania Ave, N.W., Washington, D.C. 20004. Our classification will be published on the EPA website, [www.epa.gov](http://www.epa.gov), according to our responsibility under Section 309 of the CAA to inform the public of our views on the proposed Federal action. If you have any questions or concerns, please contact John MacFarlane of my staff at [macfarlane.john@epa.gov](mailto:macfarlane.john@epa.gov) or 214-665-7491 for assistance.

Sincerely,

  
Rhonda Smith  
Chief, Office of Planning  
and Coordination

Enclosure

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**DETAILED COMMENTS ON THE  
U.S. DEPARTMENT OF ENERGY  
DRAFT ENVIRONMENTAL IMPACT STATEMENT  
FOR THE  
TEXAS CLEAN ENERGY PROJECT  
ECTOR COUNTY, TEXAS**

**BACKGROUND:** Summit Texas Clean Energy, LLC (Summit) proposes to design and build an advanced commercial integrated gasification combined-cycle (IGCC) coal-fired power plant that would capture approximately 90 percent of the carbon dioxide (CO<sub>2</sub>) in its syngas. The U.S. Department of Energy (DOE) would provide at least \$450 million in cost shared Clean Coal Power Initiative funding to Summit to support construction and operation of the Texas Clean Energy Project (TCEP). The DOE has prepared a Draft Environmental Impact Statement (DEIS) to satisfy the Federal requirements established by the National Environmental Policy Act (NEPA).

**COMMENTS:** The following are offered for your agency's consideration in completing the Final EIS:

Alternatives Analysis

**F-3-1** *Section 2.3.2 Alternative Sites* states that other sites were considered, but Summit "ultimately selected the Odessa site primarily because of its proximity to an existing CO<sub>2</sub> pipeline and multiple EOR sites." The Council on Environmental Quality's 40 Code of Federal Regulations (CFR) Part 1502.14 (a) of its regulations for implementing NEPA states agencies shall "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." This section does not evaluate all reasonable alternatives nor does it discuss those alternatives eliminated from further study. In the very least, a brief discussion is necessary to explain why other potential site locations (Oak Grove, Corpus Christi, Big Brown, and Jewett) were eliminated from further study.

**F-3-2** Several alternatives are available for the various linear facilities that are required for the operation of the TCEP. Alternatives for process waterlines (WL) and transmission lines (TL) are analyzed for impacts, but no screening analysis was performed to determine a preferred alternative. As stated in CEQ CFR Part 1502.14, the alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public.

**F-3-3** EPA is concerned with the predicted volume of process water required for the TCEP. Table 2.2 states the annual peak water usage could be up to 5.5 million gallons per day. EPA is concerned with the decline of area groundwater supplies primarily from agricultural and municipal use. Process water alternatives WL2, WL3, and WL4 would utilize groundwater. EPA recommends the implementation of WL1 which would utilize municipal wastewater effluent for use as process water. WL1 would be the environmentally preferable alternative. The DEIS also considers alternatives to other processes and infrastructure, such as brine water disposal and cooling towers. EPA recommends the use of the Zero

**F-3-4** Liquid Discharge System (ZLDS) as the process for disposing of and/or recycling brine water and  
**F-3-5** recommends the use of dry cooling towers for the heat removal process.

Emissions, Discharges, and Wastes

**F-3-6** A 2002 study of IGCC coal-fired power plants states that wastewater effluent could contain sulfide, chloride, ammonium, and cyanide.<sup>1</sup> EPA recommends that additional information be included as to the possible contaminants contained in process water effluents and whether the ZLDS would be able to process those contaminants and how the contaminants would be disposed.

<sup>1</sup> Jay A. Ratafia-Brown, Lynn M. Manfredo, Jeff W. Hoffmann, and Massood Ramezan. *An Environmental Assessment of IGCC Power Systems*. Science Applications International Corporation.

**F-3-1:** The final EIS explains DOE’s alternatives analysis in Section 1.6.3.3 (Scope of DOE’s Alternatives Considered). DOE also prepared a synopsis summarizing the consideration given to environmental factors that were evaluated in the process of selecting projects seeking financial assistance under Round 3 of the CCPI, in accordance with DOE’s NEPA-implementing regulations, Volume 10 Code of Federal Regulations (C.F.R.) § 1021.216. This synopsis is included in the final EIS as Appendix B. As explained in more detail in these documents, the scope of DOE’s alternatives analysis is more limited when the agency undertakes NEPA review of a project selected for an award of financial assistance through an open competition. Initially, prior to the selection of projects, the range of reasonable alternatives is defined by the range of proposals that meet all of the mandatory eligibility requirements listed in the funding opportunity announcement. Those proposals that meet the requirements of the announcement are evaluated for their potential environmental impacts, which are summarized in a written environmental critique that is provided to the selection official. A synopsis of this environmental critique appears in the final EIS as Appendix B. Once DOE selects a project for an award, the range of reasonable alternatives is limited. Alternatives still under consideration by the applicant or that are within the reasonable confines of the project as proposed, and the no action alternative. DOE cannot redefine the applicant’s project when there was an open and competitive process used to select the project; therefore, DOE does not consider alternatives outside the boundaries described in the preceding sentence as reasonable. Although there is no requirement for an EIS to present the alternatives considered but dismissed by the applicant prior to submitting its proposal, the EIS includes a brief disclosure of the alternatives considered but dismissed by Summit before it prepared and submitted its application to DOE under the CCPI Round 3 Funding Opportunity Announcement.

As noted in the final EIS, Summit considered several sites in Texas, including Corpus Christi, Oak Grove, Big Brown, and Jewett. In response to this comment, Summit provided the following additional information in Section 2.3.2 (Alternative Sites) to further clarify the sites considered in Texas.

Summit investigated two adjacent sites in the port/harbor area of Corpus Christi. However, there were several drawbacks to the sites that ultimately eliminated them from consideration: 1) lack of any existing CO<sub>2</sub>/EOR experience or infrastructure in or connecting the site to the “target” oil fields; 2) potentially extensive site work required to make the site suitable for the project; 3) elevation of the plant site just a few feet above sea level, which could have made project investors or lenders concerned about the project’s ability to withstand hurricanes and/or sea level rise; and 4) concern among local residents regarding possible health and safety considerations in the transport, storage, and use of fuel.

Summit also investigated two sites in North-Central Texas—Oak Grove and Big Brown—as well as the Jewett site, which was one of the two “finalist” sites in Texas considered for the FutureGen Project. However, none of these sites had existing CO<sub>2</sub>/EOR operations or infrastructure, which made the timing and cost of development of these CO<sub>2</sub>/EOR possibilities uncertain, and the sites were ultimately judged by Summit to be commercially nonfeasible.

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- F-3-2:** Chapter 4 in the EIS is a summary comparison of impacts for alternatives. In Table 4.1 of the final EIS, DOE presents the impacts of the Proposed Action and No Action Alternative and the technology options (cooling tower options and brine disposal options) in comparative form. Although the impacts of each of the waterline, transmission line, access road, and natural gas options are described in Chapter 3, these have been added to Tables 4.2–4.5 in the final EIS to allow for a comparison of the impacts of these linear options and a basis for choice among the options.
- F-3-3:** WL5 is a modification of WL1 and is Summit's preferred GCA waterline option. However, some commenters suggested that WL2 (Oxy Permian pipeline system, which gets its highly brackish water from the Capitan Reef Complex Aquifer) should be the environmentally preferred option because they believe West Texas communities may soon have to begin reusing municipal waste water for potable water supplies.
- F-3-4:** Due to a design change, the raw water treatment system would be constructed and operated at the polygen plant site rather than at the GCA Odessa South Facility, as described in the draft EIS. This design modification is addressed in the final EIS. The on-site treatment would result in an increase in reverse osmosis brine waste water needing to be disposed of at the polygen plant site and thus, an increase in the capacity of the ZLD system described in the draft EIS. As a result, a ZLD system would be impractical due to increased costs. Instead of being disposed via a ZLD system, the reverse osmosis brine waste water would be disposed of using a combination of on-site, lined solar evaporation ponds and on-site deep injection wells. The final EIS describes this modification in Section 2.4.3.5 and analyzes the potential impacts associated with this modification.
- F-3-5:** Some of the chemical processes that would be used at the polygen plant require cooling to temperatures below what can be achieved through dry cooling. The overall project has been designed using good engineering practices to optimize efficiency and minimize water use. The use of dry cooling for all chemical processes is not achievable based on the design optimization required for the economic viability of the project. However, the TCEP would use dry cooling for the power block and would thus significantly reduce the overall water demand for the project.
- F-3-6:** As discussed in response to comment F-3-4 above, reverse osmosis brine waste water would not be disposed of using a ZLD system, but would instead be disposed of using a combination of solar evaporation ponds and deep well injection. Constituents in the brine would consist of minerals and salts associated with the influent water and concentrated through the reverse osmosis process. These brines are not anticipated to be hazardous. A deep injection well would require a permit from TCEQ.

Air Quality

F-3-7 EPA finds the estimated air emissions from the proposed project to be well illustrated and quantified. EPA Region 6 air permitting staff worked closely with Summit and the Texas Commission on Environmental Quality during development of the Prevention of Significant Deterioration (PSD) permit for the TCEP, and provided agency comment on the permit. EPA does not have significant air quality concerns with the TCEP at this time.

F-3-8 Any demolition, construction, rehabilitation, repair, dredging, or filling activities have the potential to emit air pollutants and best management practices are recommended to be implemented to minimize the impact of any air pollutants. EPA encourages the use of clean, lower-emissions equipment and technologies to reduce pollution. Furthermore, construction and waste disposal activities should be conducted in accordance with applicable local, state and federal statutes and regulations

F-3-9

F-3-10

Surface Water Resources

F-3-11 EPA agrees with the DEIS summarization that the "[t]he absence of surface water resources in or adjacent to the polygen plant site eliminates the possibility of direct impacts and reduces the risk of indirect impacts. Indirect impacts to surface waters in the ROI during construction or operation of the polygen plant site would be unlikely". *Section 3.7.5.1 Wetlands, Waterbodies, Waterways, and Water Quality* states that no delineation of wetland resources has been conducted. EPA recommends DOE conduct wetland and waterways delineations for any waters identified within the right of way of each of the linear facilities options. Any impacts to jurisdictional waters of the U.S. shall be permitted and mitigated for in accordance with U.S. Army Corps of Engineers (USACE) regulations and/or guidelines.

F-3-12 This section should include a discussion of the adverse environmental impacts of considerably dewatering Monahans Draw and any associated wetlands if WL1 is implemented.

Biological Resources

F-3-13 EPA recommends that *Section 3.8.5.1 Terrestrial Species* provide additional information detailing the methods that would be used to prevent and/or minimize the spread of noxious non-native vegetation during and after construction of both the polygen plant and associated linear facilities.

Environmental Justice

F-3-14 The census tracts in the region of influence do have more than 50 percent minority population, compared with the Texas average of 32 percent, and the census tracts also have 50 percent low-income population. However, the population is very sparse in Ector County, a large 902 square-mile county, with a total population of 128,000 residents. The area closest to the proposed plant, Penwell, Texas, has a population of only twelve. The residences are located between 0.6 mile and one mile from the plant site. Extensive measures and the latest technology will be used to prevent accidents and estimates are that in the unlikely event of accidents, workers would be the most likely to be affected. The numerous economic benefits through additional taxes received from the plant, and increased employment opportunities will be shared by all the residents of this region. Some benefits of this project will be shared beyond the region, and will include the U.S. and even the world, because it will be a prototype for similar plants that will result in lowered greenhouse gases, as well as other benefits.

Tribal Issues

F-3-15 Nomadic Tribes, such as the Apache, Comanche and Kiowa, frequented the area more than 150 years ago, but it appears few or no Indians live in the area now. The area appears to have no traditional, cultural or historic significance for Tribes. There are no known tribal artifacts, burial grounds or ruins in the project area. The normal protocols were followed to contact Tribes for National Historic Preservation Act issues. Eight Tribes in Oklahoma, Texas, and New Mexico were consulted regarding this project, and only the Ysleta del Sur Pueblo Tribe responded, requesting notification in the event that bones or relics should be found.

- F-3-7:** Comment noted.
- F-3-8:** Summit intends to implement practices to minimize impacts from air pollutants. Please see Table 2.8 in the final EIS, which addresses the incorporated mitigation measures for the TCEP.
- F-3-9:** Summit intends to use clean, lower-emissions equipment and technologies to reduce pollution to the fullest extent practicable.
- F-3-10:** Construction and waste disposal activities would be conducted in accordance with applicable local, state, and federal statutes and regulations.
- F-3-11:** During preparation of the draft EIS, property access was not available for most of the linear facility corridors. For that reason, DOE conducted a constraints analysis for wetlands, waterways, and water bodies during three field investigations in 2010. Formal jurisdictional waters delineations would be conducted when a final route for each of the linear facilities is determined and access is permitted. Appropriate permits would be sought by Summit. Section 3.7 in the final EIS has been updated to clarify this.
- F-3-12:** The final EIS has been modified, as appropriate, to include new information about WL1 and WL5. Current minimum discharges to Monahans Draw would be maintained under all of the water source alternatives being considered for the TCEP. The current, minimum, monthly, average discharge of 2.0 million gal (7.6 million L) per day from the GCA Odessa South Facility to Monahans Draw would not be decreased as a result of the TCEP, because the additional water needed for TCEP would be provided to the GCA Odessa South Facility from the city of Midland WWTP (Levine 2010). Thus, TCEP's process water use would not dewater Monahans Draw or the wildlife habitats and wetland communities.
- F-3-13:** Summit has not yet decided on methods for preventing or minimizing the spread of noxious non-native vegetation. It intends to implement the following practices to minimize and avoid the spread of invasive species during construction and operation:
- Develop an invasive species monitoring and control plan.
  - Inspect and clean construction equipment.
  - Use invasive species-free mulches, topsoil, and seed mixes.
  - Plant native species after construction and as landscaping.
  - Use chemical and mechanical eradication of non-native or invasive species to reduce the potential for the introduction or spread of non-native or invasive species (see Section 3.8.6 of the final EIS).
- DOE will state in its ROD whether it will require any particular mitigation or avoidance measures would be required as a condition for DOE funding.
- F-3-14:** Comment noted.
- F-3-15:** Comment noted.

Cumulative Impacts

F-3-16 Cumulative impacts are those impacts "on the environment which result 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 persons undertake such actions." EPA suggests that additional past, present, and reasonably foreseeable future projects be analyzed. For example, a search of the Texas Department of Transportation database revealed that there are several highway construction projects within the region of influence.

Agency Coordination

F-3-17 Chapter 8 lists the agencies and tribes that were contacted, but Appendix A only includes two agency coordination and/or consultation letters. The appendix should contain all agency coordination and/or consultation letters.



**F-3-16:** When revising Chapter 5 (Cumulative Effects) for the final EIS, which describes the potential cumulative effects of the TCEP in combination with reasonably foreseeable future projects and trends, DOE reviewed the TxDOT database, which included 24 ongoing and proposed highway construction projects identified in Andrews, Crane, Ector, Midland, Upton, Ward, and Winkler Counties. Of these projects, three were identified as having the potential to have effects that would overlap with those of the TCEP. The proposed projects include roadway repairs to Loop 338 in Ector County and roadway repairs to I-20 in both Ward and Midland Counties.

In addition, DOE recently completed the grant approval process to provide funding to install large-scale batteries capable of storing electricity produced by the 153-megawatt (MW) Notrees wind farm in Ector and Winkler Counties. DOE has determined that this proposed project has the potential to have effects that would overlap with those of the TCEP. Chapter 5 has been updated to include these reasonably foreseeable future projects in the cumulative effects analysis.

**F-3-17:** The list of agencies provided in Chapter 8 includes the two agencies that were provided consultation request letters from DOE (U.S. Fish and Wildlife Service and Texas Historical Commission) and the nine applicable agencies that were contacted during the TCEP public scoping process. Appendix A has been updated to include a copy of the invitation letter that was submitted to the nine applicable agencies and agency comments that were received during the public scoping process.

Bryan W. Shaw, Ph.D., *Chairman*  
 Buddy Garcia, *Commissioner*  
 Carlos Rubinstein, *Commissioner*  
 Mark R. Vickery, P.G., *Executive Director*



## TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

March 18, 2011

Mr. Mark L. McKoy  
 U.S. Department of Energy  
 3610 Collins Ferry Road  
 Morgantown, WV 26507-0880

Re: TCEQ Grant and Texas Review and Comment System (TRACS) #2011-115, Ector  
 County - Texas Clean Energy Project

Dear Mr. McKoy:

The Texas Commission on Environmental Quality (TCEQ) has reviewed the above-referenced project and offers following comments:

A review of the project for General Conformity impact in accordance with 40 CFR Part 93 and Title 30, Texas Administrative Code § 101.30 indicates that the proposed action is located in Ector County, which is currently unclassified or in attainment of the National Ambient Air Quality Standards for all six criteria air pollutants. Therefore, General Conformity does not apply.

Although any demolition, construction, rehabilitation or repair project will produce dust and particulate emissions, these actions should pose no significant impact upon air quality standards. Any minimal dust and particulate emissions should be easily controlled by the construction contractors using standard dust mitigation techniques.

S-1-1

We do not anticipate significant long term environmental impacts from this project as long as construction and waste disposal activities associated with it are completed in accordance with applicable local, state, and federal environmental permits and regulations. We recommend that the applicant take necessary steps to insure that best management practices are utilized to control runoff from construction sites to prevent detrimental impact to surface and ground water.

Thank you for the opportunity to review this project. If you have any questions, please contact Ms. Tangela Niemann at (512) 239-3786 or [tangela.niemann@tceq.texas.gov](mailto:tangela.niemann@tceq.texas.gov).

Sincerely,

Jim Harrison, Director  
 Intergovernmental Relations Division

P.O. Box 13087 • Austin, Texas 78711-3087 • 512-239-1000 • [www.tceq.state.tx.us](http://www.tceq.state.tx.us)

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- S-1-1:** Summit plans to include in its contracts for construction a requirement for the use of practices (e.g., silt fencing, hay bales), including dust control measures, to minimize potential impacts to surface water, ground water, and air quality.



April 29, 2011

Mr. Mark L. McKoy  
Environmental Manager  
US Department of Energy  
National Energy Technology Laboratory  
3610 Collin Ferry Road, M/S B07  
P.O. Box 880  
Morgantown, WV 26507-0880

Re: Comments on Texas Clean Energy Project Draft EIS (DOE/EIS-0444D)

Dear Mr. McKoy,

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the Texas Clean Energy Project (TCEP). The Texas Department of Transportation (TxDOT) submits the following comments for your consideration:

- s-2-1 | • A left-turn lane may need to be constructed on northbound FM 866 at the proposed entrance road to the TCEP power plant to prevent congestion during peak travel times; and
- s-2-2 | • TxDOT approval will be needed prior to locating utilities or performing work within TxDOT Right-of-Way (ROW).

Although there are no major concerns regarding this proposed project, any anticipated or unanticipated disruptions to transportation facilities because of this project should be communicated to the Odessa TxDOT District office at (432) 332-0501 and located at 3901 E. Highway 80, Odessa, TX 79761.

Sincerely,

Dianna F. Noble, P.E.  
Director of Environmental Affairs

cc: Matt Carr, Advanced Project Development Coordinator, ODA  
Tim Wood, Environmental Specialist, ENV

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- S-2-1:** Summit intends to coordinate with TxDOT and local authorities prior to project construction to determine whether a left-turn lane would be required to reduce impacts to traffic on Farm-to-Market Road 866.
- S-2-2:** Summit intends to coordinate with TxDOT and obtain approval prior to locating utilities or performing work within the TxDOT rights-of-way.



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May 2, 2011

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Dan Allen Hughes, Jr.  
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S. Reed Morian  
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Lee M. Bass  
Chairman-Emeritus  
Fort Worth

Carter P. Smith  
Executive Director

Mr. Mark L. McKoy  
U.S. Department of Energy  
National Energy Technology Laboratory  
P.O. Box 880  
Morgantown, WV 26507-0880

RE: Texas Clean Energy Project, Draft Environmental Impact Statement (DOE/EIS-0444D, 76 Federal Register 55 [22 March, 2011] pages 15968-15970); Ector, Crane, and Midland Counties, Texas

Dear Mr. McKoy:

Texas Parks and Wildlife Department (TPWD) has received the draft Environmental Impact Statement (EIS) for the proposed action of providing approximately \$450 million in federal funds for planning, design, construction, and demonstration-phase testing and operation of the Texas Clean Energy Project (TCEP). TPWD offers the following comments and recommendations regarding the proposed project.

Chapter 1. Purpose and Need

*Section 1.2 Project Background*

*Section 1.2.1 Clean Coal Power Initiative*

Funding for detailed design, construction, and three-year demonstration-phase testing and operations is being provided to Summit Texas Clean Energy, LLC. (Summit) through the Clean Coal Power Initiative (CCPI). The CCPI is a cost-sharing collaboration between the Department of Energy (DOE) and industry to increase investment in low-emissions coal technologies. The CCPI's goal is to accelerate the readiness of new coal-based technologies for commercial deployment by commercially demonstrating advanced technologies. These demonstrations are intended to encourage the emergence

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Mr. Mark McCoy  
Page Two  
May 2, 2011

of new technologies, prove the feasibility of integrating carbon dioxide (CO<sub>2</sub>) management with power production, and facilitate widespread commercial deployment of coal technologies.

*Section 1.2.2 Summit's Proposed Project: TCEP Overview*

Summit proposes to construct a poly-generation (polygen) plant on approximately 600 acres approximately 15 miles southwest of Odessa. The TCEP would use integrated gasification combined-cycle technology. This technology combines the process of converting coal into a gaseous fuel (called synthesis gas or syngas) with a power plant that uses both a combustion turbine-generator and a steam turbine-generator. The plant would generate approximately 400 megawatts (MW) of electricity per year, and 213 MW of that power would be delivered to the electric grid. The remainder of the electricity would be used to run the plant, including the use of excess syngas to produce urea to be sold on the commercial market for fertilizer. By-products of the gasification process including argon, inert slag, and sulfuric acid would also be sold on the commercial market. Project details including projected water use, proposed infrastructure to support the plant, and proposed carbon capture are described below under Proposed Action and Alternatives.

*Section 1.5 DOE Scoping Process*

*Section 1.5.5 Consultation and Coordination*

*Section 1.5.5.1 Coordination with Federal and State Agencies*

The draft EIS states that the DOE contacted several federal and state agencies to initiate consultation regarding particular environmental resources, and those consultation letters are included in Appendix A to the draft EIS. Please note that TPWD provided scoping comments for the proposed project to the DOE on July 30, 2010. This correspondence was not included in Appendix A of the draft EIS. A copy of the TPWD scoping comment letter is attached for your reference.

S-3-1

**Recommendation:** Please review the attached TPWD scoping comments, as they remain applicable to the project as proposed.



**S-3-1:** The comments from TPWD provided on July 20, 2010, have been included in the revised Appendix A.

Mr. Mark McCoy  
Page Three  
May 2, 2011

## Chapter 2. Proposed Action and Alternatives

### *Section 2.4 Summit's Proposed Project*

#### *Section 2.4.5 Resource Requirements*

##### *Section 2.4.5.2 Natural Gas*

The TCEP would require up to 2 trillion British Thermal Units of natural gas annually for polygen plant startup, backup fuel for the power island, heating and drying gases, fueling an auxiliary boiler, and providing pilot flames. The plant would tap into an existing natural gas pipeline, which would require the installation of a 2.7-mile pipeline south of the plant site.

##### *Section 2.4.5.3 Process Water*

The TCEP would require a minimum of 3.5 million gallons of process water per day (1.28 billion gallons per year) and a maximum of 5.5 million gallons per day (2.01 billion gallons per year). Water for the plant would be supplied from one or more of the following three sources:

- Waterline Option 1 (WL1) – The Gulf Coast Waste Disposal Authority, located south of Odessa, treats an average of 2.0 million gallons per day of municipal sewage from the City of Odessa and industrial wastewater from nearby industries. This facility is required to discharge a minimum of 2.0 million gallons per day into Monahans Draw. Under WL1, all or part of the untreated wastewater from the City of Midland would be piped approximately 41.2 miles to the Gulf Coast Waste Disposal Authority facility for treatment and then to the TCEP for use as process water. City of Midland wastewater currently undergoes primary treatment and is then disposed of through agricultural irrigation. WL1 is the preferred option of Summit.
- Waterline Option 2 (WL2) – Oxy Permian currently provides nonpotable saline ground water from the Capitan Reef Complex Aquifer via existing pipelines in the general area for use in oil extraction. WL2 would require a new 9.3-mile pipeline to connect into the existing Oxy Permian system. This water would require treatment and brine disposal.

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Mr. Mark McCoy  
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- Waterline Options 3 and 4 (WL3 and WL4) – Fort Stockton Holdings (FSH) has proposed to provide ground water from the Edwards-Trinity Aquifer near the City of Fort Stockton in Pecos County to the cities of Midland and Odessa for municipal use. If this 66-mile waterline were built, the TCEP could use approximately 10 percent of the water that would be available through that line. A 14.2-mile line (WL3) would be required to connect the TCEP to the proposed location of the FSH line. If water from the FSH line were used as a backup for WL1, a 2.7-mile line (WL4) would be required to connect the proposed location of the FSH line to the Gulf Coast Waste Disposal Authority facility.

**Comment:** As stated above, the use of City of Midland wastewater following treatment at the Gulf Coast Waste Disposal Authority facility (WL1) is Summit's preferred source of process water for the TCEP. Provided that the quantity and/or quality of water in Monahans Draw would not decrease as a result of this alternative, TPWD notes that WL1 appears to best minimize adverse impacts to water resources when compared to the other alternative water sources discussed in the draft EIS.

S-3-2

#### *Section 2.4.5.5 Electric Transmission*

The TCEP would tie into the existing transmission grid using one of six options that connect into the existing Moss Substation, one of two existing 138-kilovolt (kV) transmission lines, or the existing Midland County Substation. The lines would range from 0.6 to 36.8 miles in length. Section 1.4.2.4 of the draft EIS states that as an exempt wholesale generator, the TCEP would not be required to obtain a Certificate of Convenience and Necessity (CCN) from the Public Utility Commission (PUC) for the transmission line.

#### *Section 2.4.5.6 Carbon Dioxide Pipeline*

Captured CO<sub>2</sub> would be transported by pipeline to connect with an existing Kinder Morgan CO<sub>2</sub> pipeline located approximately 1 mile east of the plant site. CO<sub>2</sub> would be sold under commercial contracts for use in Enhanced Oil Recovery (EOR). Additional information about proposed CO<sub>2</sub> capture and use in EOR is provided below under Sections 2.4.7.2 and 3.3.

- S-3-2:** WL5 is a modification of WL1 and is now Summit's preferred GCA waterline option. However, some commenters suggested that WL2 (Oxy Permian pipeline system, which gets its highly brackish water from the Capitan Reef Complex Aquifer) should be the environmentally preferred option because they believe West Texas communities may soon have to begin reusing municipal waste water for potable water supplies.

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*Section 2.4.5.7 Transportation*

Access to the polygen plant would be primarily by FM 866, which would require the construction of approximately 3.7 miles of a new county road. Emergency vehicles, administrative workforce, and visitors would access the plant from FM 1601, which would require the construction of an approximately 0.04-mile underpass, overpass, or at-grade intersection with the nearby railroad. A 1.1-mile rail spur would also be constructed to connect the plant to that railroad.

*Section 2.4.7 Marketable Products*

*Section 2.4.7.2 Carbon Dioxide*

The TCEP is expected to capture approximately 3 million tons of CO<sub>2</sub> per year. A maximum of approximately 1,080 tons of captured CO<sub>2</sub> per day would be sent to the urea synthesis plant, and 9,050 tons per day would be compressed and sent to the CO<sub>2</sub> pipeline for use in EOR.

*Section 2.4.9 Operation Plans*

*Section 2.4.9.1 Plant Operations and Section 2.4.9.2 Operational Labor*

Following construction, Summit would begin initial startup followed by demonstration testing and then operational testing. Operational testing would occur in parallel with portions of the demonstration testing and would include a shakedown period that is expected to continue for three years, through late 2017. The TCEP would operate for at least 30 and possibly up to 50 years following the demonstration phase. Workforce size would vary between the demonstration period and the period of commercial operation. No other information was provided regarding proposed differences between the demonstration phase and commercial operation phase or why workforce needs would differ between these phases.

S-3-3 | **Recommendation:** In the final EIS, TPWD recommends Summit provide a thorough explanation of proposed or potential differences in plant products, processes, and/or commitments during the demonstration phase and operations phase.

- S-3-3:** Although the TCEP is referred to as a demonstration project, there would be no demonstration phase that is different from the normal start-up and operations of the plant. Chapter 2 of the EIS describes the plant products that would be produced by, the processes that would be used during, and the commitments Summit has made with respect to the operation of the TCEP. Monitoring, verification, and accounting practices for the CO<sub>2</sub> used in the EOR is a requirement in the Cooperative Agreement between DOE and Summit. Field operators would report monitoring, verification, and accounting data to DOE (via Summit) and the State of Texas.

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Chapter 3. Affected Environment and Environmental Impacts

*Section 3.3 Air Quality and Greenhouse Gas Emissions*

*Section 3.3.4 Affected Environment*

*Section 3.3.4.4 Greenhouse Gases*

The draft EIS states that due to recent federal regulations, the TCEP would be required to report emissions of CO<sub>2</sub> as well as the amount of CO<sub>2</sub> captured in the process of CO<sub>2</sub> supply and its end use. The Texas Commission on Environmental Quality issued a Prevention of Significant Deterioration construction permit for this project on December 28, 2010. Therefore, the TCEP is not subject to the Environmental Protection Agency's Tailoring Rule, which determined that greenhouse gas emissions became subject to regulation under the Clean Air Act as of January 2, 2011.

*Section 3.3.5 Environmental Impacts of Summit's Proposed Project*

*Section 3.3.5.2 Project Emissions*

Annual non-captured CO<sub>2</sub> emissions from TCEP operations would be approximately 300,000 tons. This estimate is based on the total amount of CO<sub>2</sub> to be generated minus the CO<sub>2</sub> removal that would occur as a result of carbon capture and subsequent injection of EOR. According to Section 2.1 (Introduction) of the draft EIS, the polygen plant would be designed to capture, as CO<sub>2</sub>, 90 percent or more of the total carbon in the fossil fuel used in the plant under almost all operating conditions. Section 2.4.4 (Disposition of Carbon Dioxide) states that the TCEP's captured CO<sub>2</sub>, up to a maximum of approximately 3 million tons per year, would be sold and used for EOR.

S-3-4 | **Recommendation:** TPWD recommends that the minimum amount of CO<sub>2</sub> possible be emitted during all phases of the proposed project. TPWD also recommends Summit seek to offset carbon emissions that cannot be avoided. TPWD recommends the final EIS address potential CO<sub>2</sub> emissions if the demand for CO<sub>2</sub> for use in EOR decreases over the life of the plant.



**S-3-4:** The TCEP is being designed to capture 90 percent or more of the total carbon in the coal that would be used in the polygen plant under almost all operating conditions. Additionally, in accordance with its TCEP air permit, Summit could not release increased amounts of CO<sub>2</sub> more than 5 percent of the time when the plant is operating. Captured CO<sub>2</sub> would be sold for EOR and used in the production of urea for fertilizer. The CO<sub>2</sub> is one of the most valuable products of the plant. Thus, Summit intends to minimize the amount of CO<sub>2</sub> emitted during the proposed project. Furthermore, Summit believes that by demonstrating the commercial feasibility of carbon capture and reuse, the TCEP could lead to future reductions in CO<sub>2</sub> emissions by future coal-fueled power plants. This would more than offset any TCEP carbon emissions that cannot be avoided.

The captured CO<sub>2</sub> from the TCEP would be sold under binding, long-term commercial contracts. For this reason, Summit fully expects that the demand for CO<sub>2</sub> for use in EOR would not decrease over the life of the plant. In the unlikely event that Summit is unable to sell the captured CO<sub>2</sub> for EOR, the operation of the TCEP would become uneconomical and the plant would be shut down. The final EIS addresses this issue.

The oil and natural gas produced by the EOR, when burned, would release its carbon in the form of CO<sub>2</sub> to the atmosphere. It is also important to note that by displacing imports of foreign oil and urea, the amount of CO<sub>2</sub> released by the transportation of these materials to the US will be reduced as a result of the proposed TCEP.

See response to comment I-5-9 for information regarding the possibility of offsets associated with the power sales agreement.

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*Section 3.6 Ground Water Resources*

*Section 3.6.4 Affected Environment*

As stated in the introduction to Chapter 3 and in Section 3.4.4 (Climate, Affected Environment) of the draft EIS, the project area is located in a drought-prone region with few perennial streams and relatively low annual precipitation where there is almost no usable surface water. Section 3.6.4 states that according to the Texas Water Development Board (TWDB) water plan for Region F, which includes the proposed project area, the largest withdrawals of ground water in the region are for irrigation and municipal uses.

As stated in Section 5.2.2.2 (Potential Cumulative Effects, Water Resources) of the draft EIS, TWDB projects a water shortage of 78.2 billion gallons for Region F by 2060. Based on a review of the TWDB 2011 Region F Water Plan Section ES.2.4 (Comparison of Supply and Demand), TPWD notes that irrigation, municipal, and steam electric demands have the largest shortages when considering available water supply and projected demands in Region F. TPWD also notes that, based on a review of Section 1.5.1 (Wholesale Water Providers) of the 2011 Region F Water Plan, the Great Plains Water System recently established contracts to supply water to a steam electric operation in Ector County with a projected demand of 2.08 billion gallons per year in 2010, increasing to 5.75 billion gallons per year by 2060. Table 2.3-9 in the plan summarizes the long-term projections for steam electric water demands by county. According to the table, the demands of the above-described facility are the only water demands for steam electric generation in Ector County between 2010 and 2060. No water demands for steam electric generation are projected for Midland County or Pecos County. Section 5.2.2.2 concludes that none of the three alternative sources for process water would have a direct effect on potable water supplies, but any of the three could have an indirect effect if users of the source were to instead rely on potable water in the future.

S-3-5 | **Recommendation:** As stated above, the proposed TCEP would use up to 2.01 billion gallons of water per year. This proposed use would greatly increase the 2010 projected water demand for steam electric generation in Ector County or create new demands in Midland and/or Pecos counties. In the final EIS, TPWD recommends the DOE consider how the proposed water use in this arid area would impact water supply and demand over the life of the plant in Region F based on the county projections in the water plan.

**S-3-5:** The 2011 state water plan projects total demand for water resources in Region F to rise from approximately 800,000 acre-feet (ac-ft) in 2010 to 816,000 ac-ft by 2060, with a total shortfall of up to 220,000 ac-ft by 2060 (TWDB 2011). Water used for irrigation accounts for approximately 70 percent of supply, demand, and shortfall. The authors of the 2011 Region F water plan are careful to point out that with the current uncertainty in the electrical generation industry, it is not possible to predict the location and need for future water demands for steam electric generation (TWDB 2011 sec. 2.3.4). Consequently, these uncertainties prevent DOE from evaluating how the proposed TCEP water use would impact the regional water supply over the life of the plant. To address the projected shortfalls, the state water plan includes water management strategies to develop or use approximately 251,000 ac-ft per year of additional supplies by 2060, including new well fields, desalination, reuse, and voluntary redistribution (TWDB 2011).

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*Section 3.7 Surface Water Resources*

*Section 3.7.5.1 Wetland, Water Bodies, Waterways, and Water Quality*

The proposed water pipeline under WL1 would cross Monahans Draw downstream of a wastewater discharge point, potentially resulting in the disturbance of 0.74 acre of associated wetlands. Although the hydrology at this location is artificial, the wetlands created by the wastewater discharge provide important wildlife habitat in this arid area. The draft EIS states that the crossing at Monahans Draw could occur either by traditional open-cut trenching methods or by horizontal directional drilling.

S-3-6

**Recommendation:** TPWD recommends that the crossing be performed by directional drilling rather than trenching. Staging areas for drilling equipment should be located in previously disturbed areas outside of the wetland habitat. If directional drilling is not feasible and trenching in Monahans Draw would occur, TPWD recommends performing construction activities during dry or low flow conditions, restoring wetland and streambed contours, and revegetating disturbed areas with site-specific native plant species.

*Section 3.8 Biological Resources*

*Section 3.8.4 Affected Environment*

*Section 3.8.4.4 Rare, Threatened, and Endangered Species*

The draft EIS states that the U.S. Fish and Wildlife Service (USFWS) concurred that no federally listed species are likely to be adversely affected by the proposed project. TPWD notes that in November 2010 (after the scoping period for this project had ended), the USFWS published its Candidate Notice of Review in which the Sand dune lizard (*Sceloporus arenicolus*) (also known as the Dune sagebrush lizard) was determined to be a high priority for federal listing. The USFWS is working on a proposed listing rule for this species, which they expect to publish prior to submitting the next annual 12-month petition finding. Although tallgrass habitat was not observed on aerial photography or on accessible areas during field surveys, suitable habitat for the Sand dune lizard could be present on active sand dunes in the general project area.

- S-3-6:** Summit is evaluating both methods of construction for pipeline crossings of Monahans Draw. Should the open trench method be used, Summit would minimize impacts to the streambed and adjoining wetlands to the maximum extent possible. Upon completion of the construction, the affected streambed and wetlands would be restored to pre-project conditions.

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- S-3-7 **Recommendation:** TPWD recommends Summit and DOE monitor the listing status of the Sand dune lizard during project planning, construction, and operation and coordinate with the USFWS pursuant to the Endangered Species Act if necessary. TPWD recommends the TCEP project site and approved right of way (ROW) for linear facilities be surveyed for suitable Sand dune lizard habitat prior to construction. If suitable habitat is found, TPWD recommends avoiding adverse impacts to this species and its habitat during project design, construction, and operation.

#### *Section 3.8.5 Environmental Impacts of Summit's Proposed Project*

##### *Section 3.8.5.1 Terrestrial Species*

The draft EIS states that construction and operation of the polygen plant would result in the permanent loss of up to 300 acres of Mesquite (*Prosopis glandulosa*) shrub – Grassland community. Associated linear facilities including the natural gas line, process water line, electric transmission line, CO<sub>2</sub> pipeline, and transportation facilities would result in the permanent removal of between 132 and 574 acres and the temporary disturbance of an additional 114 to 543 acres of Mesquite shrub – Grassland vegetation. The draft EIS states that following construction, both the construction and operational ROWs would be reseeded with native vegetation. Section 3.8.6 (Mitigation) states that an invasive species monitoring and control plan would be developed.

- S-3-8 **Recommendation:** TPWD supports plans to revegetate disturbed areas using native plant species and control invasive species in the project area. TPWD recommends Summit implement these plans on the plant site as well as the associated linear ROWs.

##### *Section 3.8.5.3 Migratory Birds*

The draft EIS states that, although there could be collisions associated with the addition of a transmission line, no rare or unique habitat attractants such as wetlands, water bodies, or feeding flight lines are present along any of the transmission line options. Summit concludes that construction and operation of linear facilities would present only minor impacts to migratory birds.

TPWD notes that, based on the Texas Tech University Playa Lakes Digital Database, transmission line options 5 and 6 could cross or be located very near three small playa lakes located northwest of Loop 338 in Midland. As stated above, electric transmission lines for this project would not require a CCN from the PUC.

**S-3-7:** During four field investigations conducted in 2010 and 2011, DOE determined that no habitat suitable for the sand dune lizard (*Sceloporus arenicolus*) occurs within the proposed polygen plant site or associated linear facility corridors. However, if suitable habitat is found when final routes are determined and access is permitted, Summit would notify DOE and take measures to avoid adverse impacts to this species and its habitat during project design, construction, and operation.

**S-3-8:** Summit has not yet decided on methods for preventing or minimizing the spread of noxious non-native vegetation. It intends to implement the following practices to minimize and avoid the spread of invasive species during construction and operation:

- Develop an invasive species monitoring and control plan.
- Inspect and clean construction equipment.
- Use invasive species-free mulches, topsoil, and seed mixes.
- Plant native species after construction and as landscaping.
- Use chemical and mechanical eradication of non-native or invasive species to reduce the potential for the introduction or spread of non-native or invasive species (see Section 3.8.6 of the final EIS).

DOE will state in its ROD whether it will require any particular mitigation or avoidance measures would be required as a condition for DOE funding.

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**Comment:** Based on the transmission line options presented in the draft EIS, transmission line option 4 (TL4) appears to best minimize potential adverse impacts to natural resources. TL4 would have a total length of 0.6 mile and would connect with an existing Oncor 138-kV transmission line at a new 5- to 10-acre switchyard.

S-3-9 **Recommendation:** If a transmission line route that crosses or is located near a water body is chosen, TPWD recommends these lines have line markers installed at the crossings or closest points to the drainages to reduce the potential of collisions by birds flying along or near the drainage corridors. To prevent electrocution of perching raptors, raptor protection measures such as adequate conductor spacing, perch guards, and insulated jumper wires should also be used. For additional information, please see the attached *TPWD Recommendations for Electrical Transmission/Distribution Line Design and Construction* and the guidelines published in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and the *Avian Protection Plan Guidelines*.

### Section 3.9 Aesthetics

#### Section 3.9.5 Environmental Impacts of Summit's Proposed Project

A visual simulation was performed to analyze impacts to aesthetics from Monahans Sandhills State Park, along with other key observation points. The draft EIS states that viewing distances (14.8 miles), intervening topography, or intervening structures would prevent the site from being clearly viewed from the park during the daytime. Night sky conditions could be impacted by the installation of high-intensity lighting in and around the site, nighttime flaring, and Federal Aviation Administration (FAA)-required lighting on the stack tops. Section 3.9.6 (Mitigation) states that red strobes could be used for FAA lighting rather than white ones because they are less visually intrusive.

S-3-10 **Recommendation:** Studies have shown that night migrating birds are attracted to solid or pulsing red lights. Therefore, TPWD recommends towers requiring lights for aviation safety use white strobe lights to minimize the potential for bird strikes on the towers.



- 
- S-3-9:** Summit's preferred transmission line option is TL4, which would not traverse any playa lakes or water bodies. Should Summit choose another transmission line option that would traverse a playa lake or water body, Summit would ensure implementation of practices such as increasing the visibility of transmission lines, removing overhead grounding wire, and providing a 60-in (152-cm) separation between energized conductors (see Section 3.8.6 [Mitigation] of the final EIS for details).
- S-3-10:** Red lights are better to reduce visual impacts, whereas white lights minimize potential for bird strikes. Summit intends to take these factors into account in optimizing its lighting plan.

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I appreciate the opportunity to provide comments on this draft EIS. Please contact me at (512) 389-4579 or [julie.wicker@tpwd.state.tx.us](mailto:julie.wicker@tpwd.state.tx.us) if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Julie C. Wicker". The signature is written in a cursive style with a large initial 'J'.

Julie C. Wicker  
Wildlife Habitat Assessment Program  
Wildlife Division

JCW:gg.15962

Attachments (2)

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4/20/2011

• •

Schuyler Wight  
PO Box 433  
Goldsmith, TX 79741

Mark L. McKoy  
PO Box 880  
Morgantown, WV 26507

**Dear Mr. McKoy,**

The History of the Western United States is replete with stories of people who have come west in search of fame and fortune. A large portion of these stories are of folks from the east who have sought to make oases out of desert scrub. The common thread that binds these stories together is how the realities of the desert would not support the water needs of their projects. After my great-grandfather trekked to this land, one of the first projects he started was the Odessa Orchard Company. He spent a lot of time searching for shallow water to irrigate orange trees. After a time, he had to give up on that idea. Whether it be a power plant, orchard, or irrigation canal, the reality of the scarcity of water will over-whelm the dreams of the dreamer who decides to take on Mother Nature.

The story of Clayton Williams family is another example of the hubris of the dreamer out to transform the desert. BC (Before Clayton Sr.), the City of Fort Stockton was quite another place. There was Comanche Spring, which flowed 18,000 gallons per minute year round and Cottonwood trees lined the irrigation canals. These trees actually formed a canopy over the highway. The canals were a source of play for the kids in the summer to ride their inner tubes. Now, the spring is dry and the irrigated land of Claytie Jr. actually covers less acreage than when the spring flowed. The reason that Fort Stockton Holdings is going to go through seemingly endless litigation is because people haven't forgotten, nor forgiven, what his family did to their town. Another good example is documented in the book "Ditches Across the Desert". And don't forget the Salton Sea. I could go on and on, but you seem to have enough common sense to get my point.

Regarding your first option for water, it is no small matter to take 4 million + gallons of water per day out of our water equation.

I-7-1 | Consider the wetlands that Monahans Draw provides. The ponds and stream are home to birds and various wildlife not otherwise seen here in West Texas. It may not seem like much to you,

- I-7-1:** Current minimum discharges to Monahans Draw would be maintained under all of the water source alternatives being considered for the TCEP. The current, minimum, monthly average discharge of 2.0 million gal (7.6 million L) per day from the GCA Odessa South Facility to Monahans Draw would not be decreased as a result of the TCEP, because the water needed for TCEP would be provided to the GCA Odessa South Facility from the city of Midland WWTP (Levine 2010). Thus, TCEP's process water use would not dewater Monahans Draw or the wildlife habitats and wetland communities.

I-7-1 | but it is the only one that we've got. If you use the effluent water for your plant, then we would  
 contd. | lose even that. If they treat the water and discharge water with higher TDS down the draw,  
 I-7-2 | then it will further desertify the ecosystem downstream.

I-7-3 | Consider the limited recharge that the Midland farms provide. That may not seem like it will  
 I-7-4 | cause much harm to the aquifer underneath, but it may be all that is keeping it from dying a  
 I-7-4 | slow death. *What about the carbon sequestration that these farms provide?*  
 I-7-5 | The option of using Capitan Reef water is certainly preferable to using effluent. Summit is  
 I-7-6 | going to whine and moan about the costs associated with cleaning that water up, but it sure  
 I-7-6 | beats the folly of removing usable water from our water equation here in the desert. The  
 I-7-6 | Capitan Reef is actually a wonderful water storage facility, because you get out what you put in  
 I-7-6 | it. If you assist in pumping out the brackish water, it might help later on if we need to use it to  
 I-7-6 | store water.

I-7-7 | Here's another option to consider for source water. You seem to have little regard for freighting  
 I-7-7 | in massive quantities of coal. And then: Freighting out massive quantities of slag, fertilizer,  
 I-7-7 | sulphur, etc. Neither do you have a *problem of this plant producing electricity at times* when it  
 I-7-7 | is not needed. Why don't you consider building a pipeline from back East to send water to run  
 I-7-7 | this plant. This option is not that far-fetched when you think about the other commodities that  
 I-7-7 | have to be brought to the site. If you look hard enough, I'll bet you could find some Eastern  
 I-7-7 | water that is loaded with a pollutant that a township would love to get rid of. Injection of the  
 I-7-7 | brine water would permanently sequester the offending pollution agent, and murder two mules  
 I-7-7 | with one machete. Or, if you could find us some clean water from the East, Odessa and  
 I-7-7 | Midland would have another source if this plant doesn't pan out.

I-7-8 | The main emplis of this project is to study the feasibility of the idea of CO2 capture and  
 I-7-8 | sequestration. If a business were to consider this project without government funding, they  
 I-7-8 | would locate the plant where the inputs are. Since water and coal are the two most needed in  
 I-7-8 | quantity, they would start there and factor in the need to funnel out the electricity to market in  
 I-7-8 | their location decision.

I-7-9 | Another thing to consider with this project is the environmental trade off. The EIS states that  
 I-7-9 | the water needed would only be 0.7% of this area's water usage. How much of this area's  
 I-7-9 | carbon are you planning to capture? In the grand scheme of things, have you gained anything  
 I-7-9 | to trade one environmental problem for another one? Remember that we only get to rent this  
 I-7-9 | earth for a time, and then our kids take it over. If we don't take care of it, they will use bad  
 I-7-9 | words when they talk about us.

Schuyler Wight

**I-7-2:** There would be no increase in the concentration of TDS discharged to Monahans Draw under any of the water source alternatives being considered for the TCEP. Although GCA has applied for an increase in discharge quantity in its industrial waste discharge permit (from a maximum of 7.0 million gal [26.5 million L] per day to a maximum of 12.0 million gal [45.4 million L] per day), no increase in TDS limits would occur as a result of this permit amendment.

The March 11, 2011, Fact Sheet and Executive Director's Preliminary Decision issued by the TCEQ includes the following determination regarding the GCA's proposed effluent discharges: "In accordance with §307.5 and the TCEQ implementation procedures (January 2003) for the Texas Surface Water Quality Standards, an antidegradation review of the receiving waters was performed. A Tier 1 antidegradation review has preliminarily determined that the existing water quality uses will not be impaired by this permit action."

**I-7-3:** The Midland farms currently receive approximately 10–12 million gal (37.9–45.4 million L) per day from the Midland WWTP. This quantity would be reduced to approximately 4–6 million gal (15.1–22.7 million L) per day in the future as a result of the TCEP. Per TCEQ regulations, there should not be any recharge to the underlying aquifer occurring. The waste water application rates are set such that the waste water is taken in by the plant roots and transpired through plant leaves to the air, or directly evaporated at the ground surface. Please refer to Section 3.6.5.1, which addresses the impacts to ground water quantity.

**I-7-4:** *Repeat of the Comment: What about the carbon sequestration that these farms provide?*

The crops grown on the Midland farms take in CO<sub>2</sub> as part of the photosynthesis process. The CO<sub>2</sub> is released back to the atmosphere after the crops are harvested or decayed and when the soil is disturbed during farming practices. In comparison, approximately 90 percent of the CO<sub>2</sub> from the TCEP would be captured and either used in the production of urea (6–15 percent) or injected underground for use in EOR (85–94 percent)—the volumes of which would vary based on electricity and urea demand. Almost all of the CO<sub>2</sub> used for EOR would be sequestered and would not be released to the atmosphere. Although the urea would not permanently prevent CO<sub>2</sub> release to the atmosphere, it would provide short-term benefits by increasing crop yield and CO<sub>2</sub> uptake during the photosynthesis process. The oil and natural gas produced by the EOR, when burned, would release its carbon in the form of CO<sub>2</sub> to the atmosphere. It is also important to note that by displacing imports of foreign oil and urea, the amount of CO<sub>2</sub> released by the transportation of these materials to the US will be reduced as a result of the proposed TCEP.

**I-7-5:** This is an alternative being evaluated as a waterline option (WL2, Oxy Permian). The EIS evaluates the potential impacts for multiple options including the Oxy Permian pipeline water, which comes from the Capitan Reef Complex Aquifer, and the municipal waste water as nonpotable water sources. Water from both could be treated and used for drinking water, but significant amounts of treatment would be required. The salinity and dissolved solids of the Capitan Reef Complex water is higher than the salinity and dissolved solids of the municipal waste water, but the load of various organic compounds is less.

**I-7-6:** The Capitan Reef Complex Aquifer is being considered as a process water option for the TCEP (WL2). Summit is currently planning to install a reverse osmosis system at the polygen plant site, which would enable this alternative to be used. The commenter's suggestion that the Capitan Reef Complex Aquifer might be used for potable water storage in the future could have merit and perhaps should be investigated by the appropriate state governmental agencies or water resource planning organization. The potential for using the aquifer for future potable water storage, however, is beyond the scope of the TCEP EIS.

**I-7-7:** This is not a feasible alternative. Building a water pipeline over distances of hundreds of miles would be cost-prohibitive, impose significant environmental impacts, and be difficult to permit.

**I-7-8:** The purpose of the proposed project is to demonstrate the commercial feasibility of the proposed combination of technologies, particularly a coal-fueled IGCC power plant with CO<sub>2</sub> capture and sequestration of the CO<sub>2</sub> that would otherwise be emitted to the atmosphere.

Summit selected a site in the Permian Basin because the region has an existing market for the CO<sub>2</sub> for use in EOR. No other area of the United States has an established market for CO<sub>2</sub>. Sale and use of the CO<sub>2</sub> is important for demonstrating the commercial feasibility for a power plant to capture and sequester CO<sub>2</sub>. Thus, Summit decided to locate the plant near existing oil fields that could use CO<sub>2</sub> for EOR, rather than to build a power plant near the fuel source that would require the construction of hundreds of miles of CO<sub>2</sub> pipeline or have no established local market for the CO<sub>2</sub>.

**I-7-9:** This project would capture approximately 90 percent of the carbon in its coal feedstock. It would not capture carbon from other air emissions sources in the area. Depending on the PPA that is reached, there is a possibility for offsets of the CO<sub>2</sub> from an existing source. An offset could occur, for example, if an existing CO<sub>2</sub>-emitting power plant would be shut down and its electricity supply replaced by the electricity generated from the TCEP. At this point in time, a PPA has not been completed for this project; therefore, any offsets remain undetermined.

More importantly, as a demonstration project, one of DOE's goals for its involvement is to obtain information that would factor into decisions on future projects and future laws and regulations relative to the issue of reducing carbon emissions to the atmosphere. At this time, it is too early to determine the level of impact of this and other demonstration projects on changing the carbon footprint of society in this area, in the United States, or in the world. Reducing our society's CO<sub>2</sub> emissions to the atmosphere, and the world's emissions, is predicted to be necessary in an effort to limit global climate change.

Although the quantity of process water used would equal approximately 0.7 percent of the area's annual available ground water (this statistic was presented in the EIS to give readers an appreciation of the relative magnitude of the TCEP's water use, compared to all the major ground water sources currently used in Water Planning Region F of Texas), Summit's goal is to use no currently potable water (other than, perhaps, as a backup water supply) to meet the TCEP's demand for process water. In addition, Summit's goal is to demonstrate one way to use coal to produce electricity with the minimum commercially feasible emission of CO<sub>2</sub>. Given that currently potable water would not



**I-7-9 ctd:** likely be used in appreciable quantities by the TCEP, DOE and Summit believe that the impacts associated with the proposed process water use and water supply options under consideration would be acceptable to society as a whole and locally in an effort to achieve the desired objectives of the demonstration.

I-7-10

One of the things that the smart fellows keep telling us about global warming is that it is going to make droughts more severe. The current weather pattern that we are in would certainly suggest that to be true for us here in West Texas. Why would you want to add to our woes by reducing our water availability? I don't claim to have as much knowledge as them smart fellows, but I've got enough common sense to know not to evaporate water that would serve a purpose in the desert.

It is a bad plan to take water out of the desert. That is something you ought to know just from living so long. Which is exactly what you are planning to do if you use the first and third options for water. We who have made our home here in the desert will have to suffer the consequences if that is your decision.

Sincerely,



Schuyler Wight

Schuyler Wight

- I-7-10:** DOE's intention is to assist in reducing greenhouse gas emissions in the United States (and the world) and thereby limit the effects of global warming. DOE understands that such an effort necessarily has certain costs and tradeoffs, which DOE attempts to minimize to levels that are acceptable to society as a whole and to the local communities that are most immediately impacted. See also the response to comment I-5-9.

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**From:** Steven Schafersman [sschafersman@gmail.com]  
**Sent:** Monday, May 02, 2011 7:05 PM  
**To:** mmckoy@netl.doe.gov  
**Subject:** Public Comments from Steven Schafersman, May 2, 2011

Hi, Mark,

Here are my public comments just in time.

Representing: self

Best,

Steve

Steven Schafersman  
 6202 Driftwood Dr  
 Midland, TX 79707  
 432-352-2265

=====

Public Comments Concerning the Texas Clean Energy Project

by Steven Schafersman, PhD  
 2011 May 2

There are many unanswered questions that need to be answered before the Department of Energy (DOE) gives final approval for its contribution of limited financial assistance (\$450 million) to the Texas Clean Energy Project (TCEP) that will make the project possible.

**I - 8 - 1** I am not necessarily opposed to the TCEP, but its creation and operation should not have a negative impact on the existing quality of life in its region, the Permian Basin, and I think it may. Let me stipulate at the beginning that a "clean coal" IGCC plant has some positives and far fewer negatives than traditional coal-powered electricity-generating plants, but it is not necessarily the ideal solution. To my mind, the ideal solution is to move quickly to wind, solar, geothermal, and generation-IV nuclear reactor power generation of electricity and to move as fast as possible away from fossil fuel energy and to exclusive use of carbon-free energy for all activities, especially including transportation. Due to incomprehensibly shortsighted and stupid public leadership despite the warnings of scientists for many decades, it is almost certainly too late to do this to stop anthropogenic climate change, but anything in this direction would mitigate the problem. IGCC plants are a solution proposed by the coal industry to keep their industry viable in the face of massive climate change caused by their pollution.

There is no such thing as a "clean coal" electrical power generation plant. Pollution occurs every step of the way: mining the coal, transporting the coal, storing and crushing the coal, operating the plant, disposing of pollutants, etc. But an IGCC plant is certainly cleaner than a traditional plant although at considerably greater expense (whose costs will be passed along to the consumer). Still, there are too many questions that must be

**I-8-1:** Comment noted. DOE does have programs that fund many projects in each of these alternative technologies for generation of electricity.

answered before this plant is constructed. Texas has a long history of Republican political leaders who live in fantasy worlds and indulge in commercial boosterism that ignores physical and financial realities. Our state's communities have numerous sports stadiums that require immense amount of public tax money to keep them operating. The Superconducting Supercollider was desired and pursued as a source of federal funds for thousands of jobs for Texas workers, not as a scientific experiment to discover information about the origin of the universe. In addition, almost all of the state's political leaders already knew how the Earth and universe were formed 6,000 years ago, so the real scientific purpose of the SSC was irrelevant to them. The same is true for an IGCC plant today. Since few to no political leaders and boosters in the Permian Basin, almost all Republicans--and this includes individuals who should know better, such as geologists and engineers in the petroleum industry, at Midland College, and even at the local university, UTPB--believe in the reality of anthropogenic climate change, they have all been pursuing the TCEP as a source of outside funding and jobs for the region, not as a solution for global warming. Remember that the DOE is dealing with a disingenuous and hypocritical reactionary political culture in Texas whose leaders live in a fantasy world and whose version of reality does not match the natural world.

Here are the problems with the TCEP I foresee:

- I-8-2 | 1. The Permian Basin is not a big market for electricity. The electricity produced by the plant will be transmitted at approximately 50% loss to the Dallas-Fort Worth market (400 MW gross produced, 213 MW net received; some of the gross is used to power the plant). The TCEP should be located closer to its electricity market to lower transmission losses.
- I-8-3 | 2. Turning coal into a synthetic gas to heat water to produce steam to drive electrical generators is more complicated and inefficient than just using abundantly available local natural gas to do the same thing. In fact, the industry could use natural gas to directly run natural gas-powered generators and omit the intermediate steps of heating water to drive steam turbines to run the generators, further improving efficiency. With proper pollution controls, such a plant would be equally low-polluting as the TCEP, and far more efficient and less costly, and. Frankly, transporting millions of tons of coal to a region rich in oil and natural gas is a bizarre idea.
- I-8-4 | There has to be an enormous justification to allow this to happen. The existence of a completed environmental impact statement and a market for generated CO2 is just not enough.
- I-8-5 | 3. Transportation of the coal by coal trains might be a problem. These are trains are very long and run very frequently. Such trains could not be routed through Midland and Odessa but must approach Penwell from the north. It should be clear which towns will have traffic and environmental conditions affected by the coal trains. The pollution from the diesel-powered trains plus the expense of transporting the coal from Wyoming or Utah will both be enormous (and completely unnecessary if alternate paths for electrical generation are selected).
- I-8-6 | 4. An IGCC plant is preferable to a traditional coal-powered plant since 90% of the CO2 will be captured and just 10% released; this is obviously better than releasing 100% of the CO2 as occurs now. The captured CO2 should be permanently sequestered underground, but in the case of TCEP it won't be. Instead, the CO2 will be used for enhanced oil recovery (EOR, in this case a tertiary recovery program). Most of this CO2 will remain in the subsurface when injected for CO2 flooding, but some percentage will escape when the extra oil is produced and processed. Even worse, all of the CO2 will be used to produce additional oil that will ultimately be refined into fossil fuels and release more CO2 to the atmosphere when burned in internal combustion engines. This program totally defeats the goal of having no net increase in atmospheric CO2 from electrical power generation, which begs the question of why the project is termed "clean energy." It is not clean energy when the captured CO2 is used to ultimately produce more CO2.
- I-8-7 | After the production, capture, transmission, and use of CO2 in tertiary oil recovery and the release of more CO2 from recovered oil used as fossil fuels, there will ultimately be a small net decrease in the total amount of CO2 released compared to a traditional coal-fired plant in which the CO2 is not captured and sold for EOR, but the

**I-8-2:** Summit selected a site in the Permian Basin because the region has an existing market for the CO<sub>2</sub> for use in EOR. No other area of the United States has an established market for CO<sub>2</sub>. Sale and use of the CO<sub>2</sub> is important for demonstrating the commercial feasibility for a power plant to capture and sequester CO<sub>2</sub>. Thus, Summit chose a location near existing oil fields that could use CO<sub>2</sub> for EOR, rather than to build a power plant near the large markets for electricity.

Although there can be some level of line loss associated with the transmission of electricity, that loss would be substantially less than 50 percent. The project would have a gross generating capacity of 400 MW, of which 187 MW would be used in the production of the various chemical products, including the capture and compression of CO<sub>2</sub>. The difference between the 400-MW gross generating capacity and the net production of 213 MW is not related to line loss associated with transmission.

Electric power from the polygen plant site would be sold into the ERCOT system that manages the flow of electric power to 23 million Texas customers, representing 85 percent of the state's electric load and 75 percent of the Texas land area. The ERCOT system is responsible for scheduling power on an electric grid that connects 40,500 miles (65,178 km) of transmission lines and more than 550 generation units. The electric power from the polygen plant site would be distributed, as needed, on the ERCOT system and is not intended to be supplied solely to the Permian Basin or solely to the large population centers in the eastern half of Texas.

**I-8-3:** TCEP would incorporate both a steam turbine generator and a gas turbine generator to achieve higher energy conversion efficiency than either type of generator alone could achieve. A coal-fueled combined-cycle power plant has an efficiency that is similar to that of a natural-gas-fueled combined-cycle power plant.

The economic preference for large coal-fueled power plants relates to fuel price volatility. Over the planned life of the power plant, coal is expected to have much less price variability than natural gas. Recent history has shown that natural gas prices vary greatly, causing plants using natural gas to cease operations (and even close) when the price of natural gas goes too high. Throughout the 1990s, plants fueled by natural gas were built in response to the low prices for the relatively abundant natural gas at that time. The widespread deployment of these plants resulted in the demand exceeding the supply to a degree that caused a large increase in the prices of natural gas. As a result, natural gas plants were put on standby or closed. High prices for natural gas eventually triggered more exploration and production of natural gas, which led to a decline in natural gas prices; however, the price volatility has caused a fear among long-term investors and lenders regarding the opportunities to participate in such proposed plants today. In general, plants fueled with coal are much easier to finance under long-term arrangements.

**I-8-4:** From the perspective of DOE, the proposed project seeks to show both that the proposed technologies can work on a sustained commercial basis and that the proposed system and business approach is potentially feasible from an economic perspective. Although the plant may be located in a region where natural gas is abundant and relatively inexpensive at the present time, the region is also one where the CO<sub>2</sub> to be captured by the plant can be readily sold on an existing market, transported primarily through existing pipelines, and sequestered as a result of its usage in an existing

**I-8-4 ctd:** industry.

From the perspective of the project proponent, Summit is not attempting to build a substitute for a natural gas plant. Instead, the TCEP is a demonstration plant, which would establish the use of coal in an environmentally sensitive and commercially viable way (see Section 1.3.2 of the final EIS, which addresses Summit's purpose and need). Not only would the plant be located near a critical market, the choice of fuel is based on long-term economic reasons. Over the planned life of the power plant, coal is expected to have much less price variability than natural gas.

**I-8-5:** The trains that would transport coal to the site and transport urea to market would be no longer than trains that currently operate on the local UPRR line (approximately 150 cars, maximum). The frequency of trains on the local UPRR line would increase 3–4 percent, and it is expected that the frequency of train traffic on most other segments of the train routes would not increase by much greater amounts. Total air emissions associated with train traffic would experience a similar level of increase.

Trains are considered to be one of the most energy efficient means of heavy freight transportation. It is claimed (Association of American Railroads, 2011) that 1 gal (3.8 L) of fuel can move 1 ton (0.9 metric tonne) of freight 484 mi (779 km), and that trains are four times more efficient than trucks at moving heavy freight. This translates into only one-fourth as much CO<sub>2</sub> emissions and similar reductions in other engine pollutant emissions compared to heavy trucks.

**I-8-6:** CO<sub>2</sub> is produced when petroleum, including that obtained using EOR, is burned. However, approximately 90 percent of the CO<sub>2</sub> from the TCEP would be captured and either used in the production of urea or injected underground for use in EOR. Almost all of the CO<sub>2</sub> used for EOR would be sequestered and would not be released to the atmosphere. The Permian Basin has an abundance of oil reservoirs that collectively could use TCEP's CO<sub>2</sub> for the life of the plant along with the other current and likely future sources of CO<sub>2</sub>.

Some of the CO<sub>2</sub> injected for EOR would be re-captured from dissolved gases in the recovered oil and then recycled by reusing it in further EOR. In EOR, the CO<sub>2</sub> that comes to a well head with the oil is degassed from the oil, recompressed, and returned to the pipelines going to the CO<sub>2</sub> injection wells. For the TCEP, oil field operators would be subject to a contract provision with Summit that requires recycling of CO<sub>2</sub> degassed from the produced oil and requires monitoring, verification, and accounting with oversight by the Texas Bureau of Economic Geology. Both Summit and the oil field operators would receive tax incentives for the quantity of sequestered CO<sub>2</sub> that is certified by the Texas Bureau of Economic Geology as being permanently sequestered. Thus, there is substantial incentive, beside the value of the CO<sub>2</sub>, for not releasing TCEP's CO<sub>2</sub> to the atmosphere.

DOE does acknowledge that the oil produced by the EOR (CO<sub>2</sub> floods) would ultimately lead to the emissions of CO<sub>2</sub> to the atmosphere when the oil-derived products are produced and consumed. However, DOE does not expect that this project would result in increased greenhouse gas emissions from consumption of oil-derived fuels domestically or globally. Domestic production of crude oil in 2010 was 5.5 million barrels per day. The estimated CO<sub>2</sub> capture rate for this project is 3 million tn (3.3



**I-8-6 ctd:** million t) per year. Assuming a typical CO<sub>2</sub> EOR efficiency of 3.1 barrels of crude oil produced per metric tonne of CO<sub>2</sub> sequestered, this project would result in an average crude oil production rate of 25,000 (0.025 million) barrels per day over the life of the project. DOE believes that the resulting 0.45 percent increase in domestic supply of crude oil would not be enough to change the market price. With no price signal, the project would not affect the crude oil consumption rate, and therefore there would be no change in CO<sub>2</sub> emissions from the combustion of oil-derived fuels.

DOE predicts that the increased domestic crude oil production from this project would offset imports of crude oil as a source of supply. Imported crude oil is more expensive and would be the first source to be offset with an increase in domestic supply. This assertion is supported by crude oil supply data from the Energy Information Administration. During the economic downturn in 2007, demand for crude oil decreased. However, domestic supply remained level, and all of the reduction in supply came from imports. Based on the estimated crude oil production rate of 0.025 million barrels per day and using a five-year rolling average price for crude oil of \$78.00 per barrel, the project would reduce the outflow of cash for imported crude oil by roughly \$700 million per year and enhance the nation's energy security.

DOE has selected other projects in the CCPI Program and other programs (e.g., ICCS and FutureGen 2.0), that propose to investigate and store CO<sub>2</sub> in deep saline reservoirs. However, Summit determined deep saline injection of CO<sub>2</sub> for permanent storage is not an option for the proposed TCEP, which needs the revenue from the sale of CO<sub>2</sub> for EOR to make the project financially viable. For this reason, Summit did not propose and DOE did not consider deep saline injection as a CO<sub>2</sub> disposition option in the EIS.

**I-8-7:** This comment assumes that the oil produced by the EOR (CO<sub>2</sub> floods) would not be otherwise produced. The polygen plant would capture approximately 90 percent of the CO<sub>2</sub> it generates, and Summit would sell this CO<sub>2</sub> for use in EOR by oil field operators. Oil and natural gas recovered as a result of EOR using CO<sub>2</sub> would then be processed into fuels that would be combusted in engines, combustion turbines, steam boilers, space heaters, etc. with the result that the carbon in these fuels would be released to the atmosphere in the form of CO<sub>2</sub>. This CO<sub>2</sub> would offset a portion of the benefit from the capture and geologic sequestration of CO<sub>2</sub> generated by the TCEP. However, the process does result in a net benefit compared to a situation where no CO<sub>2</sub> is captured and stored from a fossil fuel power plant, and the oil and natural gas are produced by other means. It is also important to note that by displacing imports of foreign oil and urea, the amount of CO<sub>2</sub> released by the transportation of these materials to the US will be reduced as a result of the proposed TCEP. A detailed life cycle analysis, which is beyond the scope of this EIS due to incomplete or unavailable information, would be needed to quantify the net greenhouse gas emissions relative to other scenarios. Data obtained through the monitoring, verification, and accounting activities of this project and other projects in DOE's programs would allow for such a detailed life cycle analysis to be performed in the future.

See also Response to I-8-6 above.

The nation's energy security requires the use of a variety of energy sources. DOE implements a wide-ranging portfolio of separate and distinct programs, each of which is focused on specific energy technologies. These include wind, solar, nuclear, and fossil

- I-8-7 contd.** amount without permanent and immediate CO<sub>2</sub> sequestration is not an incrementally significant decrease and is certainly not enough to justify spending such an enormous amount of money on a partially federally-financed initiative to generate electricity, especially when cleaner and less expensive ways (wind, solar, geothermal) and cleaner and equally expensive ways (Generation-IV nuclear) exist to do this.
- I-8-8** I am aware that this will be a demonstration plant and for this reason alone the expense may be acceptable. The econometrics of an IGCC plant that sells CO<sub>2</sub> and chemicals as well as electricity are not fully known now and may not be realistically known until a plant is operating. Markets and engineering processes may change. More knowledgeable scientists and engineers than me will have to decide if the enormous expense of a giant IGCC polygen plant is worth it for this information. I believe that fossil fuels, especially coal, need to be phased out as quickly as possible for electrical-power generation and transportation use. The enormous pollution of traditional coal plants and the enormous expense of IGCC plants make either option a risky proposition with today's polluted atmosphere. Truly clean and less expensive alternative energy sources are needed. Solar, wind, and geothermal will fill niche and transition roles, and advanced, modular, uniform 4th-generation nuclear designs will ultimately provide the energy human civilization needs in a safe, reliable, and affordable manner. We would have this energy mix in the U.S. today if this country had intelligent bipartisan political leadership over the last four decades, but it hasn't.
- I-8-9**
- I-8-10** 5. Certainly the most controversial aspect of the entire TCEP design is the need for large amounts of fresh water used to cool the chemical removal and separation processes (a dry, air-cooled condenser will be used for the combined-cycle processes). The TCEP has plans to obtain this water from two sources: (1) the municipal treated waste water of Midland and Odessa and (2) groundwater brought into the region with a pipeline from well fields near Fort Stockton controlled by Clayton Williams Jr. Both of these fresh water sources are extremely problematic and unlikely to be permanent sources of fresh water for the TCEP. The lack of local fresh water is one of the two issues that derailed the Permian Basin's FutureGen bid several years ago. The second was the cost of sequestering the recovered CO<sub>2</sub>; the nearest suitable strata was quite a distance and the lease would have been almost \$1 million annually. This latter issue is not pertinent in the present case.
- I-8-11** The two municipal water sources cannot be expected to provide the necessary water on a permanent basis. Odessa's waste water is already allocated to several industries; although it isn't all being used by them, it could be. Much of Odessa's effluent is sent down Monahans Draw after primary treatment. Midland's waste water is currently piped to fields near Sprayberry where it is used to water crops for farm animals. Primary treatment is not enough to clean sewage plant effluent for human use, but secondary and tertiary treatments exist that do provide this standard. Midland has immediate plans to use half of its waste water as landscape irrigation water for Midland College and Midland ISD after secondary treatment. The other half will continue to be used to water Sprayberry crop fields.
- I-8-12** But here's the problem. Within a decade, both Midland and Odessa will want to subject all its waste water to secondary and probably tertiary treatments and reuse it, either for landscaping or human consumption. The reason is the tremendous expected water shortage that has just now begun and will only grow worse in future years and decades. Soon, even treated effluent will be too precious to waste. Recent scientific investigations now indicate that the American West will experience a huge water shortage due to the impacts of anthropogenic climate change on Western water resources ([http://www.texscience.org/water/western\\_water.htm](http://www.texscience.org/water/western_water.htm)). In addition, recent scientific studies now indicate that the drought the American West is experiencing will become permanent by 2050 ([http://www.texscience.org/water/permanent\\_drought.htm](http://www.texscience.org/water/permanent_drought.htm)). The traditional El Niño and La Niña weather cycles will be masked by global climate change forcings, resulting in drought conditions in the western U.S. Anthropogenic climate change (global warming) is real and its effects, now obvious, will only become worse ([http://www.texscience.org/water/climate\\_change\\_sites.htm](http://www.texscience.org/water/climate_change_sites.htm)). Western cities will begin to capture and treat their formerly released waste water and reuse it. If they have excess waste water at present, they will only want to write contracts for other entities to use it for 5-10 years, no more. This will be obviously insufficient to plan a plant that will take five years to build and will plan to operate for decades.
- I-8-13**

- I-8-7 ctd:** energy. Each program is mandated by Congress and receives its own appropriated funding. The proposed TCEP is being considered under DOE's CCPI program; such funds are not available for wind, solar, or nuclear energy power plants.
- I-8-8:** Comment noted. DOE believes the expense of taxpayer dollars is justified by more than simply gathering econometric information. Such projects are needed to drive down the cost of equipment and operations for capturing and sequestering CO<sub>2</sub> from all types of large stationary sources, including cement plants, chemical plants, foundries and mills, and other elements of our nation's industrial infrastructure. And, such projects build societal momentum for advancing all activities (including regulation) and technologies that could reduce our emissions of carbon compounds and air pollutants.
- I-8-9:** Comment noted. DOE does have programs funding many projects in each of these alternative technologies for generation of electricity. DOE views IGCC with carbon capture and sequestration as a "bridge" technology that could help our society reduce its carbon emissions until the time when other technologies are more ready (technically, economically, and socially) to supply much of our nation's energy needs.
- I-8-10:** Both DOE and Summit have recognized since the FutureGen Project that water is the dominant environmental concern for the Odessa–Midland area with regard to the siting and operation of a new power plant. Therefore, both entities have given considerable emphasis in the planning process to minimizing the potential for impacts to potable water supplies in the region. Summit has considered the availability, technical feasibility, and economic feasibility of alternative water supplies along with the potential for adverse impacts to regional potable water supplies and the environment in developing its water supply options. DOE has analyzed the potential environmental impacts of these options in the EIS. Summit has found that reuse of waste water and use of highly brackish ground water are the most promising strategies to minimize the impacts on the local and regional water supply while limiting project costs.
- I-8-11:** Summit is currently considering the purchase of treated waste water from either the city of Odessa or the GCA Odessa South Facility as a backup water supply source only. Although the city of Odessa has fully committed their reuse water to other water rights holders, they do have excess water that discharges into Monahans Draw in the winter months. Summit could purchase secondary or tertiary water rights as a backup water supply during these months.

The EIS also addresses primary water source options (WL1 and WL5) consisting of transferring part of the untreated sewage effluent from the City of Midland to the GCA facility where it would receive primary and secondary treatment prior to delivery via pipeline to the polygen plant site. DOE's understanding, based on communication between Summit representatives and representatives of the city of Midland and the GCA, is that the city of Midland would continue sending nearly half of its waste water to Midland's spray irrigation fields for disposal. Midland does have plans for a small percentage of its waste water to be processed to higher quality through a small WWTP (to be installed at or near the point of use). This cleaned waste water would then be used for landscaping and lawn maintenance by Midland College and perhaps another entity. However, accounting for these applications, there would be sufficient waste water remaining to meet the needs of the TCEP. DOE understands that Midland's current rate of spray disposal exceeds the optimal land irrigation rates for crops and

I-8-14

Using groundwater as a source of freshwater is equally problematic. Groundwater in the region is used primarily for irrigation, a notably wasteful and environmentally-destructive use, since irrigating with groundwater will cause the topsoil to become more saline, ultimately destroying it. The western aquifers, both aquifers with fossil water and aquifers that are normally recharged, are rapidly becoming depleted as the regional water tables drop due to groundwater mining (removing groundwater faster than it is being recharged). Soon, agricultural irrigation will cease as the true value of groundwater is realized and it is priced accordingly, putting irrigation farmers out of business. What groundwater that remains needs to be preserved for human consumption, not landscape or crop irrigation (landscape irrigation with treated waste water is an excellent option).

I-8-15

Clayton Williams Jr. (Fort Stockton Holdings) wishes to sell groundwater pumped from his property to the cities of Midland and Odessa, either for regular public water supplies or for the TCEP. To do this, he is relying on the Rule of Capture (RoC), a reckless and environmentally-damaging statute based on English Common Law. The RoC has long been recognized to be dangerous for groundwater supplies and has become obsolete almost everywhere in the U.S. For historical and reactionary political reasons, Texas is today the only state that still uses the RoC. Strong litigation would end its existence in Texas since all of the reasons to defend it are now known to be mistaken. Every competent and honest hydrologist would have to testify in court under oath that the RoC is a very reckless and wasteful way to legally control groundwater withdrawal. The last Texas court case that upheld the RoC was in 1954. Clayton Williams Sr. was opposed by Fort Stockton and surrounding ranchers when he wanted to pump groundwater at nonsustainable rates from the aquifer with powerful diesel-powered pumps. He won: Comanche Springs went dry forever and the wells on his neighbors' ranches all went dry (they all had to be re-drilled deeper to make them flow again).

During the next two weeks the regional groundwater conservation board in Fort Stockton will hold hearings to determine if Clayton Williams Jr. will be able to sell groundwater pumped from the aquifer beneath his ranch and sell it outside the area (instead of using it to water crops as now permitted; note: even this use is environmentally destructive but is still allowed in Texas). Regional groundwater conservation districts exist now in Texas and are a way to prevent over-exploitation of groundwater. Here are the issues. First, if Mr. Williams pumps the very large amount of water he wants to sell and send it to the Permian Basin by pipeline, the water table in the aquifer will lower and many neighboring wells will become depleted and even dry up (subsurface aquifers do not stop at surface property boundaries). This will include the wells that supply Fort Stockton with city water, although it is claimed that if this happens Mr. Williams will have to stop pumping to allow Fort Stockton to get its share since the city's needs will have priority. We well know the history of how things turn out in Texas when profits from private property owned by wealthy men conflict with the needs of working and middle class citizens. To see another example of how this is turning out, just examine the nuclear waste dump being constructed on the New Mexico state line in Andrews County, Texas.

Second, Mr. Williams has hydrological studies that claim to show that the amount of groundwater he wants to sell is permanently sustainable. This, however, is highly doubtful, even though reputable hydrological companies performed the studies. Just the pumping from the Williams' lands since the 1950s caused the water table to fall permanently (Comanche Springs went dry), indicating that groundwater mining had taken place. If pumping stopped, the Springs should flow again since normal recharge would allow the water table to rise. The amount of water proposed to be withdrawn and piped to Midland thus appears to me to be well in excess of current recharge rates and therefore not sustainable. When exceptionally high rainfalls in the late 1950s and early 1960s occurred, Comanche Springs briefly flowed again, but it has been essentially dead since then. There is no question that even current groundwater withdrawals are in excess of recharge and thus permitting even more would be inadvisable. (Note: Almost all West Texas Springs have gone dry due to human consumption of groundwater, an almost inevitable consequence of settlement. The point here is to protect what's left of the groundwater and use it sustainable in fact, not just in wishful and deceptive words of fantasy-prone individuals.)

- I-8-11 ctd:** that diversion of excess waste water to the TCEP would be beneficial to the spray disposal system currently in use by Midland without reducing the production of crops.
- I-8-12:** Comment noted.
- I-8-13:** Comment noted. Summit is currently considering how to increase its flexibility in choice of water supply.
- I-8-14:** Comment noted. Both DOE and Summit prefer to not use ground water of potable quality or near-potable quality.
- I-8-15:** DOE analyzed the potential environmental impacts of obtaining process water from FSH in the EIS. This analysis did not consider whether the FSH pipeline would be constructed or whether any litigation might ensue. DOE understands that all permit requirements and other project-related hurdles would have to be cleared before the FSH water supply pipeline could be used by the TCEP. The environmental acceptability of this option, either as a primary water supply or as a backup water supply, would be considered by DOE during DOE's deliberations leading to a ROD. Furthermore, the extent to which this water would be available in the time period needed for the TCEP may be a factor in DOE's decision-making with respect to TCEP funding for subsequent phases of the project (e.g., detailed design and construction). DOE expects that Summit would also factor the availability of potential process water sources into Summit's decision making.

Use of the FSH water supply option by TCEP would only become feasible if the FSH mainline project is constructed. If the FSH mainline project is constructed and the other options are no longer viable, the TCEP could use approximately 10 percent of the total water that would be available through the FSH waterline. The amount of water the TCEP would use is not sufficient in itself to cause the FSH project to move forward.

From a cumulative effects standpoint, the FSH water is currently permitted for agricultural irrigation activities on the FSH farms in Fort Stockton. The FSH mainline project would represent a change in the use for the water rather than a new demand on water. FSH's proposal is to reduce the amount of water used for irrigation proportional to the amount of water exported such that the project does not result in a net increase in the amount of water currently being pumped. Therefore the impacts from the pumping of wells in this aquifer should not deviate from the current trends as a result of the proposed FSH project.

**I - 8 - 15  
contd.**

Third, the hydrologists undoubtedly used current rainfall rates to calculate future recharge of the Edwards-Trinity aquifer, a highly doubtful proposition. More recent scientific studies (cited above) indicate that regional rainfall will decrease by more than half over the next several decades and indeed has decreased even now (the effect of the regional drought). So while Fort Stockton Holdings claims that their pumping will be permanently sustainable, in truth it will be sustainable only for a few decades, until the aquifer is mined out, fully exhausted, and this mean exhausted for everyone, including the citizens of Fort Stockton and the surrounding ranches. Groundwater extraction today needs to be decreased, not increased, to permit the aquifer to be sustainable at current levels (which are below historical levels as discussed above). Permanent sustainability means the water table remains constant (or more realistically rises and falls within a small vertical zone) forever or permanently changes only in relation to natural climate patterns, not due to any human activity. When the professional hydrologists state, as they do, that the proposed Fort Stockton Holdings are permanently sustainable, do they mean one of the definitions I use above or something else, such as sustainable for the foreseeable future?

**I - 8 - 16**

The TCEP could obtain a secure supply of fresh water by desalinating the subsurface formation-oilfield-connate waters found in abundance in the Permian Basin. Every oil and natural gas well produces this saline water (thus usually called oilfield water, although the correct term is connate water). Connate water has long been routinely pumped back into the formation to keep the reservoir pressure up, although historically--before proper reservoir engineering principles were known--the saline water was allowed to flow on the ground and kill the vegetation and permanently damage the soil. The Texon Scar near the first regional oil well, Santa Rita No. 1, is an example of this. Industrial scale reverse osmosis of ocean water--as practiced, for example, in Saudi Arabia and Israel--will turn saline water into fresh water. This method, while expensive, is technologically feasible and could easily be practiced here.

[The author is a professional geologist and biologist who has received training in both surface and groundwater hydrology. He is not a professional hydrologist. However, he maintains that there are plenty of professional hydrologists who would agree with him. Soon a page at [http://www.texscience.org/water/rule\\_of\\_capture.htm](http://www.texscience.org/water/rule_of_capture.htm) will be available with many references to document what is said here.]

**I-8-16:** Summit seeks to use non-potable water that can be economically treated for use at the proposed TCEP. Water co-produced along with oil and natural gas contains both petroleum contaminants and high concentrations of dissolved mineral constituents. Processing of this water would be much more costly than for ground water from shallower depths where the water is less saline (but too saline for human or animal consumption) and does not have the petroleum contaminants and even higher concentrations of dissolved minerals typically found in the waters from oil reservoirs.

Furthermore, in most cases it is preferable to re-inject into the oil reservoirs the water that is pumped to the ground surface along with the oil. This is a common procedure for handling the produced water, and it serves several beneficial purposes: 1) maintenance of fluid pressures in reservoirs to assist the migration of oil toward producing wells; 2) a sweep effect (as in a water flood of a reservoir) to push oil toward the production wells; and 3) maintenance of pore pressures that, in some reservoirs, minimize the compaction of the reservoir materials and associated land surface subsidence. For these reasons, produced waters from surrounding oil fields may not be the best choice.

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