

**INFORMATION COLLECTION REQUEST  
FOR THE  
FEDERAL REQUIREMENTS UNDER THE UNDERGROUND INJECTION CONTROL  
PROGRAM FOR CARBON DIOXIDE GEOLOGIC SEQUESTRATION WELLS—  
PROPOSED RULE**

OMB Control No. 2040-NEW  
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# **Information Collection Request for the Underground Injection Control (UIC) Program: Federal Requirements Under the Underground Injection Control Program for Carbon Dioxide Geologic Sequestration Wells – Proposed Rule**

## **1 Identification of the Information Collection**

### **1(a) Title of the Information Collection**

TITLE: Underground Injection Control (UIC) Program: Federal Requirements for Injection of Carbon Dioxide for Geologic Sequestration – Proposed Rule

OMB Control Number: 2040-NEW

### **1(b) Short Characterization/Abstract**

EPA is proposing federal requirements for underground injection of carbon dioxide (CO<sub>2</sub>) for the purpose of geologic sequestration (GS). GS is the process of injecting CO<sub>2</sub> captured from an emission source (e.g., a power plant or industrial facility) into deep subsurface rock formations for long-term storage. It is part of a portfolio of options that could help to reduce CO<sub>2</sub> emissions to the atmosphere and mitigate climate change. The U.S. Environmental Protection Agency (EPA or Agency) Office of Ground Water and Drinking Water (OGWDW) is proposing a regulation that, if finalized, will require the collection of information as part of the permit application and monitoring requirements for all CO<sub>2</sub> GS wells.

The proposed regulation establishes a new class of injection well – Class VI – for GS projects based on the unique challenges of preventing potential endangerment to underground sources of drinking water (USDWs) from these operations. The GS regulation proposes technical criteria for geological characterization; determination of the area of review (AoR) and corrective action; well construction and operation; mechanical integrity testing (MIT) and monitoring; and well plugging, post-injection site care, and site closure. The proposal is based on the existing UIC regulatory framework found at 40 CFR Parts 144 through 148, with new requirements added to address the unique nature of CO<sub>2</sub> injection for GS. The proposal will protect USDWs from contamination. It will also help ensure consistent approaches to permitting GS operations across the United States.

Under the proposed regulation, operators of GS wells must submit UIC permit applications, which contain extensive geological data and other information to demonstrate that a site is suitable for GS. Operators must also model the extent of the AoR, report on the status of corrective action on wells in the AoR, and report on pre-operational logging and testing before obtaining an injection permit. Throughout the injection project, operators will monitor the well and the site and submit data to the permitting authority on a semi-annual basis. At the end of injection activities, permit holders will be required to plug their injection well(s) and monitor the site for 50 years after injection has ended. Following the post-injection monitoring, operators

would be required to demonstrate non-endangerment to USDWs. When closure of the site is authorized, operators must close the site and submit a closure report.

States (including Tribes) applying for primacy to oversee Class VI wells will need to submit a primacy application as described in 40 CFR 145. States and Tribes that obtain primacy (and in some cases the Agency) will collect and review permit applications and geological data from operators; receive and review testing and monitoring data and updates to AoR and corrective action plans throughout the injection phase; and review plugging reports and post-injection monitoring reports, and eventually authorize site closure.

EPA assumes that the proposed GS Regulation will be promulgated in 2012; this Information Collection Request (ICR) covers the 3-year period from 2012 through 2014. EPA assumes that 31 States and territories will apply for primacy during that time. Only five owners or operators of Class VI wells are assumed to apply for permits during the three-year ICR clearance period. Four of these sites are assumed to be located in States with primacy; one is assumed to be in a State where EPA directly implements the UIC Program (this assumption is based on the distribution of States that have primacy for other well classes, as described in Chapter 5 of the Cost Analysis).

EPA estimates that the operators of GS wells will incur an average of 4,387 hours of burden annually responding to this information request, amounting to an annual average labor cost of \$325,262. Annual non-labor costs for operators are estimated at \$1.4 million. Overall, the average annual total cost for operators is expected to be \$1.7 million. In order to perform the activities associated with this ICR, EPA estimates that Primacy Agencies will incur 11,094 hours of burden annually. The estimated average annual total cost for Primacy Agencies is \$467,785, which is entirely labor cost. The estimated EPA burden is 5,225 hours annually. EPA estimates that its average annual total cost will be \$255,568, which is all labor cost. A summary of burden and cost associated with this ICR can be found in Exhibit 6-3.

## **2 Need for and Use of the Collection**

The following section describes the need for this information collection and the legal authority under which this information will be collected.

### **2(a) Need/Authority for the Collection**

The Agency is proposing the GS Regulation to provide federal requirements for owners and operators of CO<sub>2</sub> GS wells to protect USDWs from potential contamination. EPA has authority to regulate the injection of fluids, including CO<sub>2</sub>, into the subsurface under the Safe Drinking Water Act (SDWA) of 1974, as amended in 1986 and in 1996. The UIC Program, to which this proposed regulation adds a sixth class of well, was promulgated under Part C of the SDWA. The information collected under this regulation is required by EPA to carry out its monitoring and enforcement responsibilities pertaining to UIC under the SDWA.

The proposed GS regulation is based on the existing UIC regulatory framework found at 40 CFR Parts 144 through 148, with additional new requirements to address the unique nature of CO<sub>2</sub> injection for GS, including the large injection volumes and its corrosivity and buoyancy. The requirements are anticipated to be codified in a new Subpart H of 40 CFR Part 146. The proposed GS Regulation is also meant to provide regulatory certainty and permitting consistency for CO<sub>2</sub> GS projects.

The chief goal of any Federally approved UIC Program is the protection of USDWs. This includes not only those aquifers that are presently being used for drinking water, but also those that can reasonably be expected to be used in the future. EPA has established through its UIC regulations that underground aquifers with less than 10,000 mg/L total dissolved solids (TDS) and which contain a sufficient quantity of ground water to supply a public water system are USDWs.

Section 1421 of the Act requires EPA to propose and promulgate regulations specifying minimum requirements for effective State programs to prevent underground injection that endangers drinking water sources. Section 1421(b) (3)(A) of the Act also provides that EPA's UIC regulations shall "permit or provide for consideration of varying geologic, hydrological, or historical conditions in different states and in different areas within a state." EPA promulgated administrative and permitting regulations, now codified in 40 CFR parts 144 and 146, on May 19, 1980 (45 FR 33290), and technical requirements, in 40 CFR part 146, on June 24, 1980 (45 FR 42472). The regulations were subsequently amended on August 27, 1981 (46 FR 43156), February 3, 1982 (47 FR 4992), January 21, 1983 (48 FR 2938), April 1, 1983 (48 FR 14146), May 11, 1984 (49 FR 20138), July 26, 1988 (53 FR 28118), December 3, 1993 (58 FR 63890), June 10, 1994 (59 FR 29958), December 14, 1994 (59 FR 64339), June 29, 1995 (60 FR 33926), December 7, 1999 (64 FR 68546), May 15, 2000 (65 FR 30886), June 7, 2002 (67 FR 39583), and November 22, 2005 (70 FR 70513).

## **2(b) Practical Utility/Users of the Data**

Well owners and operators will use information collected in preparing their permit applications and associated plans and reports (including the testing and monitoring plan, AoR and corrective action plan, injection well plugging plan, post-injection site care and site closure plan, and emergency and remedial response plan) to construct, operate, and close their injection well sites. They will use the data they collect to determine whether they are complying with permit conditions and to determine whether corrective action or operational adjustments are needed. They will also use ambient monitoring data to track the CO<sub>2</sub> plume.

Primacy States/Tribes and EPA Regions directly implementing Class VI programs use the operator-submitted permit applications and associated plans and reports (including the testing and monitoring plan, AoR and corrective action plan, injection well plugging plan, post-injection site care and site closure plan, and emergency and remedial response plan) to determine whether a proposed site is suitable for CO<sub>2</sub> GS, whether the proposed well meets the criteria specified in the GS Regulation, and whether a permit should be granted. Permitting authorities will review testing and monitoring reports and periodic AoR reevaluations to make sure that wells are in compliance and that no fluid movement into USDWs has occurred. Permitting authorities will

use reports submitted during post-injection testing and monitoring to assure that the CO<sub>2</sub> plume is moving as predicted and not endangering USDWs, and to ensure that before site closure is authorized, the CO<sub>2</sub> plume has stabilized and poses no threat to USDWs.

EPA will use the primacy applications submitted by States and Tribes to assure that States and Tribes desiring to oversee Class VI wells will do so in a manner that protects USDWs.

### **3 Nonduplication, Consultations, and Other Collection Criteria**

#### **3(a) Nonduplication**

EPA has searched the Federal Information Locator System (FILS) in an effort to ensure nonduplication of the data collection efforts. To the best of the Agency's knowledge, data currently required by this regulation are not available from any other source.

#### **3(b) Public Notice Required Prior to ICR Submission to OMB**

As part of the Federal Register notice on the proposed regulation, EPA is also soliciting comments on this information collection and the estimates in this ICR. EPA will solicit comments on specific aspects of the proposed information collection, as described below:

- 1) Whether the proposed collection of information is necessary for the proper performance of the functions of the Agency, including whether the information will have practical utility;
- 2) Whether the Agency's burden estimate is accurate including the validity of the methodology and assumptions used;
- 3) How to enhance the quality, utility, and clarity of the information to be collected; and
- 4) How to minimize the burden on respondents, including use of appropriate automated electronic, mechanical, or other technological collection techniques or other forms of information technology.

In compliance with the Paperwork Reduction Act (44 USC 3501 *et seq.*), EPA will submit the ICR for the proposed GS Regulation to the Office of Management and Budget (OMB) for review and approval.

### **3(c) Consultations**

The burden and costs estimated in this ICR are based on the Technology and Cost (T&C) document developed for the proposed GS regulation. The costs in that document were reviewed by members of the regulatory workgroup that developed the proposed regulation. Members of the workgroup represent the following EPA Offices and Regions: the Office of Water (OGWDW and the Office of Wetlands, Oceans, and Watersheds); the Office of Air and Radiation; the Office of General Counsel; the Office of Research and Development; the Office of Solid Waste and Emergency Response; the Office of Policy, Economics and Innovation; the Office of Enforcement and Compliance; and EPA Regions 2, 3, 4, 5, 6, 7, 8, and 10.

Four States, as co-regulators, and the U.S. Department of Energy also sat on the workgroup and reviewed the T&C document.

### **3(d) Effects of Less Frequent Collection**

The testing and monitoring frequencies for some requirements under the proposed regulation will be established as permit conditions; others, including MITs, are established in the proposed regulation. The GS Regulation will require other parameters to be monitored continuously. These frequencies are consistent with those in the existing UIC regulations for other well classes, and EPA believes that the monitoring and reporting frequencies established in the proposed regulation are the minimum necessary to ensure that any leakage due to the buoyant and potentially corrosive nature of CO<sub>2</sub> would not go undetected.

### **3(e) General Guidelines**

The GS Regulation complies with the guidelines (5 CFR 1320.5(d)(2)) implemented under the Paperwork Reduction Act (PRA), with the exception that it requires a response to a request for information in less than 30 days, in opposition to the PRA guidelines. Specifically, the GS Regulation requires notification of the Primacy Agency within 24 hours if a well loses mechanical integrity or if injection may cause endangerment to a USDW. This is consistent with notification requirements for permitted wells under existing UIC regulations.

### **3(f) Confidentiality**

Operators of injection wells may claim confidentiality, as provided in existing regulations in 40 CFR 144.5, *Confidentiality of Information*. If confidentiality is requested, the information is treated in accordance with the provisions of 40 CFR 2, *Public Information*. Any confidentiality claim must be made at the time of submission in the manner prescribed by the application form or its instructions. In the case of other submissions, respondents may claim confidentiality by stamping the words “confidential business information” on each page containing such information. Claims of confidentiality for the following information will be denied:

- The name and address of any permit applicant or permittee;



- Information regarding the existence, absence, or level of contaminants in drinking water.

Information collected under this ICR is intended for the Agency's and/or State/Tribe's internal use and there are no plans to routinely release or publish any of the data. However, if no claim of confidentiality is made at the time of submission, the information can be made available to the public without further notice. Also, all information that is not deemed to be confidential would be released to the public if requested under the Freedom of Information Act.

### **3(g) Sensitive Questions**

The data collection proposed does not ask any sensitive questions concerning sexual behaviors or attitudes, religious beliefs, or other matters.

## **4 The Respondents and the Information Requested**

The following sections provide information on the respondents and the information they are requested to provide.

### **4(a) Respondent NAICS/ SIC Codes**

Under this proposed regulation, respondents to the GS Regulation requirements include those who desire to inject CO<sub>2</sub> in the subsurface for the purpose of long-term storage. They potentially include the owners and operators of coal-fired electric power plants and ethanol power plants and the oil and gas extraction industry. The North American Industry Classification System (NAICS) code for fossil fuel electric power generation is 221112; the code for crude petroleum and natural gas extraction is 211111; and for petroleum refining is 324110.<sup>1</sup> States (including Tribes) and EPA Regions that provide UIC Program oversight are also respondents. The NAICS code for Tribes is 921150. The code for administration of air and water resource and solid waste management programs is 924110.

### **4(b) Information Requested**

The following sections provide details on data items requested and associated activities respondents will be required to undertake to provide this information.

#### **4(b)(i) Data Items**

##### *Owners and Operators*

EPA will require those seeking permits to own and operate CO<sub>2</sub> GS wells to submit the following items, as described in more detail in 40 CFR 146.82:

- Information required in 40 CFR 144.31 (e)(1) through (6);

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<sup>1</sup> 2007 NAICS Codes. <http://www.census.gov/naics/2007/NAICOD07.HTM>

- A map showing the injection well(s) and the applicable AoR;
- The AoR based on modeling, using data obtained during logging and testing of the well and the formation;
- Information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations;
- A tabulation of all wells within the AoR which penetrate the injection or confining zone(s);
- Maps and stratigraphic cross sections indicating the general vertical and lateral limits of all USDWs, water wells and springs within the AoR, their positions relative to the injection zone(s) and the direction of water movement, where known;
- Baseline geochemical data on subsurface formations, including all USDWs in the area of review;
- Proposed operating data;
- The compatibility of the CO<sub>2</sub> stream with fluids in the injection zone and minerals in both the injection and the confining zone(s);
- Proposed formation testing program;
- Proposed stimulation program;
- The results of the formation testing program;
- Proposed procedure to outline steps necessary to conduct injection operation;
- Schematic or other appropriate drawings of the surface and subsurface construction details of the well;
- Injection well construction procedures;
- Proposed AoR and corrective action plan;
- The status of corrective action on wells in the AoR;
- All available logging and testing program data on the well;
- A demonstration of mechanical integrity prior to commencing injection;
- A demonstration that the applicant has met financial responsibility requirements;
- Proposed testing and monitoring plan;
- Proposed injection well plugging plan;
- Proposed post-injection site care and site closure plan;
- Proposed emergency and remedial response plan; and
- Any other information requested by the Director.

Once an operating permit has been issued, EPA will require semi-annual reports of the following (40 CFR 146.91):

- The characteristics of injection fluids, injection pressure, flow rate, volume, and annular pressure.
- A description of any events that required shutdown or that resulted in an exceedance of operating parameters specified in the permit.
- The results any MITs, ground water quality monitoring, plume tracking, soil gas/air monitoring (if required), well workovers, and any other required test. This should be submitted within 30 days or with the next semi-annual report, whichever comes later (40 CFR 146.91(b)).

At least every 10 years (or when changes in operational conditions warrant re-evaluation), operators must also re-evaluate the AoR and submit a report, along with the status of phased corrective action to the permitting authority. (40 CFR 146.92; 40 CFR 146.93) Operators must also periodically update the cost information supporting their financial responsibility determinations. (40 CFR 146.85)

Following the injection phase (i.e., during well plugging and post-injection site care) the owner or operator must submit the following information:

- A notification of intent to plug injection wells, along with any revisions made to the original plugging plan submitted with the permit application.
- A plugging report after plugging is complete.
- A revised post-injection site care and site closure plan.
- Periodic reports of the results of post-injection ground water quality monitoring and the position of the CO<sub>2</sub> plume.
- A non-endangerment demonstration that the CO<sub>2</sub> plume has stabilized and there is no threat to USDWs following the post-injection monitoring.
- A site closure report and recording of a notation on the deed to the property regarding the fact that injection occurred.

#### *Primacy States and Tribes*

Primacy States/Tribes will be required to review all the items submitted by owners and operators (see above).

States and Tribes seeking authority to implement a Class VI program will also be required to apply for primacy. In applying for primacy, under existing regulations, States must submit to EPA the following (40 CFR 145.22):

- A letter from the governor requesting program approval.
- A complete program description (as described in 40 CFR 145.23).

- An attorney general's statement.
- A memorandum of agreement with the Regional administrator.
- Copies of all applicable State statutes and regulations.
- A showing of the State's public participation activities.

Three copies of the application are required.

#### **4(b)(ii) Respondent Activities**

##### *Owners and Operators*

In general, owners and operators seeking to obtain permits for CO<sub>2</sub> GS wells will be involved in the following collection activities:

- Reading and understanding the GS Regulation.
- Gathering new or existing geological data and other site information required as part of the permit application, including maps, geological and geochemical data, and data on existing wells in the AoR.
- Developing plans and procedures that must be submitted with the permit application, including the proposed operating data, proposed formation testing program, proposed stimulation program, proposed injection procedure, schematics of well construction, testing and monitoring plan, proposed area of review and corrective action plan, injection well construction procedures, proposed injection well plugging plan, proposed post-injection site care and site closure plan, and proposed emergency and remedial response plan.
- Demonstrating financial responsibility and resources for corrective action, injection well plugging, post-injection site care and closure, and emergency and remedial response.
- Compiling the above information and preparing the permit application.

After submitting the UIC permit application but before beginning operation of a Class VI well, owners and operators must conduct testing and submit additional information. Activities include the following:

- Submit all logging and testing data; results of formation testing; and data on compatibility of the CO<sub>2</sub> stream with fluids and minerals in the injection and confining zones, and well materials.
- Demonstrate mechanical integrity of the well.
- Calculate the AoR using computational models, based on data obtained during logging and testing.
- Provide information on status of corrective action on wells in the AoR.

Once operation commences, owners and operators must monitor the well and submit semi-annual reports. They must monitor the following:

- Chemical and physical characteristics of the CO<sub>2</sub> stream.
- Injection pressure, flow rate and volume, and pressure on the annulus (using continuous recording devices).
- Corrosion of well materials.

In addition, at least once per year operators must demonstrate external mechanical integrity and report the results of testing. Throughout the injection phase, operators must monitor ground water quality, track the CO<sub>2</sub> plume and pressure front, and perform any soil gas/ surface air monitoring or other required monitoring, as specified in their approved testing and monitoring plans.

At least every 10 years, the owner or operator must re-evaluate the AoR by re-running the delineation models to incorporate operational and monitoring data. Based on this, the operator must revise the AoR and corrective action plan, if needed.

At the end of an injection project, the operator must submit a notice of intent to plug the injection well and a revised post-injection site care and site closure plan. During the post-injection phase, operators will monitor ground water quality and track the position of the CO<sub>2</sub> plume and report to the permitting authority on the results as specified in their approved plan. Following the post-injection monitoring, operators would perform a non-endangerment demonstration that there is no threat to USDWs, and that no further monitoring is necessary. At this point, if closure of the site is authorized, the owner or operator must submit a site closure report and must record a notation on the deed to the property regarding the fact that injection occurred (40 CFR 146.93).

Recordkeeping activities include maintaining the AoR and corrective action plan, the well plugging plan, and the post-injection site care and site closure plan. Operators must also maintain and adjust cost information associated with their financial responsibility determinations.

In addition to these new requirements, existing regulations require owners and operators of Class VI wells to keep records associated with permit application for at least 3 years after the application is signed. Other regulations require recordkeeping of all reports required by the permit and records of continuously monitored data for 3 years. Data on the nature and composition of all injected fluids must be kept until 3 years after completion of plugging and abandonment procedures.

#### *Primacy States and Tribes*

State and Tribal officials may serve in the role of respondents when reviewing and evaluating information and reports submitted by operators. States and Tribes with primacy will act as the Agency in ensuring the implementation of the GS Regulation. States are anticipated to be involved in the following activities:

- Review permit applications and prepare permits.
- Review pre-operational testing and logging data, AoR evaluations, and the status of corrective action.
- Review semi-annual and occasional reports from operators.
- Review AoR re-evaluations and updates to the AoR and corrective action plan.
- Review notices of intent to plug wells.
- Review post-injection monitoring data and non-endangerment demonstrations and determine whether to authorize site closure.
- Review notices of intent to close GS sites and site closure reports.
- Maintain records of the above information submitted by operators.

States and Tribes are required to maintain records of verification activities and each determination made, and report to EPA in accordance with reporting requirements at 40 CFR 144.8 through the UIC Program.

States and Tribes must develop and submit a UIC Program (primacy application) for Class VI wells if they wish to govern CO<sub>2</sub> GS wells in their States/Tribes. The programs are subject to approval by EPA, and must include the items described in section 4(b)(i) for States and Tribes.

## **5 The Information Collected—Agency Activities, Collection Methodology, and Information Management**

The following sections describe the Agency activities related to analyzing, maintaining, and distributing the information collected.

### **5(a) Agency Activities**

The Agency will be responsible for promulgating this proposed regulation and overseeing its implementation. EPA Regions and EPA Headquarters will have different responsibilities. Where a State does not obtain primacy, EPA Regions conduct the same activities as States (see section 4b(ii)) to oversee GS wells in the State, except that they do not need to apply for primacy. Regions also receive and review primacy applications submitted by the States; the Regions then forward the applications to Headquarters for final approval.

EPA Headquarters (OGWDW) provides technical assistance to Regions, primacy States and Tribes, and operators in the form of guidance manuals and training. Headquarters will also evaluate primacy applications submitted by the States for final decisions.

### **5(b) Collection Methodology and Management**

EPA proposes to require the reporting of data from owners or operators in an electronic format acceptable to the Director for site, facility, and monitoring information. At the discretion of the Director, formats other than electronic may be accepted after a determination has been made that the entity does not have the capability to use the required format. Long-term retention of records in an electronic format may also be required at the Director's discretion. If records are stored in an electronic format, information should be maintained digitally in multiple locations (i.e., backed-up) in accordance with best practices for electronic data.

Electronic reporting involves transmitting UIC data in a standard electronic format that can be readily incorporated into Headquarters UIC databases without manual data entry. Electronic reporting supports the Agency's effort to streamline the UIC Program by reducing the reporting burden on the States and improving EPA's data collection methods. Electronic reporting offers an opportunity to:

- Reduce data entry;
- Reduce mailing costs;
- Reduce the routine process of handling paperwork;
- Reduce or eliminate the need to store large quantities of paper documents; and
- Increase the accuracy of reports submitted to EPA.

In 2007, EPA created a national UIC database for well, facility, and compliance data submitted by Primacy Agencies. The national UIC data model contains approximately 120 data elements related to various aspects of the UIC Program. At this time, several Primacy Agencies are actively participating in use of the national UIC database. EPA encourages State and Tribal primacy agencies to work with EPA Regional offices as much as possible in order to use the new database system for reporting of information regarding Class VI wells. The database includes a mechanism to electronically transfer data between existing State and EPA Regional databases and Headquarters' database, eliminating the need for State UIC Program Directors to complete paper reporting forms. (The burden and cost associated with developing and maintaining the national UIC database is accounted for in the UIC Program ICR; the proposed GS regulation is assumed to add a negligible cost to this requirement due to the small number of GS sites.)

### **5(c) Small Entity Flexibility**

In general, a small entity is defined as: (1) a small business with annual revenue less than \$6 million according to Small Business Administration size standards; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; or (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field. In some cases, however, industries propose different standards for small businesses.

EPA expects that Class VI wells will be owned and operated by fossil fuel power generators, oil and gas extraction companies, and oil and gas refineries. Because the resources necessary to construct injection wells that meet the standards of the GS Regulation are significant, EPA believes that none of the owners or operators of Class VI wells will be small entities. Therefore, EPA assumes that the GS Regulation will cause no significant impact on small entities.

**5(d) Collection Schedule**

The final GS Regulation is scheduled for promulgation in 2012; this ICR covers the first three years of implementation (2012 through 2014). At that point, States and Tribes wishing to obtain primacy will complete and submit primacy applications to EPA.

Because this ICR covers only the first three years of a regulation that will cover injection operations with potentially long life spans (i.e., up to 20 years of injection and 50 years of post-injection monitoring), EPA assumes that only a limited portion of the paperwork burden for GS projects will be captured in this ICR. EPA anticipates that the majority of the activities during the information collection will be associated with States applying for primacy.

Only a handful of GS projects are expected to be deployed during the collection period. EPA estimates that five operators will submit permit applications and/or monitoring data. EPA does not predict that any CO<sub>2</sub> GS well operators will perform AoR re-evaluations, plug their injection wells, or perform post-injection site care within the period covered by this ICR.

EPA assumes that one-third of the 31 States (or 10 States) anticipated to apply for primacy will do so in each year of the collection. EPA assumes that no Tribes will seek primacy during the information collection period. EPA’s estimates of GS project deployments are based on Exhibit 3.1 of the Cost Analysis. Exhibit 5-1 presents a schedule of the activities EPA expects to take place during the collection period.

Exhibit 5-1  
Schedule of Activities Under this Information Collection  
2012-2014

Year	Activities
Year 1 (2012)	10.3 States submit primacy applications
	2.2 Operators in primacy states apply for permits
	0.8 Operators in DI states apply for permits
Year 2 (2013)	10.3 States submit primacy applications
	0.7 Operators in primacy states apply for permits
	0.3 Operators in DI states apply for permits
	3.0 Operators begin injection/monitoring
Year 3 (2014)	10.3 States submit primacy applications
	0.7 Operators in primacy states apply for permits
	0.3 Operators in DI states apply for permits
	4.0 Operators begin injection/monitoring

Note:

(1) Detail may not add exactly due to independent rounding.



## **6 Estimating the Burden and Cost of the Collection**

This section contains EPA's estimates of the burden and costs to respondents (i.e., well owner/operators and State primacy agencies) associated with CO<sub>2</sub> GS Regulation paperwork requirements, and federal burden hours and costs for reviewing respondent submissions. Section 6(a) provides estimates of burden hours for all respondent types. Section 6(b) contains estimates of respondent costs for the information collection. Section 6(c) summarizes federal burden and costs as users of respondent data. Section 6(d) describes the respondent universe and the total burden and cost of this collection to respondents. Section 6(e) covers aggregate burden hours and costs for all respondents and the burden statement for this information collection is in Section 6(f).

Many of the burden and cost estimates for this ICR were derived from estimates in the Technology and Cost document for the proposed GS regulation, and estimates for Class I well operators in the draft 2007 UIC Program ICR (ICR No. 0370.021), adjusted to account for the larger scale of CO<sub>2</sub> GS sites. The derivation of the burden and cost estimates used in the ICR is explained in Appendix A.

### **6(a) Respondent Burden**

#### **6(a)(i) Burden to Owners and Operators of CO<sub>2</sub> GS Wells**

EPA's estimate of the annual paperwork burden to operators associated with submitting permit applications, delineating the AoR and performing corrective action, pre-operational testing, testing and monitoring, reporting and recordkeeping, injection well plugging, and post-injection site care is presented in Exhibit 6-1. Legal, managerial, technical, and clerical staff hours are shown; Column A presents the total unit burden for each activity.

The total annual burden on the five operators of Class VI wells nationwide is estimated to be 4,387 hours for the 3 years covered by this ICR. These costs break down as follows:

- Permitting and startup operations will require a total of about 3,191 hours annually. These activities include preparing the permit application, performing geological site characterization, developing necessary plans, and pre-operational testing and reporting, including modeling the AoR and performing all pre-operational corrective action.
- Compliance with testing and monitoring requirements will impose a total annual burden of 1,023 hours.
- Reporting requirements will be associated with 163 burden hours annually for all operators.
- Recordkeeping requirements will require 9.3 annually.

EPA does not expect that any operators will conduct activities associated with periodic AoR re-evaluations, injection well plugging, or post-injection site care during the three years covered by this ICR. Burden and cost estimates are summarized by response type in Exhibit 6-3.

EPA recognizes that many UIC information collection activities are performed by contractors. The operator unit burden estimates reported in this section represent a composite of the operator time to both perform an information collection activity and to supervise a contractor when the contractor performs the activity. The mix of operator versus contractor labor varies by activity. Contractor costs are included in the estimates of operator non-labor costs.

**Exhibit 6-1 Annual Paperwork Burden and Costs Associated with Class VI CO2 GS Wells: Operators  
2012-2014**

Description of Requirement	Frequency	Hours and Costs per Response							Total Hours and Costs		
		Legal Burden (Hours)	Managerial Burden (Hours)	Technical Burden (Hours)	Clerical Burden (Hours)	Unit Burden (Hours)	Unit Labor Cost	Unit Non-Labor Cost (\$)	No. of Responses	Total Hours/Year	Total Cost/Year
<b>Initial/Startup Requirements (Per Permit Application)</b>											
<b>Requirements associated with construction and operating permit applications</b>											
Compile all geologic testing data and prepare and submit permit application.	One-time	25.0	66.0	284.0	199.0	574	\$35,385	\$ -	1.7	956.7	\$ 58,974
Gather and submit description of activities requiring a permit, facility name and address, SIC codes, ownership and facility status, facility location, listing of relevant permits or construction approvals, relevant maps and cross sections, construction specifics, description of the business, proposed injection, formation testing, and stimulation programs.	One-time	0.0	0.0	20.0	0.0	0.0	\$ 1,577	\$ -	1.7	0.0	\$ 2,628
Prepare and submit map showing the injection well(s) for which a permit is sought and the applicable AoR, maps and cross sections of AoR, and geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure.	One-time	0.0	0.0	20.0	0.0	20.0	\$ 1,577	\$ 4,125	1.7	33.3	\$ 9,503
Prepare and submit information on the calculated AoR.	One-time	0.0	0.0	324.0	0.0	324.0	\$25,546	\$ 2,415	1.7	540.0	\$ 46,601
Identify location, orientation, and properties of known or suspected faults and fractures; determination whether they would not interfere with containment.	One-time	0.0	0.0	0.0	0.0	0.0	\$ -	\$281,250	1.7	0.0	\$ 468,750
Obtain and analyze seismic (earthquake) history.	One-time	0.0	0.0	30.0	0.0	30.0	\$ 2,365	\$ -	1.7	50.0	\$ 3,942
Obtain data on the depth, areal extent, thickness, mineralogy, porosity, permeability and capillary pressure of the injection zone and confining zone. Obtain geomechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone.	One-time	0.0	0.0	297.0	0.0	297.0	\$23,417	\$179,813	1.7	495.0	\$ 338,716
Prepare and submit a map and tabulation of all wells within the AoR.	One-time	0.0	0.0	165.0	0.0	165.0	\$13,010	\$ 33,250	1.7	275.0	\$ 77,099
Prepare and submit maps/cross sections of local and regional geology, USDWs.	One-time	0.0	0.0	42.0	0.0	42.0	\$ 3,312	\$ -	1.7	70.0	\$ 5,519
Submit baseline geochemical data on subsurface formations and maps/cross sections of subsurface aquifers.	One-time	0.0	0.0	90.0	0.0	90.0	\$ 7,096	\$ 5,700	1.7	150.0	\$ 21,327
Submit proposed operating data (e.g., anticipated maximum pressure and flow rate).	One-time	0.0	0.0	8.0	0.0	8.0	\$ 631	\$ -	1.7	13.3	\$ 1,051
Demonstrate compatibility of CO2 stream with well materials and fluids and minerals in the injection and	One-time	0.0	0.0	96.0	0.0	96.0	\$ 7,569	\$ 6,400	1.7	160.0	\$ 23,282
Develop formation testing and stimulation programs and injection procedures and submit results of formation testing program.	One-time	0.0	0.0	20.0	0.0	20.0	\$ 1,577	\$ 5,433	1.7	33.3	\$ 11,683
Prepare and submit descriptions of construction procedures and schematics.	One-time	0.0	0.0	8.0	0.0	8.0	\$ 631	\$ 4,527	1.7	13.3	\$ 8,597
Prepare and submit AoR and corrective action plan.	One-time	0.0	0.0	84.0	0.0	84.0	\$ 6,623	\$ -	1.7	140.0	\$ 11,038
Submit status of corrective action at wells in the AoR.	One-time	0.0	0.0	50.0	0.0	50.0	\$ 3,942	\$202,000	1.7	83.3	\$ 343,237
Prepare and submit completion report.	One-time	0.0	0.0	20.0	0.0	20.0	\$ 1,577	\$ -	1.7	33.3	\$ 2,628
Prepare and submit a report of deviation checks and other logs and tests during construction.	One-time	0.0	0.0	7.0	0.0	7.0	\$ 552	\$ 27,768	1.7	11.7	\$ 47,200

**Exhibit 6-1 Annual Paperwork Burden and Costs Associated with Class VI CO2 GS Wells: Operators  
2012-2014**

Description of Requirement	Frequency	Hours and Costs per Response						Total Hours and Costs			
		Legal Burden (Hours)	Managerial Burden (Hours)	Technical Burden (Hours)	Clerical Burden (Hours)	Unit Burden (Hours)	Unit Labor Cost	Unit Non-Labor Cost (6)	No. of Responses	Total Hours/Year	Total Cost/Year
Demonstrate mechanical integrity prior to commencing injection.	One-time	0.0	0.0	5.5	0.0	5.5	\$ 434	\$ -	1.7	9.2	\$ 723
Prepare and submit well plugging plan, post-injection site care and site closure plan, and demonstration of financial responsibility.	One-time	0.0	0.0	24.0	0.0	24.0	\$ 1,892	\$ -	1.7	40.0	\$ 3,154
Prepare and submit testing and monitoring plan.	One-time	0.0	0.0	40.0	0.0	40.0	\$ 3,154	\$ 3,562	1.7	66.7	\$ 11,192
Prepare and submit emergency and remedial response plan.	One-time	0.0	0.0	10.0	0.0	10.0	\$ 788	\$ -	1.7	16.7	\$ 1,314
<b>Requirements Associated with Periodic AoR Reevaluations</b>											
Prepare and submit amended AoR and corrective action plan or demonstrate that no amendment to the plan is needed.	Per plan	0.0	0.0	324.0	0.0	324.0	\$25,546	\$ 2,415	0.0	0.0	\$ -
<b>Testing and Monitoring Requirements</b>											
Analyze the CO2 stream.	Per permit	0.0	0.0	12.0	0.0	12.0	\$ 946	\$ 3,200	2.3	28.0	\$ 9,674
Demonstrate internal mechanical integrity by monitoring injection pressure, flow rate and volume, Conduct corrosion monitoring. (3)	Continuous	0.0	0.0	0.0	0.0	0.0	\$ -	\$ 7,417	2.3	0.0	\$ 17,306
	Periodic			2.5		2.5	\$ 197	\$ -	2.3	5.8	\$ 460
Monitor ground water quality.	Per plan	0.0	0.0	96.0	0.0	96.0	\$ 7,569	\$ 38,400	2.3	224.0	\$ 107,261
Demonstrate external mechanical integrity using tracer survey, noise/temperature logs or other	Annual	0.0	0.0	4.0	0.0	4.0	\$ 315	\$ -	2.3	9.3	\$ 736
Conduct pressure fall-off test. (3)	Every 5	0.0	0.0	0.0	0.0	0.0	\$ -	\$ 4,000	0.0	0.0	\$ -
Track CO2 plume and pressure front.	Per plan	0.0	0.0	324.0	0.0	324.0	\$25,546		2.3	756.0	\$ 59,607
Conduct surface air and soil gas monitoring, if directed.	Per plan	0.0	0.0	0.0	0.0	0.0	\$ -	\$ 1,875	2.3	0.0	\$ 4,375
Conduct casing inspection log at workover.	Every 5	0.0	0.0	2.0	0.0	2.0	\$ 158	\$ 18,000	0.0	0.0	\$ -
<b>Reporting Requirements</b>											
Report semi-annually on: physical, chemical, and other characteristics of injected fluids; injection pressure, flow rate, and volume; and monitoring of USDWs.	Semi-annual	0.0	0.0	22.0	2.0	24.0	#####	\$ -	4.7	112.0	\$ 7,632
Report on most recent MITs and other tests.	Annual	0.0	0.0	20.0	2.0	22.0	\$ 1,793	\$ -	2.3	51.3	\$ 4,184
Report results of: any required mechanical integrity tests, other required tests, and well workovers.	Occasional	0.0	0.0	12.0	2.0	14.0	\$ 1,005	\$ -	0.0	0.0	\$ -
Provide periodic adjustments/updates to financial cost estimates for financial responsibility.	Per plan	0.0	4.0	0.0	0.0	4.0	\$ 314	\$ -	0.0	0.0	\$ -
<b>Recordkeeping Requirements</b>											
Maintain monitoring information, calibration and maintenance records, required reports, application data, and monitoring results. Maintain all required plans.	At least 3 years	0.0	0.0	0.0	4.0	4.0	\$116.90	\$ -	2.3	9.3	\$ 272.78
Maintain cost data to support financial responsibility determinations.	Annual (Ongoing)	0.0	0.0	0.0	4.0	4.0	\$116.90	\$ -	0.0	0.0	\$ -
<b>Injection Well Plugging</b>											
Prepare and submit notice of intent to plug.	One-time	0.0	0.5	0.0	1.0	1.5	\$ 69	\$ -	0.0	0.0	\$ -
Prepare and submit plugging report.	One-time	0.0	0.0	40.0	0.0	40.0	\$ 3,154	\$ 1,014	0.0	0.0	\$ -
<b>Post-Injection Site Care</b>											
Conduct post-injection monitoring and report to director on results.	Per plan	0.0	0.0	40.0	0.0	40.0	\$ 3,154	\$400,000	0.0	0.0	\$ -
Submit non-endangerment demonstration that CO2 plume and pressure front have stabilized.	One-time	0.0	0.0	332.0	0.0	332.0	\$26,177	\$189,915	0.0	0.0	\$ -
Submit site closure report.	One-time	0.0	0.0	40.0	0.0	40.0	\$ 3,154	\$ -	0.0	0.0	\$ -
<b>Total</b>									<b>62.3</b>	<b>4,386.7</b>	<b>\$ 1,709,669</b>

Notes:

- (1) Burden and cost estimates are based on T&C document or estimates for Class I Hazardous and Nonhazardous wells in the 2007 UIC Program ICR, adjusted to account for variations between Class I and Class VI GS wells. See Appendix A.
- (2) EPA assumes that the GS projects permitted during the clearance period will be large saline projects, each with 4 injection wells.
- (3) Non-labor cost is total for 4 injection wells.
- (4) Numbers may not appear to add due to rounding.
- (5) EPA assumes that all operator activities during the collection period will be associate with permit applications, monitoring, and reporting. See section 5(e).
- (6) All non-labor cost is operating and maintenance (O&M) cost or contractor cost.

**6(a)(ii) Burden to Primacy Agencies**

Primacy agencies' burden as users of data associated with implementing Class VI programs arise from program oversight, reviewing and responding to permit applications and pre-operational reports, operator testing and monitoring reports, AoR re-evaluations, and plugging and post-injection reports submitted by operators within their States. Primacy agency burden associated with oversight of Class VI programs is presented in Column A of Exhibit 6-2.

EPA estimates that the annual burden to primacy agencies associated with this information collection will be 11,094 hours. The burden is allocated as follows:

- The majority of the burden is associated with completing primacy applications, which will impose an average burden of 10,747 hours annually during the 3 years covered by this ICR. EPA estimates that applying for primacy will require 0.5 FTEs or 1,040 hours per State.
- Primacy agencies will spend an average of 347 hours annually overseeing four Class VI well operators, including:
  - 294 hours reviewing permit applications for Class VI wells, writing permits, and reviewing AoR studies and pre-operational data.
  - 52 hours reviewing testing and monitoring data or occasional reports submitted by operators.
  - Recordkeeping will impose an annual burden of 1.2 hours.

During the ICR clearance period, EPA predicts that primacy agencies will not spend any time reviewing AoR re-evaluations or plugging and post-injection monitoring reports submitted by operators of Class VI sites, because no sites are expected to reach that phase during this period.

Exhibit 6-3 provides a summary of primacy agencies' burden and cost according to different response categories.

**Exhibit 6-2 Annual Paperwork Burden and Costs Associated with Class VI CO2 GS Wells: Primacy Agencies**

Description of Requirement	Frequency	Hours and Costs per Response			Total Hours and Costs		
		Unit Burden (Hours)	Unit Labor Cost	Unit Non-labor Cost	Number of State Responses	Total State Burden/Year	Total State Cost/Year
<b>Requirements Associated with Obtaining Primacy</b>							
Prepare primacy application for oversight of Class VI wells.	One-time	1,040.0	\$43,852	-	10.3	10,746.7	\$ 453,141
<b>Initial/Start-up</b>							
<b>Requirements Associated with Review of GS Permit Applications</b>							
Review permit application, geological data, and proposed construction and operating procedures to determine geologic suitability of proposed site.	One-time	100.0	\$4,217	-	1.2	120.0	\$ 5,060
Review proposed testing and monitoring plan.	One-time	20.0	\$843	-	1.2	24.0	\$ 1,012
Review proposed AoR and corrective action plan.	One-time	20.0	\$843	-	1.2	24.0	\$ 1,012
Review proposed well plugging and post-injection site care and site closure plans.	One-time	5.0	\$211	-	1.2	6.0	\$ 253
<b>Requirements Associated with Public Notices for GS Permits</b>							
Issue notice of intent to deny.	One-time	20.0	\$843	-	0.0	0.0	\$ -
Prepare draft permit.	One-time	40.0	\$1,687	-	1.2	48.0	\$ 2,024
Provide public notice of issuance of a draft permit or intent to deny.	One-time	1.0	\$42	-	1.2	1.2	\$ 51
Consider public comments.	One-time	6.0	\$253	-	1.2	7.2	\$ 304
Issue final permit decision.	One-time	2.0	\$84	-	1.2	2.4	\$ 101
Respond to comments.	One-time	7.0	\$295	-	1.2	8.4	\$ 354
<b>Pre-operational Reporting</b>							
Review initial AoR model and report of status of corrective action on wells in the AoR.	One-time	40.0	\$1,687	-	1.2	48.0	\$ 2,024
Review report of pre-construction logs and tests.	One-time	4.0	\$169	-	1.2	4.8	\$ 202
Witness logging and testing.	One-time	3.0	\$126	-	0.0	0.0	\$ -
<b>AoR Reevaluation</b>							
Review operator reports on AoR reevaluation.	Occasional	30.0	\$1,265	-	0.0	0.0	\$ -
<b>Operator Reporting</b>							
Review operator reports.	Semi-annual	10.0	\$422	-	3.4	33.6	\$ 1,417
Review monitoring and other test data submitted since previous evaluation.	Annual	5.0	\$211	-	1.7	8.4	\$ 354
Respond to periodic notifications by owners and operators.	Occasional	4.0	\$169	-	1.7	6.7	\$ 283
Review updated financial cost estimates.	Per plan	2.0	\$84	-	1.7	3.4	\$ 142
<b>Recordkeeping</b>							
Maintain administrative record of permit decision.	One-time	1.0	\$42	-	1.2	1.2	\$ 51
<b>Injection Well Plugging</b>							
Review well plugging plan.	One-time	4.0	\$169	-	0.0	0.0	\$ -
Review amended post-injection site care and closure plan upon cessation of injection.	One-time	4.0	\$169	-	0.0	0.0	\$ -
<b>Post-injection Site Care</b>							
Review periodic monitoring reports during post-injection site care.	Per plan	4.0	\$169	-	0.0	0.0	\$ -
Review non-endangerment demonstrations.	One-time	24.0	\$1,012	-	0.0	0.0	\$ -
Prepare and publish notice of permanent record on the GS project.	One time	8.0	\$337	-	0.0	0.0	\$ -
<b>Total</b>					<b>33.1</b>	<b>11093.9</b>	<b>\$ 467,785</b>

Notes:

- (1) Numbers may not appear to add due to rounding.
- (2) EPA assumes that all operator activities during the collection period will be associate with permit applications, monitoring, and reporting. See section 5(e).

## **6(b) Respondent Costs**

### **6(b)(i) Cost to Operators**

Exhibit 6-1 shows the annual total costs for owners and operators of Class VI injection wells over the 3-year ICR clearance period. The annual costs are estimated at approximately \$1.7 million, which consists of \$1.4 million in non-labor costs and \$325,262 in labor costs.

EPA determined operator labor cost by estimating the mix of legal, managerial, technical, and clerical time needed to perform each collection activity. The labor cost estimate is based on average hourly estimates for salary and overhead of \$76 for legal staff, \$75 for managerial staff, \$62 for technical staff, and \$28 for clerical staff. The legal, managerial, and clerical rates are based on Bureau of Labor Statistics Occupational Employment Statistics, 2006, median hourly wage estimates for NAICS code 221100 (electric power generation, transmission and distribution). The technical labor rate is an average of estimates for geoscientists and mining and geological engineers from the Technology & Cost document. Each hourly wage estimate was increased by 60 percent to account for overhead costs (the inflation factor recommended in EPA's *ICR Handbook*). EPA assumes that contractor time (which is embedded in the non-labor costs in this ICR) would be approximately \$78 per hour; this is based on a mean hourly wage estimate for management, scientific, and technical consulting services for NAICS code 221100 and was inflated to account for overhead (60 percent) and contractor profit (5 percent).

EPA derived non-labor costs from the T&C document and the 2007 programmatic ICR. This ICR assumes there are no capital costs to operators—large capital expenditures associated with CO<sub>2</sub> GS (e.g., construction costs and monitoring equipment) are considered to be customary business practice, not incremental costs associated with the information collection. All non-labor costs to operators associated with this collection are operating and maintenance (O&M) costs, such as the cost of contractor services or laboratory fees associated with CO<sub>2</sub> or ground water monitoring. Appendix A describes the derivation of non-labor costs.

### **6(b)(ii) Cost to Primacy Agencies**

Exhibit 6-2 shows that the annual cost to Primacy Agencies is estimated at approximately \$467,785, all of which is labor cost. For this ICR, EPA assumed that the average hourly labor rate for a State employee is \$38.69. This estimate is based on a federal GS-9, Step 10 salary on the 2007 federal pay scale, increased by 60 percent to account for overhead cost (the inflation factor recommended in EPA's *ICR Handbook*).

The incremental non-labor costs (capital and O&M) to primacy agencies associated with the Class VI program are estimated to be negligible.

### **6(c) Agency Burden and Costs**

EPA estimates that its Regional offices will implement the UIC Program for Class VI wells in the 12 States and territories that EPA anticipates may seek Class VI permits but will not obtain Class VI primacy, and in the Tribes. The paperwork requirements for Regional direct implementation (DI) programs are roughly the same as those for the State and Tribal primacy programs. EPA estimates that only one DI program will have to meet the paperwork requirements during the 3-year clearance period because only one CO<sub>2</sub> GS project is assumed to be under the authority of a DI program. The total annual burden for Regional DI programs associated with the paperwork requirements and oversight of Class VI activities is 135 hours. In addition, Regions will spend an average of 517 hours annually reviewing primacy applications submitted by the States.

EPA estimates that Headquarters will spend approximately 2 FTEs, or 4,160 hours annually in its oversight responsibilities for the GS regulation. Headquarters activities will include providing technical assistance to the Regions and States as they begin to oversee Class VI wells. Headquarters staff will also spend 413 hours annually reviewing and making final determinations on State and Tribal primacy applications.

EPA assumes the average hourly labor rate for salary and overhead and benefits for Agency staff to be \$48.91. This estimate is based on a federal GS-12, Step 5 salary on the 2007 federal pay scale, increased by 60 percent to account for overhead costs. The annual federal cost associated with this collection is \$265,018. A summary of Agency cost is presented in Exhibit 6-3.

### **6(d) Respondent Universe and Total Burden and Costs**

In this section, EPA describes the number of respondents subject to each paperwork activity in this ICR. The number of responses for each activity is shown in Column D of Exhibits 6-1 and 6-2. This number, known as the respondent universe, is based on EPA's assumptions of the number of permittees subject to each paperwork requirement, e.g., the number of permit applications expected, or the percent of permittees subject to monitoring or reporting requirements and the frequency with which they must comply with those requirements. The frequency at which each activity is performed is presented in the burden and cost tables.

EPA estimates that 31 States will apply for and gain primacy within the 3 year clearance period, an average of 10.3 States per year. This number represents 72 percent of the 43 States currently active in the UIC program, as described in the Cost Analysis document (Chapter 5). EPA assumes that no Tribes will seek primacy for Class VI wells during the information collection period.

EPA estimates that five GS projects will be deployed over the three years covered by this ICR. This is based on the deployment schedule in the T&C document. EPA predicts that, of these five projects, four (or 72 percent) will be located in States with primacy, thus four Primacy Agencies will incur paperwork burden associated with operator submittals. EPA assumes that the remaining CO<sub>2</sub> GS project site will be permitted under the authority of a DI program.



During the three years covered by this ICR, each of the five operators will apply for a permit; this equals an average of 1.7 operators submitting permit applications per year over the three years of the information collection. EPA estimates that no operators will perform monitoring in Year 1, three will monitor in Year 2, and 4 in Year 3 (see Exhibit 5-1). This equals an average of 2.3 monitoring responses annually.

### 6(d)(i) Total Burden and Costs

EPA estimates that the total annual respondent burden (i.e., to operators and primacy agencies) for the 3 years covered by this ICR is 15,481 hours. The total respondent burden over the ICR clearance period is estimate to be 46,442 hours. EPA estimates that the total cost to respondents is \$2.2 million per year. The total cost estimate associated with this ICR is \$7.3 million from 2012 through 2014. See Exhibit 6-3 for a summary of annual costs by respondent and response type and see Exhibit 6-4 for total burden and cost incurred by respondents.

Exhibit 6-3  
Summary of Annual Operator, Primacy Agency, and EPA Regional/Headquarters Burden and Cost Associated with Class VI Wells  
2012-2014

Response Type	Burden (Hours)	Labor Cost	Non-Labor Cost	Total Cost	Responses	Burden/Response	Cost/Response
<b>Operator Burden and Cost</b>							
Initial/Startup Requirements	3,190.8	\$ 232,501	\$ 1,254,467	\$ 1,498,160	36.7	87.0	\$ 40,859
Requirements Associated with Periodic AoR Reevaluations	0.0	\$ -	\$ -	\$ -	0.0	0.0	\$ -
Monitoring/Testing Requirements	1023.2	\$ 80,672	\$ 118,748	\$ 199,420	16.3	62.6	\$ 12,209
Reporting Requirements	163.3	\$ 11,816	\$ -	\$ 11,816	7.0	23.3	\$ 1,688
Recordkeeping Requirements	9.3	\$ 273	\$ -	\$ 273	2.3	4.0	\$ 117
Injection Well Plugging Requirements	0.0	\$ -	\$ -	\$ -	0.0	0.0	\$ -
Post-injection Site Care Requirements	0.0	\$ -	\$ -	\$ -	0.0	0.0	\$ -
<b>Total</b>	<b>4,386.7</b>	<b>\$ 325,262</b>	<b>\$ 1,373,215</b>	<b>\$ 1,709,669</b>	<b>62.3</b>	<b>70.4</b>	<b>\$ 27,428</b>
<b>Primacy Agency</b>							
Requirements Associated with Obtaining Primacy	10,746.7	\$ 453,141	\$ -	\$ 453,141	10.3	1040.0	\$ 43,852
Initial/Start-up Requirements	294.0	\$ 12,397	\$ -	\$ 12,397	13.2	22.3	\$ 939
AoR Reevaluation Requirements	0.0	\$ -	\$ -	\$ -	0.0	0.0	\$ -
Operator Reporting	52.1	\$ 2,196	\$ -	\$ 2,196	8.4	6.2	\$ 261
Recordkeeping Requirements	1.2	\$ 51	\$ -	\$ 51	1.2	1.0	\$ 42
Injection Well Plugging Requirements	0.0	\$ -	\$ -	\$ -	0.0	0.0	\$ -
Post-injection Site Care Requirements	0.0	\$ -	\$ -	\$ -	0.0	0.0	\$ -
<b>Total</b>	<b>11,093.9</b>	<b>\$ 467,785</b>	<b>\$ -</b>	<b>\$ 467,785</b>	<b>33.1</b>	<b>334.8</b>	<b>\$ 14,118</b>
<b>EPA Regional/Headquarters</b>							
<b>Regional</b>							
Review of Primacy Packages	516.7	\$ 25,271	\$ -	\$ 25,271	10.3	50.0	\$ 2,446
Initial/Start-up Requirements	114.3	\$ 5,592	\$ -	\$ 5,592	5.1	22.3	\$ 1,089
AoR Reevaluation Requirements	0.0	\$ -	\$ -	\$ -	0.0	0.0	\$ -
Operator Reporting	20.3	\$ 991	\$ -	\$ 991	3.3	6.2	\$ 303
Recordkeeping Requirements	0.5	\$ 23	\$ -	\$ 23	0.5	1.0	\$ 49
Injection Well Plugging Requirements	0.0	\$ -	\$ -	\$ -	0.0	0.0	\$ -
Post-injection Site Care Requirements	0.0	\$ -	\$ -	\$ -	0.0	0.0	\$ -
<b>Subtotal</b>	<b>651.7</b>	<b>\$ 31,877</b>	<b>\$ -</b>	<b>\$ 31,877</b>	<b>19.2</b>	<b>33.9</b>	<b>\$ 1,660</b>
<b>EPA Headquarters</b>							
Review of Primacy Packages	413.3	\$ 20,217	\$ -	\$ 20,217	10.3	40.0	\$ 1,956
Oversight and Technical Assistance	4160.0	\$ 203,474	\$ -	\$ 203,474	1.0	4160.0	\$ 203,474
<b>Subtotal</b>	<b>4573.3</b>	<b>\$ 223,691</b>	<b>\$ -</b>	<b>\$ 223,691</b>	<b>11.3</b>	<b>403.5</b>	<b>\$ 19,737</b>
<b>EPA Total</b>	<b>5225.1</b>	<b>\$ 255,568</b>	<b>\$ -</b>	<b>\$ 255,568</b>	<b>30.5</b>	<b>171.1</b>	<b>\$ 8,370</b>

Note: Detail may not add exactly due to independent rounding.

Exhibit 6-4  
Annual Burden and Cost Associated with Class VI Wells  
2012-2014

Respondent Type	Burden (hours)	Labor Cost	Non-Labor Cost	Total Cost	Responses	Burden/Response	Cost/Response
Operators	4,386.7	\$ 325,262	\$ 1,373,215	\$ 1,709,669	62.3	70.4	\$ 27,428
Primacy States	11,093.9	\$ 467,785	\$ -	\$ 467,785	33.1	334.8	\$ 14,118
<b>Respondent Total</b>	<b>15,480.6</b>	<b>\$ 793,047</b>	<b>\$ 1,373,215</b>	<b>\$ 2,177,453</b>	<b>95.5</b>	<b>162.2</b>	<b>\$ 13,428</b>
EPA Regional/Headquarters	5,225.1	\$ 255,568	\$ -	\$ 255,568	30.5	171.1	\$ 8,370
<b>Total</b>	<b>20,705.7</b>	<b>\$ 1,048,614</b>	<b>\$ 1,373,215</b>	<b>\$ 2,433,021</b>	<b>126.0</b>	<b>164.3</b>	<b>\$ 19,310</b>

Note: Detail may not add exactly due to independent rounding.

**6(e) Bottom Line Annual Burden Hours and Costs**

The bottom line burden hours and costs are presented in Exhibit 6-5.

Exhibit 6-5  
Bottom Line Annual Burden and Cost  
2012-2014

Number of Respondents	16.5 =	4 Operators + 12.5 Primacy Agencies
Total Annual Responses	95.5 =	62.3 Operator responses + 33.1 Primacy Agencies responses
Number of Responses per Respondent	5.8 =	95.5 Total annual responses from above ÷ 16.5 Total respondents from above
Total Respondent Hours	15,480.6 =	4386.7 Operator burden + 11093.9 Primacy Agency burden
Hours per Response	162.2 =	15,480.6 Total annual hours from above ÷ 95.5 Total responses from above
Annual Non-Labor Cost	\$ 1,373,215 =	\$1,373,215 Operator non-labor cost + \$0 Primacy Agency non-labor cost
Total Respondent Cost	\$2,177,453 =	1,709,669 Operator cost + 467,785 Primacy Agency cost
Total Hours (Respondents plus Agency)	20,705.7 =	15,480.6 Total respondent hours from above + 5,225.1 Total EPA hours
Total Cost (Respondents plus Agency)	\$2,600,915 =	\$2,177,453 Total respondent cost from above + \$255,568 Total EPA cost

Note: Detail may not add exactly due to independent rounding.

**6(e)(i) Variations in the Annual Bottom Line**

The burden and costs incurred by respondents to the CO<sub>2</sub> GS Regulation differ over each of the 3 years covered by this ICR. These variations are shown in Exhibit 6-6 below. The differences are due primarily to the fact that the five operators assumed to apply for Class VI permits during the three years will apply and begin operation in a staggered fashion. As described in Exhibit 5-1, three operators are assumed to apply for permits in the first year of the ICR period (2.2 in States with primacy and 0.8 in DI States). During the second year, those three operators are assumed to begin injection and monitoring, and an additional operator is assumed to apply for a permit (0.7 in primacy States and 0.3 in DI States). During the third year, four operators are assumed to be injecting and monitoring, and one additional operator (again, 0.7 in primacy States and 0.3 in DI States) will apply for a permit.

State and DI oversight burden during the ICR period will vary accordingly, as States and DI programs respond to permit applications by reviewing the applications and writing permits. In addition, as operators begin operational monitoring, States and DI programs will begin reviewing the monitoring data. Preparing primacy applications will account for the majority of primacy agency burden. This is a one-time burden to each State or Tribe that seeks primacy and, in subsequent ICRs, primacy agency burden is expected to decrease by approximately 90 percent as this activity is completed.

Exhibit 6-6  
Summary of Operators, Primacy Agency, and EPA Regional/Headquarters Burden and Cost Associated with this ICR  
2012-2014

	Year 1	Year 2	Year 3	Total	Annual Average
<b>Total (Owners/Operators, Primacy Agencies, and DI Programs/EPA Headquarters)</b>					
Burden (in hours)	21,934.2	18,293.7	18,435.2	62,117.0	20,705.7
Respondents	24.3	28.2	29.9	47.0	27.5
Responses	131.0	113.0	129.0	378.0	126.0
<b>Costs (\$)</b>	<b>\$ 3,412,795</b>	<b>\$ 2,428,168</b>	<b>\$ 2,702,335</b>	<b>\$ 7,299,064</b>	<b>\$ 2,433,021</b>
Labor (\$)	\$ 1,132,302	\$ 877,087	\$ 887,616	\$ 3,145,843	\$ 1,048,614
Non-Labor (\$)	\$ 2,280,493	\$ 1,551,081	\$ 1,814,719	\$ 4,119,644	\$ 1,373,215
<b>Burden per Response</b>	<b>167.4</b>	<b>161.9</b>	<b>142.9</b>	<b>164.3</b>	<b>164.3</b>
<b>Cost per Response</b>	<b>\$ 26,052</b>	<b>\$ 21,488</b>	<b>\$ 20,948</b>	<b>\$ 19,310</b>	<b>\$ 19,310</b>
<b>Burden per Respondent</b>	<b>901.4</b>	<b>648.4</b>	<b>615.9</b>	<b>1,321.6</b>	<b>753.1</b>
<b>Cost per Respondent</b>	<b>\$ 140,252</b>	<b>\$ 86,065</b>	<b>\$ 90,278</b>	<b>\$ 155,299</b>	<b>\$ 88,495</b>
<b>Operators/Owners</b>					
Burden (in hours)	5,359.5	2,118.0	2,228.5	13,160.0	4,386.7
Respondents	3.0	4.0	5.0	5.0	4.0
Responses	63.0	54.0	65.0	187.0	62.3
<b>Costs (\$)</b>	<b>\$ 2,678,179</b>	<b>\$ 1,711,130</b>	<b>\$ 1,983,931</b>	<b>\$ 5,129,006</b>	<b>\$ 1,709,669</b>
Labor (\$)	\$ 397,687	\$ 160,049	\$ 169,212	\$ 975,786	\$ 325,262
Non-Labor (\$)	\$ 2,280,493	\$ 1,551,081	\$ 1,814,719	\$ 4,119,644	\$ 1,373,215
<b>Avg. Burden per Response</b>	<b>85.1</b>	<b>39.2</b>	<b>34.3</b>	<b>70.4</b>	<b>70.4</b>
<b>Avg. Cost per Response</b>	<b>\$ 42,511</b>	<b>\$ 31,688</b>	<b>\$ 30,522</b>	<b>\$ 27,428</b>	<b>\$ 27,428</b>
<b>Avg. Burden per Respondent</b>	<b>1,786.5</b>	<b>529.5</b>	<b>445.7</b>	<b>2632</b>	<b>1096.7</b>
<b>Avg. Cost per Respondent</b>	<b>\$ 892,726</b>	<b>\$ 427,783</b>	<b>\$ 396,786</b>	<b>\$ 1,025,801</b>	<b>\$ 427,417</b>
<b>Primacy Agencies</b>					
Burden (in hours)	11,278.0	10,990.7	11,013.1	33,281.8	11,093.9
Respondents	10.3	13.2	13.9	31.0	12.5
Responses	36.3	29.8	33.4	99.4	33.1
<b>Costs (\$)</b>	<b>\$ 475,547</b>	<b>\$ 463,433</b>	<b>\$ 464,374</b>	<b>\$ 1,403,354</b>	<b>\$ 467,785</b>
Labor (\$)	\$ 475,547	\$ 463,433	\$ 464,374	\$ 1,403,354	\$ 467,785
Non-Labor (\$)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Burden per Response</b>	<b>311.1</b>	<b>369.1</b>	<b>330.0</b>	<b>1010.2</b>	<b>336.7</b>
<b>Cost per Response</b>	<b>\$ 13,117</b>	<b>\$ 15,565</b>	<b>\$ 13,915</b>	<b>\$ 42,597</b>	<b>\$ 14,199</b>
<b>Burden per Respondent</b>	<b>1,091.4</b>	<b>831.8</b>	<b>790.4</b>	<b>2,713.6</b>	<b>904.5</b>
<b>Cost per Respondent</b>	<b>\$ 46,021</b>	<b>\$ 35,073</b>	<b>\$ 33,328</b>	<b>\$ 114,422</b>	<b>\$ 38,141</b>
<b>DI Programs/EPA Headquarters</b>					
Burden (in hours)	5296.6	5184.9	5193.6	15675.2	5225.1
Respondents	11.0	11.0	11.0	11.0	11.0
Responses	31.7	29.2	30.6	91.6	30.5
<b>Costs (\$)</b>	<b>\$ 259,069</b>	<b>\$ 253,605</b>	<b>\$ 254,029</b>	<b>\$ 766,703</b>	<b>\$ 255,568</b>
Labor (\$)	\$ 259,069	\$ 253,605	\$ 254,029	\$ 766,703	\$ 255,568
Non-Labor Cost (\$)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Burden per Response</b>	<b>166.8</b>	<b>177.4</b>	<b>169.6</b>	<b>171.1</b>	<b>171.1</b>
<b>Cost per Response</b>	<b>\$ 8,161</b>	<b>\$ 8,677</b>	<b>\$ 8,294</b>	<b>\$ 8,370</b>	<b>\$ 8,370</b>
<b>Burden per Respondent</b>	<b>481.5</b>	<b>471.4</b>	<b>472.1</b>	<b>1425.0</b>	<b>475.0</b>
<b>Cost per Respondent</b>	<b>\$ 23,552</b>	<b>\$ 23,055</b>	<b>\$ 23,094</b>	<b>\$ 69,700</b>	<b>\$ 23,233</b>

Note: Numbers may not appear to add due to rounding.

## 6(f) Burden Statement

EPA estimates that, for the 3 years covered by this request, the total annual burden on CO<sub>2</sub> GS well owners/operators and Primacy Agencies associated with Class VI requirements will be 15,481 hours and the cost will be \$2.2 million per year.

The annual public reporting and recordkeeping burden for this collection of information is estimated to average 162 hours per response, as shown in Exhibit 6-4. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR chapter 15.

To comment on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, EPA has established a public docket for the proposed GS regulations under Docket ID No. EPA-HQ-OW-2008-0390, which is available for public viewing at the Water Docket in the EPA Docket Center (EPA/DC), EPA West, Room 3334, 1301 Constitution Ave., NW, Washington, DC. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Reading Room is (202) 566-1744, and the telephone number for the Water Docket is (202) 566-2426. An electronic version of the public docket is available at <http://www.regulations.gov>. This site can be used to submit or view public comments, access the index listing of the contents of the public docket, and to access those documents in the public docket that are available electronically. Once in the system, select "search," then key in the docket ID number identified above. Also, you can send comments to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17<sup>th</sup> Street, NW, Washington, DC 20503, Attention: Desk Office for EPA. Please include the EPA Docket ID No. (EPA-HQ-OW-2008-0390), and OMB control number (2040-NEW) in any correspondence.

## Appendix A: Detailed Explanation of the Derivation of Respondent Burden and Cost Estimates

Respondents for this information collection include operators of Class VI wells and State primacy agencies. This Appendix describes how EPA derived estimates of the respondent burden and cost associated with CO<sub>2</sub> GS Regulation paperwork requirements.

EPA derived the burden and cost estimates based largely on the Technology and Cost (T&C) document and the 2007 UIC Programmatic ICR. Wherever possible, burden and cost estimates in this ICR are based on the T&C document, (i.e., for all reporting items for which a cost was developed in the T&C document). The T&C document is considered to be a reliable source of burden and cost because it was developed specifically for the GS regulation and is based on recent research to support the GS regulatory development effort. Other costs are based on costs and burdens estimated for Class I non-hazardous and hazardous well operators in the 2007 UIC Program ICR. This is because EPA assumes that many of the activities performed by CO<sub>2</sub> GS well operators will be similar in nature to those performed by Class I non-hazardous well operators. In some cases, estimates were “scaled up” to reflect the larger scope of a GS site, e.g., larger AoRs for GS wells.

Table A-1 shows the steps EPA took to derive ICR burden and cost estimates from the T&C document and the 2007 programmatic ICR.

An example of a burden and cost derivation based on T&C document estimates is below. The example shows the steps which EPA took to estimate burden and cost associated with §146.82(2) of the GS Regulation, which calls for the submission of maps showing the injection well(s) for which the permit is sought and the applicable AoR, including: the number, or name and location of all injection wells, producing wells, plugged wells or dry holes, deep stratigraphic boreholes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, and other pertinent surface features in the AoR. It requires the submission of cross sections of the AoR and geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure. It also requires the submission of a list of surface features including structure intended for human occupancy and roads. CFR citations and descriptions of the regulation reporting requirements can be found in Columns A and B of Table A-1.

- To meet the requirements of §146.82(2) of the GS Regulation, EPA determined that, at a minimum, operators would have to conduct remote aerial surveys of land, land use, structures, etc. (T&C document, tracking number A-4, as shown in Column C of table A-1), at a cost of \$2,250 per site plus \$300 per square mile. For a large scale project injecting into a saline formation this activity totals \$8,250.
- EPA assumes that 50% of the cost associated with aerial surveys is attributable to customary business practices. Operators would conduct aerial survey in the absence of this ICR in order to gain knowledge of the surface characteristics and

possible exit points for CO<sub>2</sub> within the AoR. EPA estimates that 50% of the cost incurred by aerial surveys, or \$4,125, will be a direct result of this ICR.

[Customary business practice assumptions are discussed in more detail below.] In Table A-1, a description of the EPA's burden and cost manipulations can be found in Column D and cost calculations can be found in Column F.

- In addition to the \$4,125 cost derived from the T&C document, EPA assumes that the operator will have to invest 20 hours of technical labor to assemble the information gained from the surveys into a format acceptable to EPA to fulfill the information collection request. EPA's calculation of the technical burden can be found in Column E of Table A-1.

**Table A-1 Annual Operator Paperwork Burden and Cost Estimate Derivations**

CFR Citation	Description of Requirement	Source	Manipulations	Technical Burden Calculations (Unless otherwise noted) (1)	Non-labor Cost Calculations (1)
A	B	C	D	E	F
<b>Initial/Startup Requirements (Per Permit Application)</b>					
<b>Requirements associated with permit applications</b>					
§146.82(a)	Compile all geologic testing data and prepare and submit permit application.	Technology & Cost Document: Tracking Number C-5 (Adjusted)	Non-labor cost estimate from the Technology & Cost document, tracking number C-5, was divided among the labor categories using the distribution from the 2007 ICR.	Legal Burden: 25.0 hours Managerial Burden: 66.0 hours Technical Burden: 284.0 hours Clerical Burden: 199.0 hours	\$ -
§146.82(a)(1)	Gather and submit description of activities requiring a permit, facility name and address, SIC codes, ownership and facility status, facility location, listing of relevant permits or construction approvals, relevant maps and cross sections, construction specifics, description of the business, proposed injection, formation testing, and stimulation programs.	2007 Nonhazardous ICR estimate for 146.14(a)(1, 4-12) (estimate adjusted to account for larger scale of GS projects)	The technical burden estimate for 146.14(a)(1,4-12) from the 2007 UIC Nonhazardous ICR was increased by 122%.	9.0 hours*222%=20.0 hours	\$ -
§146.82(a)(2), §146.82(a)(4)(i) and §146.82(a)(4)(vi)	Prepare and submit map showing the injection well(s) for which a permit is sought and the applicable AoR, maps and cross sections of AoR, and geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure.	Technology & Cost Document: Tracking Number A-4 (Adjusted)	Non-labor cost estimate from the Technology & Cost document, tracking number A-4, was multiplied by non-customary business practices factor of 50% and the technical labor burden was set at 20 hours.	+20.0 hours	\$8,250*50%=\$4,125
§146.82(a)(4)(ii)	Identify location, orientation, and properties of known or suspected faults and fractures; determination whether they would not interfere with containment.	Technology & Cost Document: Tracking Number A-2	Estimate from Technology and Cost document, tracking number A-2, was multiplied by non-customary business practices factor of 50%.	0.0 hours	\$562,500*50%=\$281,250
§146.82(a)(4)(iii)	Obtain and analyze seismic (earthquake) history.	Technology & Cost Document: Tracking Number A-3	Estimate from Technology and Cost document, tracking number A-3, was multiplied by non-customary business practices factor of 50%.	60.0 hours*50%=30.0 hours	\$ -
§146.82(a)(4)(iv) and (a)(4)(v)	Obtain data on the depth, areal extent, thickness, mineralogy, porosity, permeability and capillary pressure of the injection zone and confining zone. Obtain geomechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone.	Technology & Cost Document: Tracking Numbers A-5, A-6, and A-7 (Adjusted)	Estimate from Technology and Cost document, tracking number A-5, was multiplied by a non-customary business practices factor of 50%, then increased by 2000% and summed with A-6, which was also multiplied by a non-customary business practices factor of 50%. The non-labor cost estimate from Technology and Cost document, tracking number A-7, was multiplied by a non-customary business practices factor of 50%.	24.0 hours*50%*2100% + 90*50%=297.0 hours	\$359,625*50%=\$179,813
§146.82(a)(5)	Prepare and submit a map and tabulation of all wells within the AoR.	Technology & Cost Document: Tracking Numbers A-11, A-12, A-13, and D-4	Technical labor burden estimates from the Technology and Cost document, tracking numbers A-11, A-12, and A-13, were summed and multiplied by a 50% non-customary business practices factor. The non-labor cost estimator from the same document for tracking number D-4 was used.	330.0 hours*50%=165.0 hours	\$8,313
§146.82(a)(6)	Prepare and submit maps/cross sections of local and regional geology, USDWs.	Technology & Cost Document: Tracking Numbers A-1 and A-8	Estimates from Technology and Cost document, tracking numbers A-1 and A-8, summed and multiplied by a non-customary business practices factor of 50%.	84.0 hours*50%=42.0 hours	\$ -
§146.82(a)(7)	Submit baseline geochemical data on subsurface formations and maps/cross sections of subsurface aquifers.	Technology & Cost Document: Tracking Numbers: A-9, A-10, B-1	Estimates from Technology and Cost document, tracking numbers A-9, A-10, and B-1, were multiplied by their corresponding non-customary business practices factors of 50%, 50% and 100%, respectively, then summed.	180.0 hours*50%=90.0 hours	(\$5,000*50%) + \$3,200=\$5,700
§146.82(a)(8)	Submit proposed operating data (e.g., anticipated maximum pressure and flow rate).	2007 Nonhazardous ICR estimate for 146.14(b)(3) (estimate adjusted to account for larger scale of GS projects)	The technical burden estimate for 146.14(b)(3) from the 2007 UIC Nonhazardous ICR was increased by 300%, the non-labor estimate was not used.	2.0 hours*400%=8.0 hours	\$ -
§146.82(a)(10)	Demonstrate compatibility of CO2 stream with well materials and fluids and minerals in the injection and confining zones.	2007 Nonhazardous ICR estimate for 146.14(b)(6)	The technical and managerial labor burden estimates for 146.14(b)(6) from the 2007 UIC Nonhazardous ICR were combined under technical burden, the estimate for non-labor cost was also used.	2.0 hours + 6.0 hours= 8.0 hours	\$6,400
§146.82(a)(11), §146.82(a)(12) & §146.82(a)(13)	Develop formation testing and stimulation programs and injection procedures and submit results of formation testing program.	2007 Nonhazardous ICR estimate for 146.14(a)(8-10) (estimate adjusted to account for larger scale of GS projects)	The entire non-labor cost estimate for 146.14(a)(8-10) from the 2007 UIC Nonhazardous ICR was used, the technical labor burden for the same compliance activity was increased by 186%.	7.0 hours*286%=20.0 hours	\$5,433

**Table A-1 Annual Operator Paperwork Burden and Cost Estimate Derivations**

CFR Citation	Description of Requirement	Source	Manipulations	Technical Burden Calculations (Unless otherwise noted) (1)	Non-labor Cost Calculations (1)
A	B	C	D	E	F
§146.82(a)(14) & §146.82(a)(15)	Prepare and submit descriptions of construction procedures and schematics.	2007 Nonhazardous ICR estimate for 146.14(a)(7,11,15)	The unadjusted non-labor cost and technical labor burden estimates for 146.14(a)(7,11,15) from the 2007 UIC Nonhazardous ICR were used.	8.0 hours	\$4,527
§146.82(a)(17)	Submit status of corrective action at wells in the AoR.	Technology & Cost Document: Tracking Number D-7 (adjusted)	The non-labor cost estimate from the Technology and Cost document, tracking number D-7, was used, 50 hours were added as technical labor burden.	+50 hours	\$202,000
§146.82(a)(18) & §146.82(a)(19)	Prepare and submit completion report.	2007 Nonhazardous ICR estimate for 146.14(b) (estimate adjusted to account for larger scale of GS projects)	The technical labor burden for 146.14(b) from the 2007 UIC Nonhazardous ICR was increased by 1233%.	1.5 hours*1333%=20.0 hours	\$ -
§146.82(a)(18)	Prepare and submit a report of deviation checks and other logs and tests during construction.	2007 Nonhazardous ICR estimate for 146.14(b)(1)	The unadjusted non-labor cost for 146.14(b)(1) from the 2007 UIC Nonhazardous ICR was used, the technical and clerical labor burden estimates were combined under technical burden .	6.0 hours +1.0 hour = 7.0 hours	\$27,768
§146.82(a)(19)	Demonstrate mechanical integrity prior to commencing injection.	Technology & Cost Document: Tracking Number F-1.	The unadjusted non-labor cost for 146.14(b)(2) from the 2007 UIC Nonhazardous ICR was used, the technical and managerial labor burden estimates were combined under technical burden.	2.0 hours + 3.5 hours = 5.5 hours	\$8,000
§146.82(a)(20) & §146.82(a)(22)	Prepare and submit well plugging plan, post-injection site care and site closure plan, and demonstration of financial responsibility.	Technology & Cost Document: Tracking Numbers H-1 and H-2 (Adjusted)	Estimates from Technology and Cost document, tracking numbers H-1 and H-2, were summed increased by 100%.	12.0 hours *200%=24.0 hours	\$ -
§146.82(a)(21)	Prepare and submit testing and monitoring plan.	2007 Nonhazardous ICR estimate for 146.14(a)(13) (estimate adjusted to account for larger scale of GS projects)	The entire non-labor cost estimate for 146.14(a)(13) from the 2007 UIC Nonhazardous ICR was used, the technical labor burden for the same compliance activity was increased by 1,233%.	3.0 hours*1333%=40.0 hours	\$ 3,562
§146.82(a)(24)	Prepare and submit emergency and remedial response plan.	2007 Nonhazardous ICR estimate for 146.14(a)(12)	The unadjusted technical labor burden estimate for 146.14(a)(12) from the 2007 UIC Nonhazardous ICR was used.	10.0 hours	\$ -
§146.84(c)(1)	Prepare and submit information on the calculated AoR.	2007 Hazardous ICR non-labor estimate for 146.70(b)(7), Technology & Cost Document B-18 burden estimate	The technical labor burden estimate from the Technology and Cost document, tracking number B-18, was used, as well as the non-labor cost estimate for 146.70(b)(7) from the 2007 UIC Nonhazardous ICR.	324.0 hours	\$2,415
§146.84(c)(2)	Prepare and submit AoR and corrective action plan.	Technology & Cost Document: Tracking Number D-5	Estimate from Technology and Cost document, tracking number D-5, was used.	84.0 hours	\$ -
<b>Requirements Associated with Periodic AoR Reevaluations</b>					
§146.84(b)(1)	Prepare and submit amended AoR and corrective action plan or demonstrate that no amendment to the plan is needed.	2007 Hazardous ICR non-labor estimate for 146.70(b)(7), Technology & Cost Document B-18 burden estimate	The technical labor burden estimate from the Technology and Cost document, tracking number B-18, was used, as well as the non-labor cost estimate for 146.70(b)(7) from the 2007 UIC Hazardous ICR.	324.0 hours	\$2,415
<b>Testing and Monitoring Requirements</b>					
§146.90(a)	Analyze the CO2 stream.	Technology & Cost Document: Tracking Number E-2.	Half of labor (6*0.5=3 hrs quarterly = 12 hrs/yr) is for injectate analysis + lab costs (assume 4 samples @ \$200/sample quarterly = \$3200 annually)	12.0 hours	\$3,200
§146.90(b)	Demonstrate internal mechanical integrity by monitoring injection pressure, flow rate and volume, and annulus pressure.(3)	Technology & Cost Document: Tracking Number E-5 and E-6.	Non-labor cost estimates from the Technology & Cost document, tracking number E-5 and E-6, was multiplied by non-customary business practices factor of 1%.	0.0 hours	\$4,020
§146.90(c)	Conduct corrosion monitoring. (3)	EPA estimate.	EPA estimated 2.5 hours of technical burden.	2.5 hours	\$ -
§146.90(d)	Monitor ground water quality.	Technology & Cost Document: Tracking Number B-12.		96	\$4,829
§146.90(e)	Demonstrate external mechanical integrity using tracer survey, noise/temperature logs or other approved tests.	Technology & Cost Document: Tracking Number F-3 and F-5.	Non-labor cost estimates from the Technology and Cost document, tracking numbers F-3 and F-5, were summed and multiplied by a non-customary business practices factor of 50% and 8 hours were used as a technical labor burden estimate.	+8.0 hours	\$41,000
§146.90(e)	Conduct casing inspection log at workover.	Technology & Cost Document: Tracking Number F-2.	The unadjusted non-labor cost and technical labor burden estimates for 146.68(d)(4) from the 2007 UIC Hazardous ICR were used.	2.0 hours	\$18,000
§146.90(f)	Conduct pressure fall-off test. (3)	Technology & Cost Document: Tracking Number F-7	Non-labor cost estimate from the Technology & Cost document, tracking number F-7, was multiplied by non-customary business practices factor of 50%.	0.0 hours	\$8,000*50%=\$4,000



**Table A-1 Annual Operator Paperwork Burden and Cost Estimate Derivations**

CFR Citation	Description of Requirement	Source	Manipulations	Technical Burden Calculations (Unless otherwise noted) (1)	Non-labor Cost Calculations (1)
A	B	C	D	E	F
§146.90(g)	Track CO <sub>2</sub> plume and pressure front.	Technology & Cost Document: Tracking Number B-18.	Non-labor cost estimate from the Technology & Cost document, tracking number B-17, was used and the technical labor burden estimate was 8 hours.	276.0 hours	\$0
§146.90(h)	Conduct surface air and soil gas monitoring, if directed.	Technology & Cost Document: Tracking Number B-15 (Adjusted)	The non-labor cost estimate from the Technology and Cost document, tracking number B-15, was multiplied by 25% to reflect only the cost of monitoring.	0.0 hours	\$7,500*25%=\$1,875
<b>Reporting Requirements</b>					
§146.91(a)	Report semi-annually on: physical, chemical, and other characteristics of injected fluids; injection pressure, flow rate, and volume; and monitoring of USDWs.	Technology & Cost Document: Tracking Number B-20 (Adjusted)	The technical labor burden estimate from Technology and Cost document, tracking number B-20, was used and 2 hours of clerical burden were added.	Technical Burden: 12.0 hours per report * 2 = 24.0 hours/yr. Technical burden: 22 hours Clerical Burden: 2.0 hours	\$ -
§146.91(b)(1)	Report on most recent MITs and other tests.	2007 Nonhazardous ICR estimate for 146.13(d) (estimate adjusted to account for larger scale of GS projects)	The technical burden estimate for 146.13(d) from the 2007 UIC Nonhazardous ICR was increased by 233%, and the clerical burden was decrease by 50%.	Technical Burden: 6.0 hours*333%=20.0 hours Clerical Burden: 4.0 hours*50%=2.0 hours	\$ -
§146.91(b)(2) & §146.91(b)(3)	Report results of: any required mechanical integrity tests, other required tests, and well workovers.	2007 Nonhazardous ICR estimate for 146.13(c)(2) (estimate adjusted to account for larger scale of GS projects)	The technical burden estimate for 146.13(c)(2) from the 2007 UIC Nonhazardous ICR was increased by 500% and the clerical burden was increased by 100%.	Technical Burden: 2.0 hours*600%=12.0 hours Clerical Burden: 1.0 hour*200%=2.0 hours	\$ -
§146.85(b)	Provide periodic adjustments/updates to financial cost estimates for financial responsibility.	EPA estimate.	EPA estimated 4.0 hours of managerial labor burden.	Managerial Burden: +4.0 hours	\$ -
<b>Recordkeeping Requirements</b>					
	Maintain monitoring information, calibration and maintenance records, required reports, application data, and monitoring results. Maintain all required plans.	2007 Nonhazardous ICR estimate for 144.51(j)(2)	The clerical burden estimate for 144.51(j)(2) from the 2007 UIC Nonhazardous ICR was used.	Clerical burden: 4.0 hours	\$ -
<b>Injection Well Plugging</b>					
§146.92(c)	Prepare and submit notice of intent to plug.	2007 Hazardous ICR estimate for 146.71(b)	The unadjusted managerial and clerical labor burden estimates for 146.71(b) from the 2007 UIC Hazardous ICR were used.	Managerial Burden: 0.5 hours Clerical Burden: 1.0 hours	\$ -
§146.92(d)	Prepare and submit plugging report.	Technology & Cost Document: Tracking Number G-1 and G-2	The non-labor cost estimates from the Technology and Cost document, tracking numbers G-1 and G-2, were summed and multiplied by a non-customary business practices factor of 1%. The technical labor burden was estimated to be 40.0 hours.	+40.0 hours	(\$5,400+\$96,000)*1%=\$1,014
<b>Post-Injection Site Care</b>					
§146.93(b)	Conduct post-injection monitoring and report to director on results.	Technology & Cost Document: Tracking Number G-9, G-10, G-11.	The technical labor estimate from Technology and Cost document, tracking number G-11 was used.	40.0 hours	\$ -
§146.93(b)(3)	Submit non-endangerment demonstration that CO <sub>2</sub> plume and pressure front have stabilized.	Technology & Cost Document: Tracking Numbers B-17 and B-18 2007 Hazardous ICR estimate for 146.70(b)(7) (Adjusted)	The technical labor burden estimate from the Technology and Cost document, tracking number B-18, 8 hours of technical labor burden were added for plume and pressure front tracking. The non-labor cost estimate was the sum of the non-labor cost estimate for 146.70(b)(7) from the 2007 UIC Hazardous ICR and the estimate from the Technology & Cost document, tracking number B-17.	276.0 hours + 8.0 hours = 284.0 hours	\$2,415 + \$187,500 = \$189,915
§146.93(e)	Submit site closure report.	EPA estimate.	EPA estimated 40.0 hours of technical labor burden.	+40.0 hours	\$ -

Notes:

- (1) Burden and cost associated with customary business practices have already been removed in estimates from the 2007 Programmatic ICR.
- (2) Numbers may not appear to add due to rounding.
- (3) Non-labor cost is total for 4 injection wells.
- (4) All non-labor cost is operating and maintenance (O&M) cost or contractor cost.

In the T&C document, EPA produced burden and cost estimates for injection in 3 types of geologic formations, including: saline formations, depleted gas fields, and depleted oil fields. Formation type affects the injection interval, the pore space, the reservoir storage capacity, the area of the site as well as other site characteristics which ultimately affects the cost of injection and monitoring. EPA also produced more refined estimates for each geologic formation based on the size of the injection project, either pilot scale or large scale; pilot scale projects are assumed to have one injection well, whereas large scale projects would have four wells.

EPA estimates that five GS projects will be deployed over the three years covered by this ICR. Of these, EPA estimates that four will be pilot projects injecting into saline formations with one injection well per site, the other will be a large scale project also injecting into saline formations with four injection wells. EPA used burden and cost estimates for a large scale project injecting into saline formations from the T&C document to generate the conservative estimates for this ICR. EPA predicts that saline formations have the largest capacity for CO<sub>2</sub> and that following the initial pilot projects more large scale projects will be launched.

Class VI operators will rely on contractors to assist them with most information collection activities, including initial/start-up activities (e.g., permit applications and pre-operational reports); testing and monitoring (e.g., ground water monitoring, pressure fall-off tests, and MITs); well plugging and post-injection reporting; and other paperwork activities. The operator burdens presented in Column A of Exhibit 6-1 largely reflect the time to provide contractor oversight and furnish information to contractors. The costs associated with contractor labor and other contractor services are presented in Column C, unit non-labor cost.

EPA assumes that some activities required of Class VI permit applicants are customary business practices. That is, they are necessary in order to site the well to allow a profitable business venture or to maintain their injection wells—which represent a substantial investment—in working order. The burden presented in this ICR is the incremental time and cost for presenting the information in a format acceptable to permitting authorities and for using EPA-approved tests. These estimates are based on consultations with operators and permit writers involved with Class I non-hazardous wells, as part of the UIC Program ICR development effort.

- Knowledge of subsurface geology is necessary to site a well and locate a subsurface zone suitable for injection. EPA assumes that 50 percent of the geological characterization required of permit applicants is customary business practice. Most of the incremental ICR burden is attributable to the requirement for submitting detailed maps of local geology.
- Operators would customarily develop and conduct formation testing and stimulation programs for the same reasons they would develop geological data. EPA estimates that 50 percent of the required program development and testing is customary business practice.
- Facility engineers would normally prepare construction schematics and operating data during the planning and design of an injection facility; EPA estimates that 75

percent of the burden associated with compiling this data is customary business practice.

- During construction, operators would probably conduct deviation checks and other logs to verify that drilling is progressing within expected parameters. EPA estimates that 50 percent of the requirement to conduct deviation checks and other logs and tests is customary business practice.
- Operators would routinely observe injection pressure, flow rate, volume, and temperature, and analyze the chemical composition of their injectate to verify the proper operation of their wells, EPA assumes that nearly all the burden for continuous monitoring and 75 percent of the burden to perform chemical analyses of their injectate is customary business practice.