

US EPA ARCHIVE DOCUMENT

Wilson, Aimee

From: Karen Olson <kolson@zephyrenv.com>
Sent: Thursday, April 17, 2014 4:11 PM
To: Wilson, Aimee; LeDoux, Erica
Cc: Robinson, Jeffrey; 'Tammy Lasater'; Eric Quiat
Subject: Table with apportioned capital cost for the three plants in the FPC TX Expansion Project
Attachments: Table 6-8 Summary of Total and Individual Plant CCS Costs.pdf

Aimee and Erica - Tammy and I talked to Jeff Robinson yesterday about specific questions related to the GHG Permit transition policy and how it may affect the FPC TX permit application review and issuance.

In that conversation, Jeff explained the EPA's current views concerning CCS and asked that we provide an estimate of the portion of the Expansion Project CCS cost that could be attributed to each plant in the expansion. We agreed that it could be estimated based on the total cost (already provided to you) and the relative amount of CO2 from each plant's candidate sources. Attached is a table that summarizes that estimate.

We also understood that a Draft Permit and Statement of Basis for the FPC TX expansion project permits (Olefins, LDPE and Utilities) will be finalized for Jeff Robinson's review by Friday April 25th. We believe that we have responded and provided all the information you have requested in your various recent RFIs. Please let us know if we have overlooked something.

Thank you. Hope you have a great weekend.

Karen



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Table 6-8 (SEQUESTRATION OPTION): Cost Summary for Carbon Capture, Compression, Transportation and Sequestration in Scurry County, Texas**Formosa Plastics Corporation, Texas****2012 Expansion Project****Point Comfort, Texas****Summary of Costs for Total Expansion Project and Individual Plants Involved in the Expansion**Capture and Compression Capital and Operating Costs, and Storage Operating Costs for the Individual Plants were estimated from the total expansion project cost based on relative amount of CO₂ from the individual plant and the total expansion project.Transport Capital and Operating Costs and Storage Capital Cost are not expected to be dependent on the volume of CO₂ so those costs are not adjusted for CO₂ volume.

	Candidate CCS Sources, Total [1]		Olefins Expansion Sources (Furnaces, Boilers, PDH Reactors)			LDPE Source (RTO)			Utilities Sources (Gas Turbines)		
Cost Type	Annual Cost (Million \$/yr)	Total Cost (Millions \$) [2]	Fraction of Total CCS Source CO ₂ Flow Rate [3]	Annual Cost [4] (Million \$/yr)	Total Cost (Millions \$) [2]	Fraction of Total CCS Source CO ₂ Flow Rate [3]	Annual Cost [4] (Million \$/yr)	Total Cost (Millions \$) [2]	Fraction of Total CCS Source CO ₂ Flow Rate [3]	Annual Cost [4] (Million \$/yr)	Total Cost (Millions \$) [2]
Carbon Dioxide Capture and Compression System Capital Costs	77.37	2,321	0.66	50.87	1,526	0.0014	0.11	3.35	0.34	26.39	791.6
Carbon Dioxide Capture and Compression System Operating Costs	155.81	4,674		102.45	3,073		0.23	6.75		53.14	1,594
Capital Cost for Transport to Sequestration Site	20.18	605.3		20.18	605.3		20.18	605.3		20.18	605.3
Operating Costs for Transport to Sequestration Site	3.71	111.3		3.71	111.3		3.71	111.3		3.71	111.3
Storage Capital Costs	1.55	46		1.55	46		1.55	46.4		1.55	46.4
Storage Operating Costs	36.60	1,098		24.06	722		0.053	1.59		12.48	374.45
Total Capital and Operating Cost =		8,857			6,085			774.7			3,523
Approximate Capital Cost of 2012 Expansion Project =		2,000									
Costs for Carbon Capture, Compression and Transport to Sequestration Site (% of Expansion Project Capital Cost) =		443%									

Notes:

[1] Costs for total CCS candidate sources was previous presented in Table 6-6 of the revised CCS cost evaluation.

[2] Costs for 30 year project life.

[3] Fraction of Total CCS Source CO₂ Flow Rate (for individual plants) is calculated as follows: [CO₂ volumetric flow rate for plant CCS sources (acfm)] / [total (all CCS sources) CO₂ volumetric flow rate (acfm)]. See Table 6-2 for flow rate values.[4] Annual cost for the following is proportional to the quantity of CO₂ being processed: Capture and Compression Capital and Operating costs and storage operating costs.The annual cost for these items (for this group of CCS sources) is calculated by multiplying the Fraction of Total CCS Source CO₂ Flow Rate by the annual cost for All Candidate CCS Sources.