Amount Needed to Show Financial Responsibility (2015$)

Project Task	Low End Cost Estimate ($/Project; includes 20% G&A)	Middle Cost Estimate ($/Project; includes 20% G&A)	High End Cost Estimate ($/Project; includes 20% G&A)
Performing Corrective Action on Deficient Well(s) in AoR			
Maintenance Rig Rental (Clean Out Deficient Wells)	$ 70,000	$ 154,000	$ 175,000
Flush Deficient Wells	$ 1,000	$ 5,000	$ 14,000
Plug Deficient Wells	$ 32,000	$ 44,000	$ 213,000
Log Deficient Wells	$ 7,000	$ 9,000	$ 36,000
Subtotal: Corrective Action Cost	**$ 110,000**	**$ 212,000**	**$ 438,000**
Plugging Injection Well			
Maintenance Rig Rental (Clean Out Injection Well)	$ 45,000	$ 98,000	$ 111,000
Perform Mechanical Integrity Test Before Plugging Injection Well	$ 60,000	$ 60,000	$ 60,000
Flush Injection Well with a Buffer Fluid Before Plugging	$ 300	$ 2,700	$ 7,000
Plug Injection Well	$ 16,000	$ 22,000	$ 108,000
Log Injection Well	$ 4,000	$ 4,000	$ 18,000
Subtotal: Injection Well Plugging Cost	**$ 124,000**	**$ 187,000**	**$ 304,000**
Post-Injection Site Care (assume 0% discount rate)			
Post-Injection O&M for Monitoring Wells	**$ 6,400,000**	**$ 8,938,000**	**$ 11,057,000**
Post-Injection Seismic Survey			
Post-Injection Groundwater Monitoring			
Post-Injection Monitoring Reports to Regulators			
Site Closure			
Maintenance Rig Rental (Clean Out Monitoring Wells)	$ 90,000	$ 198,000	$ 225,000
Perform MIT Before Plugging Monitoring Wells	$ 171,000	$ 171,000	$ 171,000
Flush Monitoring Wells	$ 2,000	$ 19,000	$ 50,000
Plug Monitoring Wells (occurs at end of PISC; use 0% discounting)	$ 105,000	$ 136,000	$ 595,000
Log Monitoring Wells (occurs at end of PISC; use 0% discounting)	$ 25,000	$ 31,000	$ 125,000
Remove Injection Well Surface Equipment and Restore Vegetation at Injection Well	$ 19,000	$ 35,000	$ 50,000
Remove Monitoring Well Surface Equipment and Restore Vegetation (occurs at end of PISC; use 0% discounting)	$ 136,000	$ 242,000	$ 348,000
Document Plugging and Site Closure Process	$ 19,000	$ 19,000	$ 19,000
Subtotal: Site Closure Cost	**$ 570,000**	**$ 851,000**	**$ 1,584,000**
Emergency and Remedial Response, Scenario B: Remediate Underground Source of Drinking Water (USDW) Contamination			
Stop CO2 Injection	$ 1,000	$ 1,000	$ 3,000
Create Hydraulic Barrier	$ 9,830,000	$ 11,159,000	$ 18,049,000
Install Chemical Sealant to Stop CO2 Leaks	$ 11,000	$ 24,000	$ 32,000
Treat Contaminated Water from USDW	$ 3,254,000	$ 14,419,000	$ 62,841,000
Subtotal: Scenario B	**$ 13,096,000**	**$ 25,603,000**	**$ 80,925,000**
Total Amount Needed to Show Financial Responsibility	**$ 20,300,000**	**$ 35,790,000**	**$ 94,308,000**

Note: Results may not add due to independent rounding.

About EPA's Cost Estimation Tool for Class VI Financial Responsibility Demonstrations

This Cost Tool is designed to provide an "acceptable range of costs" for activities for which financial responsibility is required at 40 CFR 146.85(a)(2). Based on information submitted with a Class VI permit application, it generate cost estimates for performing corrective action, injection well plugging, post-injection site care (PISC) and site

Using the Cost Tool

The Cost Tool includes tabs for (1) project-specific inputs provided by the user and (2) outputs of the generated cost estimates. There are also two hidden tabs in which the cost estimations and discounting are calculated. **Only**

The Inputs Tab

The information entered on this tab should be based on the permit application and revised as appropriate based

Contact information – in the first section of the tab, enter the name and address/location of the project and a name/contact information for the applicant. This information does not affect the cost estimates but is useful to

Project information – enter the surface area of the AoR, whether any underground sources of drinking water (USDWs) are present, the mass of CO_2 to be injected, the PISC timeframe, and the depth and diameter of the

Monitoring wells – enter the total number of monitoring wells associated with the project in cell B22. Include the name, depth (in feet), and diameter (in inches) of all monitoring wells on rows 24, 25, and 26, respectively. Note

Corrective action – if any wells in the AoR require corrective action that will not be complete when the permit is issued, enter the total number of deficient wells in cell B29. Enter the name, depth (in feet), and diameter (in

The Outputs Tab

Based on the information entered, the Cost Tool generates a table presenting low, medium, and high cost estimates for each activity for which financial responsibility is required. Note that these outputs are in 2015

It is important to note that the Cost Tool outputs are intended to be estimates only. The specific activities described in the Cost Tool may not match the activities planned by the applicant and the unit cost for specific activities may differ. However, the range of cost estimates generated can help identify appropriate amounts of

Corrective action – this cost estimate depends primarily on the number of wells that are deficient and their

Well plugging – some elements of this cost estimate depend on the depth and diameter of the injection well.

PISC – the cost estimates for this activity assume that the permit applicant will conduct groundwater monitoring and perform seismic surveys for the duration of the PISC timeframe. The cost estimate is strongly influenced by

Site closure – this estimate is based on the number, depth, and diameter of the monitoring wells that will need to be plugged. It also estimates costs for site remediation, which are independent of the monitoring well

Emergency and remedial response – this estimate and the activities that are anticipated to occur are based on the presence/absence of a USDW in the AoR that could be contaminated. If there is no USDW present, the tool assumes a response scenario that involves remediating the injection well, i.e., ceasing injection, repairing the wel and replacing the tubing, and creating a hydraulic barrier to stop movement of fluids from the well into

Providing Feedback/Other Sources of Information

If you have any questions about using the Cost Tool or interpreting the results, or if you would like to provide

Note that evaluating cost estimates is only part of the financial responsibility evaluation. The EPA has also developed a set of electronic checklists to support the evaluation of proposed financial responsibility instruments

For additional information on evaluating financial responsibility, including permit application-specific

All of the reference materials noted above are available in the resource library of the GSDT.

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World Resources Institute (WRI). 2008. *CCS Guidelines: Guidelines for Carbon Dioxide Capture, Transport, and Storage* .

IInstructions: Please fill out the green highlighted cells below with project -specific information from the Class VI permit application.

Project Information

Variable Name	Value
Project Name (Corporate entity)	Clean Energy Systems - Mendota
Project Address/Location	400 Guillen Pkwy, Mendota, CA 93640
Contact Name	Rebecca Hollis
Contact Information for Project Operator	+1 916-638-7967 info@cleanenergysystems.com

Project Data

Variable Name	Value	Units (Click in Cell for Dropdown List)	
Size of Area of Review (AoR)	2	Square Miles	
Are There Underground Sources of Drinking Water (USDWs) in the AoR?	Yes		←If there are no USDWs, but there are other (non-USDW) types of groundwater in the AoR that the operator would be required to remediate (if contaminated by a well failure), select 'Yes'.
Mass of CO_2 to be Injected	7,000,000	Tons	*350,000 tons/year x 20 years*
Duration of Post-Injection Site Care	20	Years	
Depth of Injection Well	10,412	Feet	
Diameter of Injection Well	8.8	inches	

Information on Monitoring Wells *Note: Cost to clean out monitoring wells is based on a regression equation that is only valid for well depths greater than 2,000 ft. Model is run for all monitoring wells (where the shallow wells are conservatively assumed to be 2,001 ft deep).*

7 ←Number of Monitoring Wells

Enter the names, depths (feet), and diameters (inches) of monitoring wells in the table below.

Well Name	Mendota OBS_1	Mendota ACZ_1	Mendota USDW	GW1	GW2	GW3	GW4					
Well Depth (feet)	10,412	7,302	2,001	2,001	2,001	2,001	2,001					
Well Diameter (inches)	8.8	9	9	9	9	9	9					

Information on Deficient Wells in the AoR Requiring Corrective Action

2 ←Number of Deficient Wells in the AoR that will be Remediated

Enter in the names, depths (feet), and diameters (inches) of deficient wells in the aor requiring corrective action in the table below.

Well Name	B.B. Co. #1	Amstar										
Well Depth (feet)	11,567	8,587										
Well Diameter (inches)	9	9										