

US EPA ARCHIVE DOCUMENT

From: Wilson, Aimee  
Sent: Wednesday, April 09, 2014 11:38 AM  
To: Eric Quiat; LeDoux, Erica  
Cc: Robinson, Jeffrey; Karen Olson; 'Tammy Lasater'  
Subject: RE: Formosa GHG Application: Site-specific CCS Evaluation

Eric,

The CCS cost analysis still does not meet our needs.

Please provide more details. I would suggest looking at the Occidental application (Appendix D - beginning on page 67) available at <http://www.epa.gov/earthlr6/6pd/air/pd-r/ghg/oxychem-ethylene-revised-app011614.pdf> Occidental did a cost analysis with the level of detail we are looking for.

Specifically I need the CO2 concentration of each stream you are evaluating for CCS. For some streams CCS can potentially be eliminated as technically infeasible. If they can, please provide information that could be used to support elimination as technically infeasible. This may involve: low CO2 concentration, intermittent or variable flows, back pressure issues, disruptions to the process, etc. Also the closest EOR site and pipeline are the proposed Hillco Pipeline serving the West Ranch Oilfield in Jackson County. Please use this information when estimating the cost of pipeline and geological storage.

It would be preferable to have a CCS costs for the combustion turbines and the cracking furnaces combined and separately. I think all the other sources evaluated could potentially be eliminated on technical infeasibility, but we need information to support such a determination.

Please feel free to call me if you have any questions.

Thanks,  
Aimee  
Aimee Wilson  
U.S. Environmental Protection Agency  
Air Permits Section (6PD-R)  
1445 Ross Ave. Suite 1200  
Dallas, Texas 75202  
(214) 665-7596

From: Eric Quiat [mailto:[equiat@zephyrenv.com](mailto:equiat@zephyrenv.com)]

Sent: Wednesday, April 09, 2014 9:27 AM  
To: LeDoux, Erica  
Cc: Robinson, Jeffrey; Wilson, Aimee; Karen Olson; 'Tammy Lasater'  
Subject: RE: Formosa GHG Application: Site-specific CCS Evaluation

Erica,

Attached please find a revised BACT evaluation for CCS (Appendix C of the 2012 Expansion Project GHG applications). The revised CCS evaluation includes site-specific costing based on the project-specific and site-specific information. The revised cost estimate can be found in Tables 6-1 through 6-5 at the end of this document.

In response to your question below concerning the flare gas recovery system, this response was provided in an August 9, 2013 email which we had recently forwarded to your attention (on March 20, 2014).

Please let me know if you have any questions.

Regards,

Eric Quiat P.E. | Project Engineer  
Zephyr Environmental Corporation  
2600 Via Fortuna, Ste 450 | Austin, TX 78746  
Direct: 512.579.3823 | equiat@zephyrenv.com  
ZephyrEnv.com | HazMatAcademy.com

From: LeDoux, Erica [mailto:LeDoux.Erica@epa.gov]  
Sent: Wednesday, February 19, 2014 5:05 PM  
To: Karen Olson; 'Tammy Lasater'; Eric Quiat  
Cc: Robinson, Jeffrey; Wilson, Aimee  
Subject: RE: Formosa GHG Application

Tammy and Karen,

Attached is the pdf of the EOR pipeline that I mentioned during our call. Please let me if you would like to meet next Thursday. As was discussed, it would be difficult for EPA to defend the elimination CCS for the Formosa project due to economic infeasibility given the detail of cost information we have today that was provided by Formosa in the applications.

What should be provided is the supporting calculations that were used to derive this cost estimates

present in the application. Please provide the site-specific parameters that were used to evaluate and eliminate CCS from consideration as an add-on control for BACT. This material should contain detailed information on the quantity and concentration of CO<sub>2</sub> that is in the waste stream and the specific equipment to be used. This site-specific cost calculations should include, but are not limited to, size and distance of pipeline to be installed, pumps, compressors, if applicable the amine solution to be used and the equipment necessary to employ the chosen technology. Please provide the separate capital cost of construction, operation and maintenance, and the cost analysis for storage or transportation for the option. Please discuss in detail any site specific safety or environmental impacts associated with such a removal system and the additional cost associated. Also, please provide any additional technical or economic details for this project and its potential for installing a CCS system for recovering CO<sub>2</sub> for enhanced oil recovery (EOR) and non-EOR geologic sequestration.

Also, was a flare recovery system considered for this project? Please provide the technical evaluation that was used to eliminate it.

Please take a look at ExxonMobil's response to comments and supplemental information that was submitted.

Thank you,

Erica G. Le Doux, Environmental Engineer  
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From: Karen Olson [mailto:kolson@zephyrenv.com]  
Sent: Wednesday, February 19, 2014 3:08 PM  
To: LeDoux, Erica; 'Tammy Lasater'

Cc: Eric Quiat  
Subject: RE: Formosa GHG Application

Erica - Tammy and I tried to call a few minutes ago and got your voicemail. Please email us as soon as you are ready to talk and we will call you.  
Thanks.

Karen Olson  
Principal  
Zephyr Environmental Corporation

kolson@zephyrenv.com  
512.879.6618

From: LeDoux, Erica [mailto:LeDoux.Erica@epa.gov]  
Sent: Wednesday, February 19, 2014 1:25 PM  
To: Karen Olson; 'Tammy Lasater'; Eric Quiat  
Subject: Formosa GHG Application

Would it be possible to have a conference call with you this afternoon? You could call me at my office phone just like yesterday. I already have a meeting scheduled from 1:45 to 3:00 today, but I am available from 3:00pm - 5:00pm. What I want to discuss is the possibility of a face-to-face meeting with you later next week on Thursday along with Jeff Robinson and Aimee Wilson. Thank you, Erica

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From: Karen Olson [mailto:kolson@zephyrenv.com]  
Sent: Tuesday, February 18, 2014 1:49 PM  
To: LeDoux, Erica  
Cc: 'Tammy Lasater'; Austin O'Kelly; Eric Quiat  
Subject: Lync Webmeeting info for review of FPC TX expansion project calculation workbooks

Erica - It was great to talk to you today. We were encouraged that you are working on draft permits for FPC's review/comment and that you are planning for the July 2014 permit issuance date (assuming the cross cutting issues do not cause unnecessary delays). As Tammy requested, if you have any technical issues that you need further explained while you are finalizing the first draft of permit conditions, please email Tammy, Eric Quiat and myself. One of use will be able to make sure you get what you need.

We are happy to help you expedite your final review of the emission calculations. We appreciate your willingness to consider our proposed web-meeting as an alternative to providing you a CD of the calculation workbook. I am providing information below that you can provide to your IT folks. We have used this Webmeeting system with TCEQ and they did not have any IT issues.

To join a Lync Webmeeting, you do not have to download any software to your computer.  
All you have to do is:

1. Click on "Join online meeting" link that will come in the meeting invitation
2. Join as " Guest"
3. When you click to Join online meeting, the program may ask you how you would like to join the meeting.  
There are three options.

A. The easiest and our recommended option is to choose "Lync Attendee".

B. You can also join using one of the following if it is already installed on your computer:

- "Lync" or
- "Silverlight" as required for Lync Web App (which requires admin privileges)

The details about each of these joining options is available if you click on "First online meeting?" (link below). It will give you probably more information than you or your IT folks could possibly want.

I am also including Zephyr's IT contact so if your IT folks want to talk "IT" language they can talk to Austin O'Kelly at 512-579-3838 or aokelly@zephyrenv.com .

Thanks again. Please let us know how and when you would like to set this up.

Karen N. T. Olson, P.E.  
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2600 Via Fortuna,  
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Join online meeting  
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