
Regulatory Impact Analysis for the Final Revisions to the Oil Pollution Prevention Regulations (40 CFR PART 112)



**U. S. Environmental Protection Agency
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1 Executive Summary

The Oil Pollution Prevention regulation, at 40 CFR part 112, outlines requirements for prevention of, preparedness for, and response to oil spills. The portion of the regulation that deals with prevention measures is known as the Spill Prevention, Control, and Countermeasure (SPCC) rule. The U.S. Environmental Protection Agency (EPA or the Agency) is streamlining the rule for owners and operators of certain facilities, providing a more cost-effective approach for meeting EPA's statutory requirements. Following is a summary of the key amendments to the rule:

- *Facilities that store 10,000 gallons or less of oil and meet other qualifying criteria.* EPA is providing streamlined requirements for owners and operators of facilities that meet a set of specified qualifying criteria. Owners and operators of qualified facilities have the option to self-certify that their SPCC Plan complies with 40 CFR part 112, in lieu of having a Professional Engineer (PE) review and certify their Plan. This option is available to the owners and operators of those facilities that (1) have had no single discharge as described in §112.1(b) greater than 1,000 gallons and no two discharges as described in §112.1(b) each greater than 42 gallons within any 12-month period during three years prior to the SPCC Plan self-certification date, or since becoming subject to SPCC requirements if the facility has been in operation for less than three years; and (2) have 10,000 gallons or less in aggregate aboveground oil storage capacity. Owners and operators of qualified facilities choosing this option may deviate from requirements of the SPCC rule as provided under §112.7(a)(2) and make impracticability determinations as described under §112.7(d) only if these portions of the Plan are certified by a licensed PE.
- *Facilities with certain types of oil-filled operational equipment.* EPA is providing owners and operators of facilities with certain types of oil-filled operational equipment the option of preparing an oil spill contingency plan and a written commitment of manpower, equipment, and materials in lieu of providing secondary containment for qualified oil-filled operational equipment, without making an individual impracticability determination as required in §112.7(d). Owners or operators who pursue this alternative are required to establish and document an inspection or monitoring program for this qualified oil-filled operational equipment to detect equipment failure and/or a discharge, in lieu of providing secondary containment. An owner or operator cannot pursue the option if that facility has had a single discharge as described in §112.1(b) from any oil-filled operational equipment exceeding 1,000 U.S. gallons or no two discharges as described in §112.1(b) from any oil-filled operational equipment each exceeding 42 U.S. gallons within any twelve month period in the three years prior to the SPCC Plan certification date, or since becoming subject to 40 CFR part 112 if the facility has been in operation for less than three years.
- *Facilities with motive power containers.* EPA is providing an exemption for "motive power" containers, which are defined as any onboard bulk storage container used primarily to power the movement of a motor vehicle, or ancillary onboard oil-filled

operational equipment. An onboard bulk storage container which is used to store or transfer oil for further distribution is not considered a motive power container. The definition of motive power container does not include oil drilling or workover equipment, including rigs.

- *Facilities with mobile refuelers.* EPA is exempting mobile refuelers from the specifically sized bulk storage secondary containment requirements of §§112.8(c)(2) and (11). Mobile refuelers are vehicles with an onboard bulk storage container designed or used solely to store and transport fuel for transfer into or from aircraft, motor vehicle, locomotive, vessel, ground service equipment, or other oil storage container. This relief was proposed only for mobile refuelers at airports, but is granted in the final rule to similar mobile refuelers in other industry sectors including mining sites, chemical complexes, construction sites, seaport terminals, and tank truck home base operations. The general secondary containment requirements of §112.7(c) still apply to the onboard bulk storage containers on mobile refuelers and to the transfers associated with this equipment.

In addition, the Agency is removing and reserving certain SPCC requirements for animal fats and vegetable oils; and is instituting a separate extension of the compliance dates for owners and operators of farms. The purpose of this rulemaking is to provide streamlined, alternative methods for compliance with oil spill prevention requirements for the entities described above.

1.1 Baseline for the Analysis

EPA compared the compliance costs for owners and operators of facilities affected by the 2006 amendments to the costs under the SPCC rule as amended in 2002 (67 FR 47042). As such, the 2002 rule serves as the baseline for the analysis. EPA has not made any assumptions about current compliance with those requirements, but is treating the costs of compliance with the 2002 rule as liabilities owners and operators of existing regulated entities currently have – whether or not they have actually made the capital expenditures to comply. In this analytical construct, owners and operators of these firms are simply delaying the expenditures for the costs they already face.

1.2 Compliance Cost Savings

Exhibit 1-1 summarizes the estimated annualized compliance cost savings resulting from the SPCC amendments using 3 and 7 percent discount rates. The revisions to the SPCC rule are expected to yield annualized cost savings of roughly \$38 million for owners and operators of qualified facilities, \$53 million for owners and operators of facilities with qualified oil-filled equipment (under the 50 percent scenario), \$1 million for owners and operators of facilities with motive power containers (under the 10 percent scenario), and \$34 million for owners and operators of facilities with mobile refuelers (under the 50 percent scenario).

Exhibit 1-1
Summary of Estimated Cost Savings Associated with
the 2006 Final Rule Amendments (\$2005 Millions)

Rule Component/Scenario¹	Annualized Cost Savings (3%)	Annualized Cost Savings (7%)
Qualified Facilities	\$37.9	\$37.7
Qualified OFE		
25%	\$39.0	\$38.7
50%	\$53.1	\$52.8
75%	\$67.2	\$66.8
Motive Power		
10%	\$1.07	\$1.07
25%	\$2.69	\$2.68
50%	\$5.37	\$5.35
Mobile Refuelers		
25%	\$17.2	\$17.1
50%	\$34.4	\$34.2
75%	\$51.6	\$51.3

¹ Estimated savings are presented for final rule components and scenarios as discussed in this report.

EPA derived these savings by estimating the number of facilities affected by each provision in the final rule; identifying the specific behavioral changes (e.g., choosing to self-certify an SPCC Plan rather than using a licensed PE) that may occur; estimating the unit costs of compliance measures under the baseline and regulatory scenarios; and applying the change in unit costs to the projected number of affected facilities. Total costs were annualized over a 10-year period using both 3 and 7 percent discount rates. The main steps in the analysis are summarized below:

- *Estimate the universe of facilities affected by the final rule.* EPA first developed a baseline universe of existing SPCC-regulated facilities by industry sector. Next, EPA classified facilities into capacity categories to (1) account for differences in the potential compliance costs experienced by owners and operators of facilities of different sizes; and (2) determine the number of facilities affected by each of the changes in the SPCC rule based on a facility's storage capacity. Exhibit 1-2 summarizes the 2005 estimated number of existing SPCC-regulated facilities by size category. EPA then projected the anticipated annual change in the number of affected facilities over the analysis period using industry-specific growth rates.

Exhibit 1-2
Estimated Number of Existing SPCC-Regulated Facilities by Size Category in 2005

Size Category	Aggregate Capacity	Estimated Number of Facilities
I	1,320 to 10,000 gallons	317,000
II	10,001 to 42,000 gallons	187,000
III	42,001 to 1 million gallons	63,700
IV	Greater than 1 million gallons	3,370
Total		571,000

For each of the four major components of the final rule, EPA estimated the number of facilities that may be affected by the changes in the rule. These entities include facilities with relatively smaller volumes of oil storage; facilities with certain types of oil-filled operational equipment; facilities with motive power containers; and facilities with mobile refuelers.

- *Estimate changes in compliance cost elements resulting from the final rule.* EPA developed unit cost estimates for specific 2002 baseline requirements expected to be affected by the final rule. EPA also developed unit costs for compliance elements introduced by the 2006 final rule, such as the cost of preparing a contingency plan instead of providing secondary containment for qualified oil-filled operational equipment. EPA did not analyze cost savings associated with non-substantive changes to requirements for facilities that handle, store, or transport fats and vegetable oils or the extension of the compliance dates for owners and operators of farms.
- *Estimate total reduction in compliance costs to owners and operators of potentially affected facilities.* EPA derived the change in compliance costs for owners and operators of each type of affected facilities and multiplied these cost savings by the total number of facilities whose owners and operators are expected to take advantage of a given regulatory relief option. Total compliance cost savings were annualized over a ten-year period, 2008 through 2017, using 3 and 7 percent discount rates.

EPA projected the reduction in compliance costs associated with the amendment for owners and operators of an estimated 345,000 qualified facilities eligible for the self-certification option. Specifically EPA estimated that compliance costs for owners and operators of qualified facilities with 10,000 gallons or less of oil storage capacity would decrease by approximately \$38 million based on the offered relief by not requiring PE certification of the SPCC Plans.

Approximately 2,110 new electric utility facilities are expected to become regulated each year and their owners and operators may take advantage of the exemption for qualified oil-filled operational equipment. When estimating compliance cost savings, in addition to electric utilities, EPA also considered facilities using oil-filled operational equipment from other sectors. Under a scenario where owners and operators of 50 percent of the facilities in other industries identified as having oil-filled operational equipment would take advantage of the exemption, EPA estimated that the final rule could reduce compliance costs by as much as \$53 million. Under scenarios where owners and operators of 25 and 75 percent of the facilities in these

industries would take advantage of the provision, compliance costs would decrease by approximately \$39 million or \$67 million, respectively.

EPA projected that the final rule amendment defining and exempting motive power containers would reduce compliance costs by approximately \$1 million annually, assuming that owners and operators of 10 percent of the facilities in industries identified as having motive power oil storage will take advantage of the exemption. Under the 25 and 50 percent scenarios, compliance costs would decrease by approximately \$3 million or \$5 million, respectively.

EPA projected that owners and operators of all airports and a fraction of non-aviation industries identified as having mobile refuelers might take advantage of the exemption from the specifically sized secondary containment requirements for bulk storage containers. Under three scenarios, for all airports plus 25-, 50-, or 75-percent of non-aviation industries identified as having mobile refuelers, EPA estimated that the final rule would reduce compliance costs by approximately \$17 million, \$34 million, or \$51 million, respectively.

1.3 Impacts on Human Health, Welfare, and the Environment

The main benefit of the final rule is the reductions in compliance costs due to streamlined requirements. The Agency also considered whether the less-stringent options provided by the amendments might increase the risk of discharges, with adverse consequences for the environment, human health, and welfare. For example, owners and operators of qualified oil-filled operational equipment that implement a contingency plan instead of providing secondary containment measures could see an increase in the risk of discharges. Nevertheless, EPA has heard anecdotal evidence of non-compliance with current SPCC regulations due at least in part to the costs of compliance. To the extent that this is true, reducing the costs of complying with SPCC requirements may induce owners and operators of some previously non-compliant facilities to implement oil pollution prevention measures – thereby reducing risk of discharge.

EPA has designed the final rule to minimize increases in environmental risk. For example, regulatory relief for owners and operators of qualified facilities focuses on facilities that store relatively small amounts of oil and demonstrate they have had no discharge greater than 1,000 gallons or no two discharges greater than 42 gallons in a 12-month period during the past three years. Furthermore, EPA allows owners and operators of qualified facilities the option of avoiding PE certification, but maintains that any decision to apply environmental equivalence or pursue an impracticability claim still requires PE certification.

EPA also considered the distributional impacts of the final rule. For example, the cost savings from reduced plan certification requirements have the side effect of reducing the quantity of engineering services demanded. The net impact on comprehensive measures of social welfare has not been estimated. EPA did not quantify but acknowledges that clustering of SPCC-regulated facilities exists (e.g., oil production facilities in the Gulf of Mexico coastal states). As a result of clustering, national estimates of the impacts of the amended rule on owners and operators of regulated facilities may miss spatially disproportional effects. The

amendments are also likely to provide relatively greater relief to small businesses to the extent that these businesses are eligible for reduced regulatory requirements for qualified facilities, facilities with qualified oil-filled operational equipment, facilities with motive power containers, and facilities with mobile refuelers. For the purposes of the regulatory impact analysis (RIA), EPA evaluated facilities on the basis of their oil storage capacity, not on the employment or annual revenue figures that the U.S. Small Business Administration (SBA) uses to define small businesses. Nevertheless, EPA expects that amendments resulting in reduced burden for facilities that store 10,000 gallons or less will likely also benefit small businesses.

1.4 Limitations and Key Assumptions

One of the main limitations of this regulatory analysis is EPA's lack of data on facilities regulated under the SPCC rule. The rule does not include a notification requirement and, with certain exceptions, regulated entities do not need to submit any information to EPA. Without conducting a statistically valid survey, EPA is limited to data already collected by state or federal agencies or by proprietary sources to estimate how many SPCC-regulated facilities of different sizes with different types of equipment and oil storage and utilization techniques exist. Furthermore, given a wide range of industries and facility sizes affected by the SPCC rule – as well as geographical and climatic conditions that affect facility's configuration and operation patterns – a realistic baseline against which regulatory changes are measured cannot be reliably determined.

Another major limitation concerns many of the cost estimates used in the analysis, which are based on interviews with a limited number of PEs. The data provided by these PEs represent anecdotal information and are not statistically valid, so they cannot be reliably extrapolated to a larger universe. Additionally, the estimates presented in this report are based on currently available technologies. The figures do not capture possible cost savings from implementing new future technologies or the reduction in costs due to greater market penetration of existing technologies. Because the final SPCC rule allows owners and operators of facilities to choose alternative requirements that primarily involve paperwork-related activities over capital-intensive compliance measures (e.g., providing secondary containment), the nature of evolving technology could affect the estimated cost savings. For example, if new technologies were to lower the cost of capital-intensive compliance measures, the cost savings attributed to the final rule amendments would decrease. Furthermore, EPA acknowledges other limitations in the analysis, such as a lack of usable data on changes in oil spill risk and lack of information on SPCC compliance.

EPA made three key assumptions in the analysis. First, the Agency assumed cost minimization behavior applied to all owners and operators of facilities that qualify for reduced regulatory requirements, whereby all those affected would seek burden relief. Second, EPA assumed that owners and operators of existing SPCC-regulated facilities would forgo compliance activities offered as alternatives to activities that required capital investments because they would have already incurred a one-time cost. For example, a facility owner or operator, who had secondary containment for qualified oil-filled operational equipment in place, would not take advantage of the provided alternative to prepare a contingency plan instead.

Third, EPA assumed compliance was nationally consistent despite variability in state regulations, political climate, and the distribution of affected facilities.

1.5 Requirements of Executive Order 12866

Under Executive Order 12866 (58 FR 51735, October 4, 1993), EPA must determine whether a regulatory action is “significant” and therefore subject to Office of Management and Budget (OMB) review and the requirements of the Executive Order. The order defines “significant regulatory action” as one that is likely to result in a rule that may:

- (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities;
- (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- (4) Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in the Executive Order.

The 2006 final rule is expected to have an annual effect on the economy of \$100 million or more and, therefore, is considered economically significant. For such rules, the Executive Order requires an “assessment of the potential costs and benefits of the regulatory action, including an explanation of the manner in which the regulatory action is consistent with a statutory mandate and, to the extent permitted by law, promotes the President’s priorities and avoids undue interference with state, local, and tribal governments in the exercise of their governmental functions.” In addition, the Agency must also provide the following:

- An assessment, including the underlying analysis, of benefits anticipated from the regulatory action (such as, but not limited to, the promotion of the efficient functioning of the economy and private markets, the enhancement of health and safety, the protection of the natural environment, and the elimination or reduction of discrimination or bias) together with, to the extent feasible, a quantification of those benefits.
- An assessment, including the underlying analysis, of costs anticipated from the regulatory action (such as, but not limited to, the direct cost both to the government in administering the regulation and to businesses and others in complying with the regulation, and any adverse effects on the efficient functioning of the economy, private markets (including productivity, employment, and competitiveness), health, safety, and the natural environment), together with, to the extent feasible, a quantification of those costs.
- An assessment, including the underlying analysis, of costs and benefits of potentially effective and reasonably feasible alternatives to the planned regulation, identified by the

agencies or the public (including improving the current regulation and reasonably viable nonregulatory actions), and an explanation why the planned regulatory action is preferable to the identified potential alternatives.

EPA performed a regulatory impact analysis in accordance with Executive Order 12866 (and OMB Circular A-4) requirements to the fullest extent possible; however, the study is not a comprehensive analysis of social benefits and costs. EPA estimated compliance cost savings as a surrogate for social benefits. Many of the assumptions presented throughout this regulatory analysis are inherently uncertain, as are many of the estimates of unit cost savings and the number of affected facilities. EPA made the best use of the available data to make informed decisions regarding assumptions used. To address major uncertainties involved in estimating the total cost savings from the final SPCC rule, the Agency examined up to three scenarios for various components of the final rule to provide a sensitivity approach to estimating the range of cost savings.

Data limitations prevented the analysis from complying with the "good practices" outlined in OMB Circular A-4 guidance for regulatory analyses of social benefits and costs. However, EPA believes the analytical technique and results generated are useful, informative, and based on the best available information given the time and resource constraints associated with the final rulemaking schedule.

2 Introduction

The Environmental Protection Agency (EPA or the Agency) is amending the Spill Prevention, Control, and Countermeasure (SPCC) Plan requirements of the Oil Pollution Prevention regulation at 40 CFR part 112. This amendment is intended to reduce the regulatory burden for owners and operators of certain facilities.

- It provides an option to allow owners or operators of facilities that store 10,000 gallons or less of oil, and meet other qualifying criteria, to self-certify their SPCC Plans, in lieu of review and certification by a Professional Engineer (PE).
- It allows owners or operators to prepare an oil spill contingency plan as an alternative to secondary containment, without requiring a determination of impracticability, for facilities that have certain types of oil-filled operational equipment and meet other qualifying criteria.
- It defines and provides an exemption for motive power containers.
- It exempts mobile refuelers from the specifically sized secondary containment requirements for bulk storage containers.

In addition, the Agency is removing and reserving certain SPCC requirements for animal fats and vegetable oils; and is instituting a separate extension of the compliance dates for owners and operators of farms. The purpose of this rulemaking is to provide streamlined, alternative methods for compliance with oil spill prevention requirements for the entities described above.

The measures under this action relieve owners and operators of affected facilities of regulatory mandates and could change the manner in which they comply with remaining mandates. Under the terms of Executive Order 12866 (58 FR 51735, October 4, 1993), EPA must determine whether a regulatory action is “significant” and therefore subject to Office of Management and Budget (OMB) review and the requirements of the Executive Order. Under the terms of Executive Order 12866, this action has been judged a “significant regulatory action” because it will have an annual effect on the economy of \$100 million or more. The order defines “significant regulatory action” as one that is likely to result in a rule that may do one or more of the following:

- (1) Have an annual effect on the economy of \$100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities.
- (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency.
- (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof.
- (4) Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in the Executive Order.

Once an action is deemed subject to Executive Order 12866, agencies are required to assess all costs and benefits of regulatory activities, including quantitative and qualitative measures. The Executive Order also requires assessment of social benefits and costs, including but not limited to those related to the environment, public health and safety, distributive impacts, and issues of equity. This action was submitted to OMB for review, and the Agency prepared this regulatory analysis in support of the regulatory requirements.

The regulatory impact analysis (RIA) in this report provides an estimate of reduced compliance costs for owners and operators of certain types of facilities and equipment. However, because EPA has designed the final rule to minimize increases in environmental risk, the frequency of oil spills is not expected to increase. While this analysis provides an assessment of projected impact on human health, welfare, and the environment, as well as estimated costs of compliance, this report is not a full accounting of all social costs and benefits as required by Executive Order 12866.

Limitations of the analysis are described in Chapter 12. Many of the assumptions underlying this analysis are inherently uncertain, as are the estimates of unit cost savings and the number of affected facilities. While this report does not fully comply with Office of Management and Budget Circular A-4, "Regulatory Analysis", EPA made the best use of the available data to make informed decisions regarding assumptions and estimates used in the analysis.

The remainder of Chapter 2 provides background information on the Oil Pollution Prevention regulation, identifies the statutory authority for the regulation, summarizes the regulatory changes, and describes the organization of this report.

2.1 Statutory Authority

Section 311(j)(1)(C) of the CWA authorizes the President to issue regulations establishing procedures, methods, equipment, and other requirements to prevent discharges of oil from vessels and facilities and to contain such discharges.¹ With section 2(b)(1) of Executive Order 12777, the President delegated to EPA the authority to regulate non-transportation-related onshore facilities under section 311(j)(1)(C) of the Act.² The President also delegated authority over transportation-related onshore facilities, deepwater ports, and vessels to the U.S. Department of Transportation (DOT), and authority over other offshore facilities, including associated pipelines, to the U.S. Department of the Interior (DOI). A Memorandum of Understanding (MOU) between the Secretary of Transportation and the EPA Administrator, dated November 24, 1971 (36 FR 24080), established the definitions of non-transportation-related facilities and transportation-related facilities. A subsequent MOU, dated November 8, 1993 (published as Appendix B to 40 CFR part 112), among EPA, DOT, and DOI, reallocated to

¹ 33 U.S.C. 1321(j)(1)(C).

² 56 FR 54757 (October 22, 1991), superseding Executive Orders 11735, 38 FR 21243 (August 7, 1973) and 11548, 35 FR 11677 (July 20, 1970).

EPA the responsibility for non-transportation-related offshore facilities located landward of the coastline.

2.2 Regulatory Background

The Oil Pollution Prevention regulation, at 40 CFR part 112, outlines requirements for prevention of, preparedness for, and response to oil spills. The changes to the rule affect requirements related to prevention that are collectively known as the Spill Prevention, Control, and Countermeasure (SPCC) regulation. The SPCC regulation was originally promulgated on December 11, 1973, at 38 FR 34164, under the authority of section 311(j)(1)(C) of the Clean Water Act (CWA or the Act). The SPCC regulation establishes procedures, methods, equipment, and other requirements to prevent the discharge of oil from non-transportation-related onshore and offshore facilities with aboveground oil storage capacity greater than 1,320 gallons, or with completely buried underground oil storage capacity greater than 42,000 gallons. Regulated facilities are also limited to those that, because of their location, could reasonably be expected to discharge oil into the navigable waters of the United States or adjoining shorelines.

An amendment to the rule finalized in 2002 included changes such as exempting certain completely buried underground tanks and wastewater treatment facilities, and establishing a single 1,320-gallon aboveground storage capacity threshold. The changes to the rule also eliminated the provision that required an owner or operator of a facility having an aboveground tank greater than 660 gallons to prepare an SPCC Plan. Since then, on several occasions, EPA extended the compliance deadlines to provide additional time for the regulated community to prepare and implement SPCC Plans, and to alleviate the need for individual extension requests.

2.3 Statement of Need for Regulatory Action

EPA has identified opportunities to improve the efficiency of the SPCC regulatory program. To that end, the Agency proposed a series of revisions to the rule in 2005 (70 FR 73524), and received comments on these revisions from regulated parties, professional associations, environmental interest groups, and others. EPA reviewed these comments and evaluated new data about the operations of various industries regulated under the rule, and determined that amending the rule will provide an effective approach to meeting statutory requirements. For example, allowing owners and operators of facilities with low volumes of oil storage to self-certify their SPCC Plans may remove potential barriers to compliance at those facilities. To the extent that compliance with oil discharge prevention requirements increases or stays the same, EPA can achieve similar environmental benefits at lower overall costs. This regulatory action is within the statutory authorities described above, and will reduce the burden of the rule without creating adverse impact on public health or the environment. This action is therefore preferable to no action.

2.4 Amendments to the Rule

EPA is promulgating the following amendments to the SPCC rule requirements, found at 40 CFR part 112, to reduce the regulatory burden:

- *Qualified Facilities.* EPA is providing streamlined requirements for owners and operators of facilities that meet a set of specified qualifying criteria. Owners and operators of qualified facilities have the option to self-certify that their SPCC Plan complies with 40 CFR part 112, in lieu of having a PE review and certify their Plan. An SPCC-regulated facility must meet the following criteria to qualify for this reduced burden option: (1) total facility oil storage capacity of 10,000 gallons or less; and (2) have had no single discharge as described in §112.1(b) greater than 1,000 gallons, and no two discharges as described in §112.1(b) each greater than 42 gallons within any 12-month period in the three years prior to the SPCC Plan self-certification date, or since becoming subject to 40 CFR part 112 if the facility has been in operation for less than three years. Owners and operators of qualified facilities choosing this option may deviate from requirement of the SPCC rule as provided under §112.7(a)(2), and make impracticability determinations as described under §112.7(d), only if these portions of the Plan are certified by a licensed PE.
- *Facilities with Qualified Oil-filled Operational Equipment.* EPA is providing owners and operators of facilities with certain types of oil-filled operational equipment the option of preparing an oil spill contingency plan and a written commitment of manpower, equipment, and materials, in lieu of providing secondary containment for qualified oil-filled operational equipment, without making an individual impracticability determination as required in §112.7(d). EPA is adding §112.7(k)(1) to define the eligibility criterion that oil-filled operational equipment must meet in order to be considered qualified. This criterion specifically prohibits an owner or operator from pursuing the option if the facility has had a single discharge as described in §112.1(b) from any oil-filled operational equipment exceeding 1,000 U.S. gallons or no two discharges as described in §112.1(b) from any oil-filled operational equipment each exceeding 42 U.S. gallons within any twelve month period in the three years prior to the SPCC Plan certification date, or since becoming subject to 40 CFR part 112 if the facility has been in operation for less than three years.
- *Facilities with Certain Types of Motive Power Containers.* EPA is providing an exemption for “motive power” containers, which are defined as any onboard bulk storage containers used primarily to power the movement of a motor vehicle, or ancillary onboard oil-filled operational equipment. An onboard bulk storage container which is used to store or transfer oil for further distribution is not considered a motive power container. The definition of motive power container does not include oil drilling or workover equipment, including rigs. The transfer of fuel or other oil into a motive power container at an otherwise regulated facility is not eligible for this exemption.
- *Mobile Refuelers.* EPA is exempting mobile refuelers from the specifically sized bulk storage secondary containment requirements of §§112.8(c)(2) and (11). Mobile refuelers are vehicles with an onboard bulk storage container designed or used solely to store fuel or to transport it for transfer into or from aircraft, motor vehicle, locomotive,

vessel, ground service equipment or other oil storage container. This relief was proposed only for mobile refuelers at airports, but is granted in the final rule to similar mobile refuelers in other industry sectors, including mining sites, chemical complexes, construction sites, seaport terminals, and tank truck home base operations. The general secondary containment requirements of §112.7(c) still apply to the onboard bulk storage containers on mobile refuelers and to the transfers associated with this equipment.

- *Facilities that Handle, Store, or Transport Animal Fats and Vegetable Oils (AFVO).* EPA is removing and reserving certain provisions related to AFVO facilities because these provisions do not apply. These provisions were included in the July 2002 revisions to the SPCC rule because the Agency had not proposed separate SPCC requirements for animal fats and vegetable oils for public notice and comment. As a result, the requirements for petroleum oils were applied to animal fats and vegetable oils.
- *Farms.* Additionally, EPA is extending the compliance dates for owners and operators of all farms while the Agency considers a definition for the term “farm,” and whether this sector warrants differentiated requirements under the SPCC rule.

2.5 Organization of this Report

This regulatory analysis quantifies changes in compliance costs for owners and operators of affected facilities. The analysis also examines the impact of the rule amendments on small businesses and oil discharge risk. The remainder of this report is organized as follows:

- Chapter 3 presents the methodology used by EPA to estimate changes in unit compliance costs for the regulatory actions.
- Chapter 4 describes the SPCC-regulated universe.
- Chapter 5 discusses the estimated changes in unit compliance costs as a result of the rule amendments.
- Chapter 6 analyzes the impacts of the regulatory changes on qualified facilities.
- Chapter 7 analyzes the impacts of the regulatory changes on facilities with qualified oil-filled operational equipment.
- Chapter 8 analyzes the impacts of the regulatory changes on facilities with motive power containers.
- Chapter 9 analyzes the impacts of the regulatory changes on facilities with mobile refuelers.
- Chapter 10 describes the projected impacts of the rule amendments on human health, welfare, and the environment.
- Chapter 11 presents a summary of the impacts of the final rule on small businesses.
- Chapter 12 discusses key limitations of the analysis.
- Chapter 13 presents conclusions of the analysis.
- Appendix A describes the data sources used to estimate the universe of SPCC-regulated facilities.
- Appendix B outlines the approach used to determine industry categories for SPCC-regulated facilities based on the Dun & Bradstreet database.

- Appendix C outlines the approach used to estimate the SPCC universe.
- Appendix D describes the derivation of industry-specific growth rates.
- Appendix E includes a comparison of the estimated compliance cost savings of the 2006 final rule with those estimated for the 2005 proposed rule.
- Appendix F presents an alternative impact analysis assuming a 50-percent compliance rate.

3 Methodology

This chapter presents the overall methodology used to estimate the economic effects of the SPCC final rule. Section 3.1 outlines the major steps of the analysis, and Section 3.2 describes the regulatory and economic baseline for the analysis. Subsequent chapters provide greater detail on specific steps and calculations, including relevant equations.

3.1 General Approach

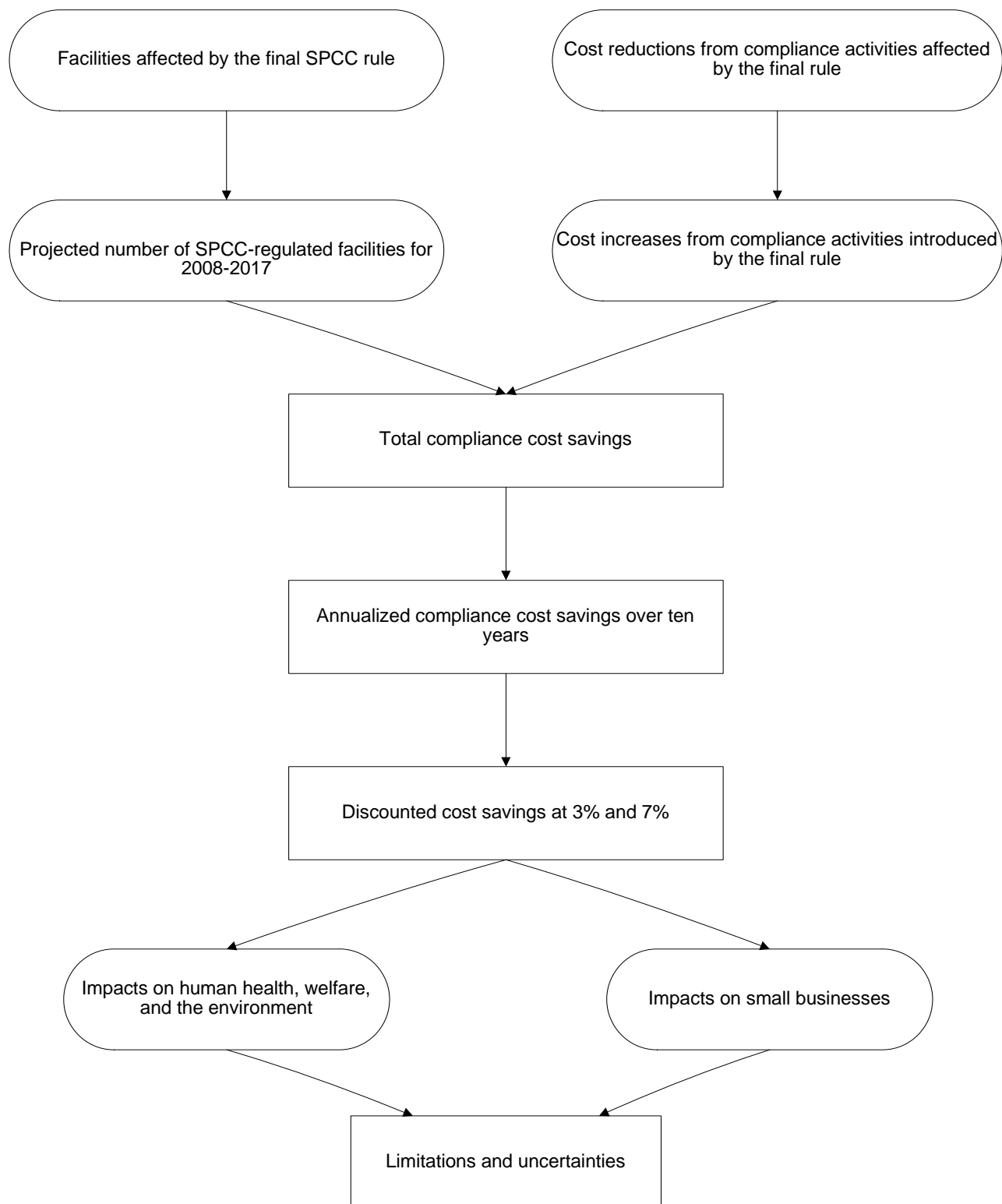
The general approach to this regulatory impact analysis involved estimating the number of facilities affected by each provision in the final rule; identifying the specific behavioral changes that may occur (e.g., choosing to self-certify an SPCC Plan rather than using a licensed PE); estimating the unit costs of compliance measures under the baseline and regulatory scenarios; and applying the change in unit costs to the projected number of affected facilities. Total costs were annualized over a ten-year period using both 3 and 7 percent discount rates. Exhibit 3-1 outlines this approach. The main steps in the analysis are summarized below:

1. Estimate the universe of facilities affected by the final rule. EPA first developed a baseline universe of SPCC-regulated facilities by industry sector and range of oil storage capacities (e.g., facilities that store between 1,321 and 10,000 gallons of oil). For each of the four major components of the final rule, EPA estimated the number of facilities that might be affected by the changes in the rule. These entities include facilities with smaller volumes of oil storage; facilities with certain types of oil-filled operational equipment; facilities with motive power containers; and facilities with mobile refuelers. EPA then projected the anticipated annual change in the number of affected facilities over the analysis period, using industry-specific growth rates.
2. Estimate changes in compliance cost elements resulting from the final rule. EPA developed unit cost estimates for specific baseline requirements expected to be affected by the final rule. Baseline requirements were based on the 2002 rule. EPA also developed unit cost estimates for compliance elements introduced by the 2006 final rule, such as the cost of preparing a contingency plan instead of providing secondary containment for qualified oil-filled operational equipment. EPA did not analyze cost savings associated with non-substantive changes to requirements for facilities that handle, store, or transport fats and vegetable oils, or cost savings associated with the extension of the compliance dates for owners and operators of farms.
3. Estimate total reduction in compliance costs to potentially affected facilities. EPA derived the change in compliance costs for owners and operators of each type of affected facilities, and multiplied these cost savings by the total number of facilities whose owners and operators are expected to take advantage of a given regulatory relief option. Total compliance cost savings were annualized over a ten-year period using 3 and 7 percent discount rates.

EPA analyzed changes in compliance costs as a result of the provisions in the SPCC final rule, by accounting for cost savings owners and operators of SPCC-regulated facilities would incur if they took advantage of the reduced requirements. The cost savings for owners and operators of regulated facilities from lessened requirements are evaluated against the current SPCC rule amended in 2002. Therefore, in this analysis, the Agency took into account only the difference in the requirements between the 2002 and 2006 rules. When estimating total cost savings, EPA relied on the most recent estimates of the major components of the economic model. In comparison to the analysis performed for the 2002 SPCC rule, the following inputs into the model have been updated: the universe of the SPCC-regulated facilities, projected growth rates for SPCC-regulated industries, and cost estimates for major compliance activities. Chapters 4 and 5 of this report contain detailed information on how the new estimates were developed. Chapter 4 describes the estimation of the universe of regulated facilities under the SPCC rule and annual growth rates, and Chapter 5 presents the derivation of unit estimates for compliance costs.

The benefits of the major components of the final rule were assessed qualitatively and are limited to reductions in expenditures accruing from lower compliance costs. The Agency also considered whether the streamlined requirements in the final rule might increase the risk of discharges, with adverse consequences for the environment, human health, and welfare. Because of the lack of data on regulated entities and their likely response to the regulatory changes, the magnitude of any increased risk is highly uncertain, but is considered low because of the safeguards built into the final rule. For example, if an owner or operator pursues environmental equivalence options, he or she must consult with a PE. In addition, to the extent that the rule increases the compliance rate by lowering compliance costs, the rule may have a positive impact on environmental quality.

**Exhibit 3-1
Main Steps for Estimating the Economic Effects of the Final Rule Changes**



3.2 Regulatory Baseline for the Analysis

The impacts of the final rule depend on the assumed baseline of industry behavior in the absence of a new rule. EPA developed a baseline to assess the change in compliance costs associated with each of the revisions in rule requirements, mutually exclusive of each other. Changes in regulatory behavior caused by the final rule are measured relative to this baseline.

EPA used as its baseline the SPCC rule requirements under 40 CFR part 112, as amended in 2002 (67 FR 47042). EPA has not made any assumptions about current compliance with those requirements, but is treating the costs of compliance with the 2002 rule as liabilities owners and operators of the regulated entities currently have – whether or not they have actually made the capital expenditures to comply. In this analytical construct, these firms are simply delaying the expenditures for the costs they already carry.

EPA is aware of industry concerns regarding potential non-compliance among owners and operators of facilities of certain sizes or industry sectors, although no reliable empirical evidence exists to assess the extent or magnitude of such non-compliance. EPA explicitly considered whether to incorporate non-compliance in the 2002 Economic Analysis of the SPCC rule:

“It is possible that [owners and operators of] some facilities have misinterpreted the existing regulation and are not currently in full compliance with existing requirements, but there is no practical way to measure the level of non-compliance. Moreover, ... the costs of coming into compliance with the clarified requirements are not properly attributed to this final regulation.”

This regulatory impact analysis is intended to account for the reductions in compliance costs resulting from the final rule. EPA recognizes, however, that actual changes in expenditures depend on the degree of compliance with SPCC requirements by owners and operators of the facilities that would be affected by this rule. Owners and operators of existing facilities that are out of compliance with the current rule would potentially face lower expenditures to comply with the final rule. To better understand the impacts of the final rule on these facilities, EPA prepared an alternative economic impact analysis (see Appendix F).

According to Executive Order 12866, agencies are required to assess all costs and benefits of regulatory activities, including quantitative and qualitative measures. In this regulatory impact analysis, the Agency estimated the incremental change in compliance costs as a result of the 2006 final rule. The cost savings for owners and operators of regulated facilities from lessened requirements are measured against the current SPCC rule amended in 2002. This regulatory impact analysis does not attempt to quantify the baseline compliance costs associated with the 2002 SPCC rule requirements.

Although major compliance activities and their associated unit costs are presented in Chapter 5 of this report, those activities do not represent a full list of SPCC rule requirements. As described in the Unit Compliance Costs (Chapter 5) and Limitations (Chapter 12) chapters of

this report, a lot of cost estimates for compliance activities were adapted from the economic analysis in support of the 2002 SPCC final rule and the 2002 rule Information Collecting Request (ICR).³ The Agency did not develop unit cost estimates for the baseline compliance activities that are not affected by the final rule as part of this regulatory analysis. For example, while EPA developed a cost estimate for providing secondary containment for facilities with oil-filled operational equipment that is affected by the final rule changes, it did not attempt to quantify costs of secondary containment for facilities of other industries, as required by the 2002 rule.

³ Economic Analysis for the Final Revisions to the Oil Pollution Prevention Regulation (40 CFR part 112), May 2002; Information Collection Request for the final rule to amend the oil pollution prevention regulation (40 CFR part 112), May 2002.

4 Estimation of the SPCC-Regulated Universe of Facilities

EPA has invested considerable resources into estimating the number of entities affected by the SPCC rule. This chapter represents the Agency's third effort to estimate the universe of affected entities.⁴ Using information contained within previous studies and new information, the current study estimated that 571,000 facilities are regulated under the 2002 SPCC rule. This chapter provides an overview of the data sources used in the analysis, industry sectors and oil storage capacities in which results are presented, and a summary of results. Appendices A – D of this report provide additional detail on the methodology employed in the analysis, as well as detailed results.

This chapter is organized as follows:

- Section 4.1 summarizes the data sources and industry sectors studied in the analysis.
- Section 4.2 summarizes oil capacity categories used in the analysis.
- Section 4.3 discusses key differences between the current study and EPA's 1991 study of the SPCC-regulated universe.
- Section 4.4 discusses the SPCC universe estimation using state databases.
- Section 4.5 discusses the SPCC universe estimation using federal and proprietary data sources.
- Section 4.6 presents detailed results of SPCC-regulated facilities in all industries and oil storage capacity categories.
- Section 4.7 discusses advantages and limitations to the universe study.
- Section 4.8 summarizes growth rates derived to project the number of SPCC-regulated facilities to 2017.
- Section 4.9 summarizes SPCC-regulated facility characteristics.

4.1 Data Sources and Industry Sectors

Based on the availability and relevance of existing data on oil storage, handling, and use in the United States, EPA used different data sources to estimate the number of SPCC-regulated facilities in different industries. Exhibit 4-1 summarizes the 30 industries examined in the analysis, the corresponding North American Classification System (NAICS) codes for these industries, and the data source used to estimate the universe of SPCC-regulated facilities

⁴ The Agency's first effort, completed in 1991 and titled the *Spill Prevention, Control, and Countermeasure Facilities Study*, summarized information on small, medium, and large facilities in 16 industry sectors that store oil in above ground and underground tanks (EPA, 1991). In 1995, EPA followed this study with a survey of approximately 30,000 facilities within the industries examined in 1991. The 1995 survey yielded detailed information on the oil storage characteristics of surveyed facilities, and was designed to allow statistical extrapolation to a broader universe. EPA used the results of the 1995 survey, the 1991 facility study, and a 1989 American Petroleum Institute report to calculate a 1996 Adjusted National Estimate of (approximately 438,000) affected facilities. The 1996 estimate has been the basis of subsequent EPA analyses of regulatory burdens associated with the SPCC rule (EPA, 1996a). On July 17, 2002, EPA published revisions to SPCC requirements in 40 CFR part 112. In its economic analysis for the proposed SPCC rule, EPA estimated that approximately 419,000 facilities were covered by the requirements in 2002 (EPA, 2002). However, various industry representatives have suggested that the actual number could be higher.

contained within each industry.⁵

⁵ EPA's 1996 estimate included a large number of facilities under the broad category "Other Commercial Facilities," making it difficult to accurately identify industry sectors included in this study that were previously excluded. In addition, the current study attempts to include facilities that may store animal fats and vegetable oil, which were previously excluded from the 1996 estimate.

**Exhibit 4-1
Industry Sectors and Databases Used to Estimate SPCC-Regulated Facilities**

Industry Sector	NAICS Code	General Data Source¹
Oil Production	211111	EIA
Farms	111, 112	Census of Agriculture
Electric Utility Plants	2211	EIA ² , FERC ³
Petroleum Refining and Related Industries	324	Economic Census
Chemical Manufacturing	325	State Databases
Food Manufacturing	311, 312	State Databases
Manufacturing facilities using and storing animal fats and vegetable oils (AFVO)	311, 325	Economic Census
Metal Manufacturing	331, 332	State Databases
Other Manufacturing	31-33	State Databases
Real Estate Rental and Leasing	531-533	State Databases
Retail Trade	441-446, 448, 451-454	State Databases
Contract Construction	23	State Databases
Wholesale Trade	42	State Databases
Other Commercial	492, 541, 551, 561-562	State Databases
Transportation	481-488	State Databases
Arts Entertainment & Recreation	711-713	State Databases
Other Services (Except Public Administration)	811-813	State Databases
Petroleum Bulk Stations and Terminals	4247	Economic Census
Education	61	CBECS ⁴
Hospitals & Other Health Care	621, 622	State Databases
Accommodation and Food Services	721, 722	State Databases
Fuel Oil Dealers	45431	Economic Census
Gasoline stations	4471	Economic Census
Information, Finance and Insurance	51, 52	State Databases
Mining	212	State Databases
Warehousing and Storage	493	State Databases
Religious Organizations	813110	CBECS
Military Installations	928110	Department of Defense
Pipelines	4861, 48691	Economic Census
Government	92	CBECS

NAICS = North American Industry Classification System; EIA = U.S. Energy Information Administration; FERC = Federal Energy Regulatory Commission; CBECS = Commercial Buildings Energy Consumption Survey.

¹ See Appendix A for a detailed description of data sources.

² EPA used EIA data on oil stocks at each electric utility plant to estimate the number of power plants in each oil storage capacity category.

³ EPA used FERC information on substations by major utilities to estimate the number of substations.

⁴ The CBECS is a nationwide survey that contains information on fuel storage and use by commercial buildings that EPA used to generate estimates of the number of government, religious, and educational establishments that are SPCC-regulated.

As shown in Exhibit 4-1, EPA used state databases to estimate SPCC-regulated facilities in 18 of the 30 industry sectors studied in the analysis. Eight state databases were used to generate estimates for the following industries: petroleum refining and related industries; chemical manufacturing; food manufacturing; metal manufacturing; other manufacturing; real estate rental and leasing; retail trade; contract construction; wholesale trade; other commercial; transportation; arts, entertainment, and recreation; other services (except public administration); hospitals and other health care; accommodation and food services; information finance and insurance; mining; and warehousing and storage. These databases are discussed in more detail in Appendix A.

Although state databases were the primary data source for the majority of industry sectors, federal and proprietary data were available and used to estimate the number of facilities in the sectors with the most facilities regulated by the SPCC rule: farms; petroleum bulk station and terminals, fuel oil dealers, pipelines, and petroleum refinery and related industries; oil and gas production; electric utilities; airports; military installations; animal fats and vegetable oil industry; and education facilities, government establishments, and religious organizations. These data sources are discussed in more detail in Appendix A.

4.2 Facility Oil Storage Capacity Categories

For each of the 30 industry sectors examined in the analysis, EPA disaggregated the universe of SPCC-regulated facilities into the following four oil storage capacity categories:

- Category I: total oil storage capacity greater than 1,320 gallons but less than or equal to 10,000 gallons;
- Category II: total oil storage capacity greater than 10,000 gallons but less than or equal to 42,000 gallons;
- Category III: total oil storage capacity greater than 42,000 gallons but less than or equal to 1,000,000 gallons; and
- Category IV: total oil storage capacity greater than 1,000,000 gallons.

The smallest size category in previous EPA analyses included facilities with storage greater than 1,320 gallons but less than or equal to 42,000 gallons. One benefit of the categories contained within the current analysis is the ability to differentiate the characteristics of facilities with storage capacities between 1,321 and 10,000 gallons from those facilities with storage capacities between 10,001 and 42,000 gallons.

4.3 Comparison with EPA's 1991 Facilities Study

While the current analysis follows the same general methodology as EPA's 1991 study, the two analyses differ in four primary ways: (1) the specific state databases used; (2) the number of industry sectors and the method used to group facilities into industry sectors; (3) the

oil storage capacity categories; and (4) the methodology used to extrapolate state data to the entire universe of SPCC-regulated facilities.⁶ Exhibit 4-2 summarizes these differences.

⁶ A similar comparison is not made to EPA's 1995 survey, because the current analysis is modeled after EPA's 1991 study.

**Exhibit 4-2
Comparisons with EPA's 1991 Facilities Study**

Element of Analysis	1991	2006	Notes
Number of State Database Sources	Four	Eight	<ul style="list-style-type: none"> EPA's 1991 study used Illinois, California, Maryland, and New York databases to estimate the universe of medium and large facilities, and the New York database alone to estimate the universe of small facilities. The current analysis does not use the Illinois data because the latest version of the database does not include capacity information for two-thirds of the records. The current analysis also does not use the California database because it lacks capacity information for one-fifth of the records and does not differentiate Aboveground Storage Tanks (ASTs) from Underground Storage Tanks (USTs). In EPA's 1991 study, the estimate for the small facilities category was calculated separately for most industry sectors using the New York Major Facilities database, because this database contains a reliable representation of these facilities. EPA was not able to use this database to estimate the overall universe because it did not provide complete industry sector information. The current analysis matches industry sector data from the Dun & Bradstreet (D&B) database with state database information. EPA is able to use the New York database (along with the other state databases) to estimate the number of SPCC-regulated facilities in all capacity categories.
Number of Industry Sectors	Sixteen	Thirty	<ul style="list-style-type: none"> The current analysis examines 30 industry sectors, using D&B data to help derive more detailed information on affected industries. However, because previous estimates grouped a large number of facilities into the broad industry sector of "Other Commercial Facilities," it is difficult to determine the extent to which the new figures include previously omitted industries. The 1991 study focused solely on petroleum and petroleum-related oils. The current analysis attempts to include facilities that may be regulated because of their use or storage of animal fats and vegetable oils (AFVO).
Number of Oil Storage Capacity Categories	Three	Four	<ul style="list-style-type: none"> EPA's 1991 study examined the following oil storage capacity categories: <ul style="list-style-type: none"> <u>Small facilities</u>: total oil storage capacity greater than 1,320 gallons but less than or equal to 42,000 gallons. <u>Medium facilities</u>: total oil storage capacity greater than 42,000 gallons but less than or equal to one million gallons. <u>Large facilities</u>: total oil storage capacity greater than one million gallons. The current analysis differentiates the characteristics of facilities with storage capacities between 1,320 and 10,000 gallons from those facilities with storage capacities between 10,001 and 42,000 gallons.
Extrapolation to the SPCC-Regulated Universe	Mid-point	Average Ratio	<ul style="list-style-type: none"> The current analysis uses the average ratio because the universe extrapolation is based on a larger number of facilities combining data from more than one state.

4.4 SPCC Universe Estimation Using State Databases

EPA used information on facility oil storage capacity contained within eight state databases to estimate the number of SPCC-regulated facilities in the following industry sectors: petroleum refining and related industries; chemical manufacturing; food manufacturing; metal manufacturing; other manufacturing; real estate rental and leasing; retail trade; contract construction; wholesale trade; other commercial; transportation; arts, entertainment, and recreation; other services (except public administration); hospitals and other health care; accommodation and food services; information finance and insurance; mining; and warehousing and storage. The estimation methodology employed was similar to that used in EPA's 1991 facilities study: SPCC-regulated facilities were identified in the state databases based on oil storage capacity, corresponding industry categories for all facilities were identified, and state data were extrapolated to the entire country to represent the SPCC-regulated universe nationwide. In total, EPA identified 140,000 SPCC-regulated facilities in the eight state databases. Some 41,000 of those facilities were matched to specific industry categories and then extrapolated to the entire universe using U.S. Census data, yielding a total of 177,000 regulated facilities. The following sections expand upon each methodological step used to calculate the universe estimate.

4.4.1 Identification of SPCC-Regulated Facilities in State Databases

In the current analysis, EPA used eight state databases (Florida, Kansas, Maryland, Minnesota, New York, Oklahoma, Virginia, and Wisconsin) to determine the number of SPCC-regulated facilities in the given state for each industry sector by capacity tier. EPA selected these particular state databases because they contain necessary information on the total number of tanks at each facility, the capacity of each tank, and tank contents. The databases also contain name and address information for each facility.⁷ EPA identified SPCC-regulated facilities in each oil storage capacity category using these data. As stated, in total, EPA identified 140,000 SPCC-regulated facilities in the eight state databases. Exhibit 4-3 summarizes details of the eight state databases used.

⁷ See Exhibit 4-2 for a summary of information contained within each state database used in the analysis.

**Exhibit 4-3
Summary of State Databases Used in the Analysis**

State	Data Source	Database Name	Regulatory Requirement¹	Data Fields	Number of Records
Florida	Florida Department of Environmental Protection (FDEP)	Storage Tank Facility Information	FDEP's Storage Tank Program regulates USTs larger than 110 gallons and ASTs greater than 550 gallons that store petroleum products and hazardous substances at non-residential facilities.	<ul style="list-style-type: none"> • Tank capacity • Material stored • Facility name & address • Facility type 	<ul style="list-style-type: none"> • 22,800 ASTs and 61,000 USTs at 20,900 facilities
Kansas	Kansas Department of Health & the Environment (KDH&E)	Permitted Tanks Database	KDH&E regulates petroleum ASTs and USTs larger than 1,100 gallons for farm and residential use, and petroleum ASTs and USTs larger than 660 gallons for other industries.	<ul style="list-style-type: none"> • Tank capacity • Material stored • Tank status • Facility name & address 	<ul style="list-style-type: none"> • 6,450 USTs at 2,380 facilities • 9,580 ASTs at 3,360 facilities
Maryland	Maryland Department of the Environment (MDE)	AST Oil Operations Database	MDE's Oil Control Program regulates petroleum storage tanks. Registration required for ASTs at facilities with at least 10,000 gallons of storage capacity or at least 1,000 gallons of storage capacity for used oil.	<ul style="list-style-type: none"> • Tank capacity • Material stored • Facility name & address • Facility four-digit SIC 	<ul style="list-style-type: none"> • 6,330 ASTs at 691 facilities • Includes only tanks currently in use or temporarily closed.
		UST Oil Operations Database	Registration required for all petroleum USTs with the exception of farm and residential USTs smaller than 1,100 gallons.	<ul style="list-style-type: none"> • Tank capacity • Material stored • Facility name & address • Industry sector 	<ul style="list-style-type: none"> • 13,000 USTs at 5,660 facilities • Includes only tanks currently in use or temporarily closed.
Minnesota	Minnesota Pollution Control Agency (McPCA)	Tanks Database	Registration required for petroleum ASTs larger than 500 gallons and petroleum USTs covered by EPA's UST program.	<ul style="list-style-type: none"> • Tank capacity • Material stored • Facility name & address • Facility category 	<ul style="list-style-type: none"> • 13,700 USTs at 7,570 facilities • 22,900 ASTs at 6,010 facilities • Includes only tanks currently in use or temporarily closed.
New York	New York State Department of Environmental Conservation (DEC)	Petroleum Bulk Storage Database	DEC's Petroleum Bulk Storage Program regulates petroleum storage at facilities with at least 1,100 gallons of storage capacity.	<ul style="list-style-type: none"> • Tank capacity • Material stored • Tank status • Facility name & address 	<ul style="list-style-type: none"> • 65,500 tanks at 55,800 facilities

**Exhibit 4-3
Summary of State Databases Used in the Analysis**

State	Data Source	Database Name	Regulatory Requirement¹	Data Fields	Number of Records
		Major Oil Storage Facilities Database	DEC's Major Oil Storage Facilities Program regulates petroleum terminals and transport vessels operating in New York waters with a total storage capacity of 400,000 gallons or more.	<ul style="list-style-type: none"> • Tank capacity • Material stored • Tank status • Facility name & address 	<ul style="list-style-type: none"> • 9,180 tanks at 344 facilities
Oklahoma	Oklahoma Corporation Commission (OCC)	Petroleum Storage Tank Database	Registration required for petroleum USTs over 1,100 gallons for residential and noncommercial agricultural use, and over 110 gallons for all other uses. Petroleum ASTs larger than 110 gallons at certain specified facilities and all petroleum ASTs at bulk plants and commercial facilities require registration.	<ul style="list-style-type: none"> • Tank capacity • Material stored • Tank status • Facility name & address 	<ul style="list-style-type: none"> • 4,780 ASTs at 2,020 facilities
Virginia	Virginia Department of Environmental Quality (DEQ)	Registered Tanks Database	Registration required for petroleum ASTs over 660 gallons or facilities with a total capacity greater than 1,320 gallons. USTs regulated under EPA's UST Program are included in the database.	<ul style="list-style-type: none"> • Tank capacity • Material stored • Tank status • Facility name & address • Industry sector 	<ul style="list-style-type: none"> • 8,010 ASTs at 3,000 facilities • 27,000 USTs at 10,500 facilities
Wisconsin	Wisconsin Department of Commerce	Storage Tank Database	Registration required for all USTs larger than 60 gallons and storing petroleum or CERCLA hazardous substances. Farm and residential ASTs larger than 1,100 gallons, and all other ASTs larger than 110, gallons are registered and included in the database.	<ul style="list-style-type: none"> • Tank capacity • Material stored • Tank status • Facility name & address 	<ul style="list-style-type: none"> • 70,500 currently in-use tanks • 7,960 ASTs and 60,200 USTs at 44,900 facilities

¹ AST = aboveground storage tank; UST = underground storage tank.

4.4.2 Fuzzy Matching Methodology

While each state database used in the analysis contained sufficient information to permit identification of SPCC-regulated facilities, six of the eight databases did not contain information on the industry to which a particular facility belongs. Therefore, in order to identify the industry represented by the SPCC-regulated facilities identified in the state databases, EPA employed a “fuzzy matching” methodology in which facility data such as name and address from the state databases were matched to D&B Market Spectrum data in order to assign industries to facilities.^{8,9,10} Appendix B of this analysis discusses the fuzzy matching methodology in greater detail. Of the 140,000 SPCC-regulated facilities in the eight states, approximately 31 percent were matched successfully. Exhibit 4-4 summarizes the percentage of matched facilities in each state database used in the analysis. As shown, these percentages range from 21 percent for the Wisconsin database to 81 percent for the Kansas database. Assuming that the matched facilities are not systematically different from the unmatched ones, the distribution of matched facilities in each industry sector was applied to all facilities in that industry sector at the national level.

⁸ D&B Market Spectrum is a suite of related products and services that allows companies to combine their customer data and third-party data with D&B's global database, resulting in the most targeted, accurate, and complete database of businesses in the United States.

⁹ In the matching process, the following facilities and tanks are dropped from the estimation: facilities with less than 1,320 gallons of aggregate storage, tanks with less than 55 gallons of storage, underground tanks subject to EPA UST requirements, inactive tanks, and tanks that do not store oil substances.

¹⁰ EPA uses D&B Market Spectrum data to match facilities to industries in order to use state databases that do not contain industry information. Exhibit 4-3 summarizes the data fields contained within each state database that is used in the analysis. As shown, six of the eight state databases do not contain industry information for each facility.

Exhibit 4-4
Percentage of Matched Facilities after Automated and Manual Matching

State	Total Number of Records	Percentage Matched	Scale Factor ¹
Florida	24,600	35%	2.9
Kansas	3,060	81%	1.2
Maryland	6,430	53%	1.9
Minnesota	6,930	43%	2.4
New York	38,700	28%	3.6
Oklahoma	1,190	45%	2.3
Virginia	11,900	36%	2.8
Wisconsin	47,500	21%	4.8

¹ The scale factor is calculated as one divided by the percentage of matched facilities, and reflects the proportion of facilities that matched relative to the total number of SPCC-regulated facilities from the state databases. The number of matched facilities is multiplied by the scale factor to estimate the total number of SPCC-regulated facilities for each industry within each state database. By using the scale factor, EPA assumed that the distribution of facilities across industries is identical for matched and unmatched facilities. To the extent this assumption is incorrect, the estimate of total facilities per industry in each state may be over or underestimates.

4.4.3 Extrapolation of Results to the Entire Universe

EPA extrapolated results to the entire country by multiplying the total number of establishments in each industry sector in the United States as contained within the 1997 U.S. Economic Census by a facility ratio, as shown in the equation below.¹¹ The facility ratio is estimated as the number of SPCC-regulated facilities in the eight states for an industry sector divided by the total number of facilities reported for that industry sector in those states.¹² Exhibit 4-5 summarizes the results of the analysis.

$$\text{Total Universe of SPCC-Regulated Facilities} = \sum [(F_i * (RF_{i,c} / TF_i))$$

where,

F = the total number of facilities in the United States by industry sector, i

RF = the total number of SPCC-regulated facilities in the eight state databases by facility size category, c , and industry sector, i

TF = the total number of facilities in the eight state databases by industry sector, i

i = facility industry sector

c = facility size category

¹¹ EPA uses the 1997 U.S. Economic Census data because the 2002 U.S. Economic Census data were not complete when the analysis was being conducted.

¹² The facility ratio is calculated using the eight state databases for all capacity categories except Category I. Because the Maryland database does not include information on Category I facilities, the ratio for Category I facilities is calculated using seven state databases (excluding Maryland).

Exhibit 4-5
SPCC Universe Estimates Using State Databases

Industry Sector	Category I	Category II	Category III	Category IV	Total
Petroleum Refining and Related Industries	85	212	1,300	424	2,000
Chemical Manufacturing	1,100	941	575	26	2,600
Food Manufacturing	1,700	1,300	510	23	3,500
Metal Manufacturing	1,600	712	398	-	2,700
Other Manufacturing	9,000	5,300	1,600	107	16,000
Real Estate Rental and Leasing	23,000	2,900	212	-	26,000
Retail Trade	14,000	2,700	819	50	18,000
Contract Construction	11,000	3,700	703	19	15,000
Wholesale Trade	9,600	3,000	2,100	98	15,000
Other Commercial	10,000	2,800	762	-	14,000
Transportation	7,800	4,400	638	641	13,000
Arts Entertainment & Recreation	11,000	1,200	94	-	13,000
Other Services	6,200	653	162	-	7,100
Hospitals and Other Health Care	5,200	1,200	194	27	6,600
Accommodation and Food Services	4,400	381	33	-	4,800
Information Finance and Insurance	318	1,700	2,300	212	4,600
Mining	1,900	1,200	791	40	4,000
Warehousing and Storage	725	333	306	28	1,400
Total	119,000	34,600	13,500	1,700	169,000

4.5 SPCC Universe Estimation Using Industry-Specific Data Sources

Where federal government and proprietary data specific to certain industry sectors were available, EPA did not rely on the state databases to estimate the universe of SPCC-regulated facilities. Instead, EPA used different methodologies based on the composition of the specific industry data. Industry-specific data were used to estimate the number of SPCC-regulated facilities in 12 industry sectors, grouped as follows:

- Farms;
- Petroleum bulk station and terminals, fuel oil dealers, pipelines, and petroleum refinery and related industries;
- Oil and gas production;
- Electric utilities;
- Military installations;
- The animal fats and vegetable oils (AFVO) industry; and
- Education facilities, government establishments, and religious organizations.

Exhibit 4-6 summarizes the federal and proprietary data sources used in the analysis; Appendix A presents a detailed description of these data sources.

**Exhibit 4-6
Summary of Federal and Proprietary Data Sources and Methodologies Used in the Analysis**

Industry Sector	Data Source	Database Name	Primary Data Fields Used	General Methodology
Farms	USDA Census of Agriculture	Farm Production Expenses, 2002 and 1997 Gasoline, fuels, and oils	<ul style="list-style-type: none"> Fuel production expenses 	<ul style="list-style-type: none"> Identify the number of farms and fuel production expense ranges for gasoline and diesel. Convert production expense ranges to quantity ranges using fuel price data. Estimate the quantity of purchased fuel that is stored on farms. Estimate the percentage of farms in each quantity range that are regulated. Project estimated number of farms from 2002 to 2005.
		Petroleum Products Expenses, 1997, 1992, and 1987	<ul style="list-style-type: none"> Cost ranges for gasoline and diesel 	
		1982 Census, Volume 1, County Table 6.	<ul style="list-style-type: none"> Quantity of stored fuel 	
		NASS, Number of Farms 1996 to 2005	<ul style="list-style-type: none"> Number of farms 	
Petroleum Bulk Station and Terminals, Fuel Oil Dealers, Pipelines, and Petroleum Refinery and Related Industries	US Census Bureau	2002 US Economic Census	<ul style="list-style-type: none"> Total number of facilities 	<ul style="list-style-type: none"> Assume all facilities in these industries are SPCC-regulated. Project number of facilities to 2005.
Oil and Gas Production	Personal Communication	Personal communication with EPA Region 6 and Texas Railroad Commission	<ul style="list-style-type: none"> Assumption of four wells per facility 	<ul style="list-style-type: none"> Assume all active oil wells and gas wells producing condensate oil in 2004 are SPCC-regulated. Assume four wells per facility. Project number of facilities to 2005.
	Department of Energy	Energy Information Administration Distribution and Production of Oil and Gas Wells by State	<ul style="list-style-type: none"> Number of active wells producing oil and oil condensate in 2004 	

Exhibit 4-6
Summary of Federal and Proprietary Data Sources and Methodologies Used in the Analysis

Industry Sector	Data Source	Database Name	Primary Data Fields Used	General Methodology
Electric Utilities	US Energy Information Administration	Form EIA-906	<ul style="list-style-type: none"> Oil stock at each power plant with generation capacity greater than 1 megawatt 	<ul style="list-style-type: none"> Estimate SPCC-regulated power plants based on oil stocks as a proxy for oil capacity. Assume each unique substation filing Form EIA-906 is SPCC-regulated. Extrapolate to universe of regulated substations using ratio of electric power sold by Form EIA-906 substations to electric power sold nationally.
		March 2005 Electric Power Monthly	<ul style="list-style-type: none"> Total retail megawatt hours of electricity sold nationwide 	
	Federal Energy Regulatory Commission	Form No. 1	<ul style="list-style-type: none"> Number of electric substations 	
Military Installations	Department of Defense	Total Military Installations (1995)	<ul style="list-style-type: none"> Total number of military Installations 	<ul style="list-style-type: none"> Assume all military installations are SPCC-regulated.
AFVO	US Census Bureau	2005 US Census of Manufacturing	<ul style="list-style-type: none"> Number of manufacturing establishments 	<ul style="list-style-type: none"> Assume a percentage of manufacturing facilities that produce, use, or store AFVO and may be SPCC-regulated. Apply these percentages to the number of facilities in manufacturing NAICS code categories. Assume all corn refining plants are SPCC-regulated. Use specific information on soy ink from industry to assume the proportion of facilities that are SPCC-regulated.
		2002 US Economic Census	<ul style="list-style-type: none"> Number of facilities by NAICS code 	
	Corn Refiners Association	N/A	<ul style="list-style-type: none"> Number of corn refining plants 	
	Soy ink	US manufacturers producing soy ink	<ul style="list-style-type: none"> Number of US manufacturers producing soy ink 	

Exhibit 4-6
Summary of Federal and Proprietary Data Sources and Methodologies Used in the Analysis

Industry Sector	Data Source	Database Name	Primary Data Fields Used	General Methodology
Education, Religious Organizations, and Government Establishments	Department of Energy	Energy Information Administration: 1995 and 2003 Commercial Buildings Energy Consumption Survey (CBECS)	<ul style="list-style-type: none"> Total tank capacity in 1995 Square footage of buildings in 1995 and 2003 	<ul style="list-style-type: none"> Project tank capacity in 1995 to 2003, using the growth in square footage of buildings from 1995 to 2003 as a proxy for growth in tank capacity. Project 2003 estimates to 2005.

For petroleum bulk stations and terminals, military installations, oil production, and electric utilities, data were available on the total universe of these facilities and their corresponding oil storage capacity information. Therefore, a direct estimation of the number of SPCC-regulated facilities was possible for these industry sectors. For the other industry sectors, EPA used reasonable assumptions to estimate the universe of SPCC-regulated facilities. Details of the industry-specific estimation methodology followed for each industry are presented in Appendix C.

Exhibit 4-7 summarizes the results of the analysis for industries discussed in this section. As shown, EPA estimated that approximately 401,000 facilities are regulated in these industries.

Exhibit 4-7
SPCC Universe Estimate Using Federal Databases

Industry Sector	Category I	Category II	Category III	Category IV	Total
Farms	145,000	7,060	569	114	152,000
Petroleum Bulk Stations and Terminals	564	846	4,370	799	6,580
Fuel Oil Dealers	318	1,700	2,340	212	4,560
Pipelines	704	0	0	0	704
Petroleum Refining and Related Industries	85	212	1,270	424	1,990
Oil Production	21,200	114,000	30,100	295	166,000
Electric Utility Plants	19,400	19,500	12,900	309	52,100
Military Installations	156	156	284	114	710
Manufacturing facilities using and storing AFVO	2,610	3,430	1,580	0	7,620
Education	1,870	5,050	0	0	6,920
Government	552	0	0	0	552
Religious Organizations	1,410	0	0	0	1,410
Total	192,000	148,000	58,500	2,270	401,000

4.6 Estimates of the Total SPCC Universe

Exhibit 4-8 presents the number of facilities regulated by the SPCC rule for each industry group considered in the analysis. As shown, EPA estimated that approximately 571,000 facilities are regulated by the 2002 SPCC rule. The majority of the regulated facilities are in Category I (56 percent), followed by the capacity tiers for Category II (33 percent) and Category III (11 percent). Facilities in Category IV account for less than 1 percent of the total facilities regulated by the SPCC.

Oil production (29 percent) and farms (27 percent) account for the largest percentages of the SPCC-regulated facilities. The electric utility plant industry (9 percent) is the only other industry sector that accounts for more than 5 percent of the total SPCC-regulated facilities.

**Exhibit 4-8
Estimated Universe of SPCC-Regulated Facilities**

Industry Category	NAICS	Facility Oil Storage Capacity Category				Total	Percentage
		I	II	III	IV		
Oil Production	211111	21,235	114,000	30,100	295	166,000	29.07%
Farms	111,112	144,608	7,100	569	114	152,000	26.62%
Electric Utility Plants	2211	19,403	20,000	13,000	309	52,000	9.11%
Petroleum Refining and Related Industries	324	85	212	1,300	424	2,000	0.35%
Chemical Manufacturing	325	1,063	941	575	26	2,600	0.46%
Food Manufacturing	311,312	1,676	1,300	510	23	3,500	0.61%
Manufacturing facilities using and storing AFVO	311,325	2,609	3,400	1,600	-	7,600	1.33%
Metal Manufacturing	331,332	1,635	712	398	-	2,700	0.47%
Other Manufacturing	31-33	9,020	5,300	1,600	107	16,000	2.80%
Real Estate Rental and Leasing	531-533	23,205	2,900	212	-	26,000	4.55%
Retail Trade	441-446, 448,451-454	14,271	2,700	819	50	18,000	3.15%
Contract Construction	23	10,752	3,700	703	19	15,000	2.63%
Wholesale Trade	42	9,580	3,000	2,100	98	15,000	2.63%
Other Commercial	492,541,551,561- 562	10,272	2,800	762	-	14,000	2.45%
Transportation	481-488	7,761	4,400	638	641	13,000	2.28%
Arts Entertainment & Recreation	711-713	11,197	1,200	94	-	13,000	2.28%
Other Services (Except Public Administration)	811-813	6,240	653	162	-	7,100	1.24%
Education	611	1,872	5,000	-	-	6,900	1.21%
Petroleum Bulk Stations and Terminals	4247	564	846	4,400	799	6,600	1.16%
Hospitals & Other Health Care	621-624	5,151	1,200	194	27	6,600	1.16%
Accommodation and Food Services	721-722	4,419	381	33	-	4,800	0.84%
Fuel Oil Dealers	45431	318	1,700	2,300	212	4,600	0.81%
Gasoline stations	4471	1,950	1,200	791	40	4,000	0.70%
Information Finance and Insurance	51, 52	3,352	514	31	-	3,900	0.68%

**Exhibit 4-8
Estimated Universe of SPCC-Regulated Facilities**

Industry Category	NAICS	Facility Oil Storage Capacity Category				Total	Percentage
		I	II	III	IV		
Mining	212-213	1,297	1,500	321	40	3,200	0.56%
Religious Organizations	813110	1,407	-	-	-	1,400	0.25%
Warehousing and Storage	493	725	333	306	28	1,400	0.25%
Military Installations	928110	148	148	296	118	711	0.12%
Pipelines	4861, 48691	704	-	-	-	704	0.12%
Government	92	552	-	-	-	552	0.10%
Total		317,070	187,000	64,000	3,400	571,000	100%
Size Distribution		55.5%	32.8%	11.1%	0.6%	100%	

4.7 Advantages and Limitations of the Updated SPCC Universe Estimate

This analysis improves upon previous estimates of the SPCC-regulated universe in several ways. First, the analysis is based on the most recent data available, capturing changes in industry structure since 1995. Second, the analysis relies on information from more state databases (eight as compared to four) than what was used in EPA's 1991 facilities study. Further, in the 1991 study EPA assumed that all electric utility plants were SPCC-regulated; the current estimates are based on oil capacity data, as reported by EIA.

Another advantage of the current estimates is that they provide information for more narrowly defined industry sectors. The 1991 and 1995 studies primarily focused on petroleum and petroleum-related oils. The updated estimate attempts to include facilities that may be regulated because of their use or storage of non-petroleum oils such as AFVO.

A key limitation of the updated estimates is that they are not based on survey data and, therefore, are not statistically reliable. State and federal databases are useful, but are not specifically designed to capture information on the full range of facilities covered by the SPCC rule. A statistical survey would be required to obtain complete coverage of all industries with SPCC-regulated facilities. Nevertheless, EPA previously concluded that schedule and resource constraints would prohibit such an effort at this time. Moreover, a rigorous survey may not be worthwhile for industries that contain a small percentage of the total number of SPCC-regulated facilities.

Another significant limitation to the current approach is that it did not consider the spatial location of facilities to determine the number that presents a reasonable expectation of discharge into navigable waters of oil in quantities that may be harmful. Instead, EPA assumed that all facilities satisfying the capacity threshold are non-transportation-related and are regulated by the SPCC rule, which may be an overestimate. A Geographic Information System (GIS) screening analysis could theoretically help to identify facilities that are less likely to be regulated, but was not feasible given the lack of spatial information for many facilities. In addition, the analysis would be time-consuming and costly given the number of facilities involved.

4.8 Projecting SPCC Universe Estimates Using Derived Industry Growth Rates

To project the number of existing and new facilities regulated under the SPCC rule over the period of analysis (2008 through 2017), EPA developed estimates of industry-specific growth rates for existing and new facilities separately. For existing facilities, EPA used U.S. Economic Census data for all industries except for farms and oil production, for which alternative data sources were used. For new facilities, EPA used information obtained from the D&B Market Spectrum database for all industries except for oil production, for which a specific methodology was employed. The methodologies used to develop the industry growth rate estimates are described in detail in Appendix D. Exhibit 4-9 summarizes the growth rates calculated for each industry following these methodologies.

Exhibit 4-9
Estimated Growth Rates

SPCC Industry Sector	NAICS Code	Estimated Growth Rates	
		Total Facilities	New Facilities
Oil Production	211111	-2.13%	0.66%
Farms	111112	-0.44%	0.89%
Electric Utility Plants	2211	3.19%	3.19%
Petroleum Refining and Related Industries	324	0.59%	1.81%
Chemical Manufacturing	325	0.27%	2.43%
Food Manufacturing	311, 312	0.65%	2.34%
Manufacturing facilities using and storing AFVO ¹	311, 325	0.44%	2.33%
Metal Manufacturing	331, 332	0.44%	1.47%
Other Manufacturing ²	31-33	-0.18%	2.32%
Real Estate Rental and Leasing	531-533	2.06%	2.16%
Retail Trade	441-446, 448, 451-454	0.27%	2.31%
Contract Construction	23	1.91%	2.83%
Wholesale Trade	42	0.10%	2.03%
Other Commercial	492, 541, 551, 561-562	4.42%	4.42%
Transportation	481-488	2.43%	3.07%
Arts Entertainment & Recreation	711-713	2.68%	2.68%
Other Services (Except Public Administration)	811-813	0.87%	1.88%
Education	61	4.34%	4.34%
Petroleum Bulk Stations and Terminals	4247	-5.56%	1.61%
Hospital & Other Health Care	621, 622	1.42%	1.42%
Accommodations and Food Services	721, 722	1.40%	1.67%
Fuel Oil Dealers	45431	-1.10%	1.62%
Gasoline Stations	4471	-1.07%	1.03%
Information Finance and Insurance	51, 52	2.39%	2.68%
Mining	212	-0.10%	1.50%
Religious Organizations ³	813110	1.51%	1.51%
Warehousing and Storage	493	14.29%	14.29%
Military Installations ³	928110	1.51%	1.51%
Pipelines	4861, 48691	-1.21%	0.86%
Government ³	92	1.51%	1.51%
All Industries		1.51%	2.24%

¹ Growth rates are based on data for two NAICS sectors that were identified as key industries expected to produce, use, or store AFVO.

² Growth rates are based on data for all manufacturing sectors due to a large number of various manufacturing sectors included in this category.

³ Growth rates are based on all entities, due to the lack of Census data for specific industries.

4.9 SPCC-Regulated Facility Characteristics

For the purpose of this analysis, EPA estimated the number of regulated facilities for four size groups based on oil storage capacity at a facility. EPA classified facilities into capacity categories to (1) account for differences in the potential compliance costs experienced by facilities of different sizes; and (2) determine the number of facilities affected by each of the changes in the SPCC rule, based on a facility's storage capacity. Exhibit 4-10 summarizes the estimated number of SPCC-regulated facilities by size category.

Exhibit 4-10
2007 Estimated Number of SPCC-Regulated Facilities by Size Category

Size Category	Aggregate Capacity	Estimated Number of Facilities
I	1,320 to 10,000 gallons	317,000
II	10,001 to 42,000 gallons	187,000
III	42,001 to 1 million gallons	64,000
IV	Greater than 1 million gallons	3,400
Total		571,000

All the facilities included in the analysis are further divided in two categories: production facilities (facilities whose operations and oil storage activities primarily involve oil production) and storage facilities (all other industry groups). EPA estimated that approximately 166,000 production facilities and 405,000 storage facilities are subject to SPCC requirements. The Agency developed separate estimates for the unit cost of compliance for production and storage facilities in Categories I through IV.

5 Unit Compliance Costs

EPA estimated changes in the compliance costs for the final rule compared to a baseline scenario involving the regulatory requirements for the existing rule (as amended in 2002). Specifically, the Agency identified individual compliance activities affected by the changes in the rule and estimated the cost savings associated with these changes. This chapter describes compliance activities affected by the 2006 rule amendments and presents unit cost estimates and underlying assumptions for these activities. Section 5.1 addresses recordkeeping and reporting activities and Section 5.2 addresses the capital and operation and maintenance (O&M) activities. Compliance costs for the alternative requirements that resulted from the revisions to the existing SPCC rule are presented in Section 5.3 of this chapter. Section 5.4 presents the developed estimates for the burden reduction associated with similarities in requirements between state regulations and the SPCC rule. Section 5.5 outlines the approach taken to annualize estimated cost savings over a ten-year analysis period.

5.1 Recordkeeping and Reporting Activities Costs

The primary recordkeeping and reporting activities required by the SPCC rule are the preparation and maintenance of the SPCC Plan along with the preparation of records of inspections and tests. In preparing a Plan, a facility owner or operator must follow the provisions outlined in the regulation, and include a discussion of the measures taken to meet the SPCC requirements. For more detailed requirements, please refer to the Oil Pollution Prevention regulation itself (40 CFR part 112). The main provisions are summarized in this section. Section 5.1.1 focuses on primary inputs into recordkeeping and reporting activities such as wage rates, PE certification costs, and capital paperwork-related costs; Section 5.1.2 describes the activities and provides estimated costs.

5.1.1 Inputs into Recordkeeping and Reporting Activities

Wage Rates

EPA used hourly wage rates for specific labor categories to calculate the per-facility cost associated with the rule's paperwork requirements. For typical new and existing facilities, unit time estimates for management, technical, and clerical personnel were multiplied by the appropriate hourly wage rate and then added to paperwork-related capital costs and PE certification costs. The approach used to develop a wage rate estimate is described in this section.

The labor wage rates for private industry were derived from the September 2005 U.S. Department of Labor's Employment Cost Indices and Levels.¹³ The 2005 wage rates include wages and salaries; and benefit costs, including paid leave, supplemental pay, insurance, retirement and savings, legally required benefits, severance pay, and supplemental

¹³ United States Department of Labor, Bureau of Labor Statistics, Employer Costs for Employee Compensation, December 2005.

unemployment benefits. These wage rates reflect private industry averages, which were estimated by the Bureau of Labor Statistics (BLS) based on a survey of 35,600 occupations within 8,200 establishments in the private sector. These wage rates reflect industry averages, which may underestimate the actual wages received by some SPCC-regulated facility personnel but overestimate the actual wages received by other facility personnel. EPA further adjusted these rates to reflect associated overhead costs.¹⁴ The estimated wage rates used in the analysis are as follows:

- Management: \$55.7/hour;
- Technical: \$47.9/hour; and
- Clerical: \$25.3/hour.

PE Certification Cost

Unless facility owners or operators have a self-certified Plan, they are expected to incur costs associated with retaining a PE to certify their SPCC Plans, along with any subsequent technical amendments that are made to the Plan.¹⁵ In certifying the Plan, the engineer attests to having examined the facility and that the Plan has been prepared in accordance with good engineering practices that satisfy the SPCC requirements found in 40 CFR part 112. Furthermore, whenever an owner or operator amends its SPCC Plan, a PE must certify any technical amendment.

Not all facility owners and operators are expected to contract with a PE to have their Plan certified. Some facilities have in-house PEs that can perform this task. EPA assumed that the cost to a facility owner or operator to retain an outside PE to certify the SPCC Plan varies by the size of the facility. EPA used this assumption because a larger facility likely has a more complex SPCC Plan, and more complex Plan amendments, than a smaller facility. EPA assumed that none of the Category I and II facilities have an in-house PE who can certify the facility's Plan and that owners and operators of facilities would retain an outside PE. For the Category III and Category IV facilities, EPA assumed that 50 percent of the Category III facilities and 25 percent of the Category IV facilities would retain an outside PE to certify their SPCC Plans. These assumptions are adapted from the 2002 rule Information Collecting Request (ICR) and consistent with the assumptions used in the economic analysis in support of the 2002 SPCC final rule.¹⁶

For the 2002 rule ICR, EPA estimated that obtaining PE certification for a new Plan would cost \$1,000, \$1,500, and \$2,000 respectively for Category I and II, Category III, and Category IV facilities. EPA also estimated that obtaining PE certification for any subsequent

¹⁴ Overhead costs were computed separately from BLS data and were assumed to be an additional 17 percent of the total wage rate, which is composed of direct wages and salaries and employee benefits, as reported by BLS.

¹⁵ For the final rule requirements allowing self-certification of SPCC Plans, see Section 6.

¹⁶ Information Collection Request for the final rule to amend the oil pollution prevention regulation (40 CFR part 112), May 2002; Economic Analysis for the Final Revisions to the Oil Pollution Prevention Regulation (40 CFR part 112)." May 2002.

amendments would cost respectively \$500, \$750, and \$1,000 for Category I and II, Category III, and Category IV facilities. EPA revised the cost estimate developed for the 2002 final rule for obtaining PE certification of a new SPCC Plan and technical changes to an existing Plan. To revise the existing estimate, EPA contacted representatives of five engineering firms to inquire about the cost of PE certification for facilities with total storage capacity of 10,000 gallons or less.¹⁷ The contacted PEs were hesitant to provide a cost for certifying a standard Plan that they did not prepare, due to the varying quality of the Plans they have seen. However, they estimated a range of \$1,000 to \$2,000 for this service, if the Plan was well prepared and the facility was generally compliant with SPCC requirements. The range of values for obtaining PE certification for subsequent amendments was determined at \$500 to \$1,000. The PEs all indicated that they would review a Plan that a facility owner or operator prepared; however, they would not certify the Plan without first visiting the site and inspecting all of the tanks and containment systems themselves.

EPA considered the information provided by engineering firms as a basis for increasing the unit cost for PE certification, but decided not to take a simple average of the values obtained from PEs. The reason for not using a mean or median is at least two-fold: (1) the telephone calls to five engineering firms did not represent a statistically valid survey and (2) the PEs expressed a common concern about providing certification services alone. Given these limitations, EPA used professional judgment to revise the cost for PE certification by adjusting the estimates for facilities of Categories I through IV. Public comments received for the proposed SPCC rule verified the reasonableness of the adjusted estimates.

Exhibit 5-1 summarizes the expected cost for an owner or operator of a typical facility to retain a PE and to have a PE certify a new Plan, as well as any subsequent amendments.

Exhibit 5-1
Cost to Retain an Outside PE for Plan Certification

Type of Facility	New Plan	Amendments
Categories I and II	\$2,000	\$750
Category III	\$2,550	\$1,030
Category IV	\$3,110	\$1,310

O&M and Capital Paperwork-Related Costs

EPA estimated that owners and operators of facilities would incur small O&M and capital costs in complying with the SPCC requirements to maintain the Plan and keep records (40 CFR 112.3 and 112.7(e)), and to submit required information in the event of certain discharges of oil (40 CFR 112.4). EPA estimated that to maintain files, owners and operators of new facilities would purchase file cabinets at a cost of \$200. In the event of certain discharges, the owner or operator is required to submit required information to the Regional Administrator and the state

¹⁷ The contacted firms are: Core Engineered Solutions; ENSR International; GZA GeoEnvironmental, Inc.; SCS Engineers; and Woodard & Curran.

agency in charge of oil pollution control activities for the area in which it is located.

Consequently, the owner or operator would incur costs for photocopying and postage, which are classified as O&M costs. EPA assumed that the typical size of a Plan would be 10 pages for a small facility; 20 pages for a medium facility; and 40 pages for a large facility. Assuming the cost of photocopying to be \$0.11 per page, photocopying costs are estimated to be \$2.20 for a small facility; \$4.40 for a medium facility; and \$8.80 for a large facility, respectively. EPA estimated that the cost to submit the information through the Post Office is approximately \$12.00, based on the cost to mail a two-pound package to two different recipients. Because only 0.15 percent of facilities are expected to incur oil discharges that trigger an information submission, the annual capital costs to an owner or operator of a typical facility are negligible.¹⁸

5.1.2 Recordkeeping and Reporting Activities

Recordkeeping and reporting activities required by the SPCC regulation include preparing new Plans, as well as modifying and maintaining the existing Plans. This section describes EPA's assumptions used when estimating the per-facility cost associated with the rule's paperwork requirements.

Prepare an SPCC Plan (New Facilities)

The owner or operator of a new facility must prepare and implement an SPCC Plan in accordance with the requirements set forth in 40 CFR part 112. The actual preparation of the Plan involves several separate tasks, the majority of which EPA assumes are conducted by the facility's technical personnel. These tasks include:

- Field investigations, which are conducted by technical personnel to fully understand the design of the facility and to accurately predict the areas or equipment most likely to discharge oil (this involves predicting the flow paths of spilled oil).
- A regulatory review conducted by management personnel, such that the technical and clerical personnel in charge of actually preparing the Plan are fully aware of all requirements in 40 CFR part 112.
- A review of existing procedures conducted by technical personnel to determine the effectiveness of the current spill prevention and control practices employed by a facility owner or operator.
- Preparation of the Plan, which involves both technical and clerical time, as well as a final review by facility management personnel prior to submission.
- Certification by a licensed Professional Engineer (PE), which must be conducted for each new Plan (unless a facility owner or operator has a self-certified Plan). A Plan must also be re-certified by a PE whenever technical amendments are made.

Plan preparation costs affect owners and operators of new facilities that become subject to the SPCC rule. New facilities are those that will initiate operations during the ten-year period considered in the analysis. Owners and operators of such facilities are required to prepare and

¹⁸ See Section 5.1.3 for the assumption on the fraction of facilities expected to submit information due to oil discharges.

implement their SPCC Plans within one year of initiating facility operations. Therefore, owners and operators of new facilities are assumed to incur the total cost of preparing a Plan in Year 1.

Review the SPCC Plan (Existing Facilities)

Owners or operators of an SPCC-regulated facility are required to review and evaluate their Plans at least once every five years. This review is estimated to involve mostly technical personnel, who will evaluate spill prevention and control procedures being implemented under the current Plan, and management personnel, who will conduct a regulatory review. Clerical personnel will also be involved, to complete the necessary paperwork. An owner or operator is required to amend his/her SPCC Plan within six months of the review to include more effective prevention and control technology if: (1) such technology will significantly reduce the likelihood of a discharge as described in §112.1(b) from the facility; and (2) such technology has been field-proven at the time of the review. Unless a facility owner or operator has a self-certified Plan, any technical amendments to the Plan must also be certified by a PE prior to implementation. Review cost estimates are applied to an existing facility only, since an owner or operator of a new facility would not be required to conduct the review until five years after starting operation.

The total cost incurred by owners and operators of existing facilities for this review is greater if, following the review, they must amend their Plan. Based on best professional judgment, EPA estimated that owners and operators of 3 percent of all existing facilities under the baseline scenario would be required to amend their Plan as a result of five-year reviews.¹⁹

Submit Information in the Event of Certain Discharges of Oil

In the event of certain discharges of oil into navigable waters, a facility owner or operator must submit information described in §112.4(a) to the Regional Administrator within 60 days. A discharge of oil occurring within any 12-month period that triggers the §112.4 reporting requirements is:

- (1) A single discharge as described in §112.1(b) of more than 1,000 U.S. gallons into or upon navigable waters; or
- (2) Two or more discharges as described in §112.1(b), each of which is over 42 U.S. gallons, into or upon navigable waters.

Submission of information after a discharge of oil is estimated to involve both technical personnel time for collecting the required information, as well as time for review by management personnel before the information is submitted. Section 112.4(c) also requires that the facility owner or operator submit a copy of this information to the state agency in charge of oil pollution control activities for the area in which the facility is located. The Regional Administrator may require the owner or operator of the facility to amend the SPCC Plan to prevent and contain

¹⁹ Information Collection Request for the final rule to amend the oil pollution prevention regulation (40 CFR part 112), May 2002.

discharges from the facility. Such amendments, if uncontested by the facility owner or operator, must become part of the Plan thirty days after the Regional Administrator responds to the facility owner or operator concerning the proposed amendments. The amended Plan must then be certified by a PE prior to implementation (unless a facility owner or operator has a self-certified Plan). As required by §112.4(e), amendments to the Plan must be implemented as soon as possible, but no later than six months after the amendments become part of the Plan. Section 112.4(f) allows a facility owner or operator to appeal a decision made by the Regional Administrator requiring a Plan amendment.

Revise the SPCC Plan

The facility owner or operator must amend his/her Plan in accordance with §112.7 whenever there is a change in the facility's design, construction, operation, and maintenance that materially affects the facility's potential to discharge oil into navigable waters. Such facility changes may include the dismantling and removal of a container; the addition of a new or rebuilt container; a change in the service of a container; any physical changes or improvements to the facility; or the construction of a new well and associated piping. The activities to amend the SPCC Plan as a result of these facility changes are estimated to involve mostly facility technical personnel, as well as some clerical personnel. Unless a facility owner or operator has a self-certified Plan, the amended Plan must also be certified by a PE prior to implementation. Such amendments to the SPCC Plan must be implemented as soon as possible, but not later than six months after the change occurs.

Owners and operators of some fraction of SPCC-regulated facilities (new and existing) will be required to amend their Plans as a result of discharging oil or modifying their facility. For the 2002 rule ICR, based on spill data obtained from the Emergency Response Notification System database, EPA estimated that owners and operators of approximately 0.15 percent of all facilities would incur costs each year due to reporting requirements related to an oil discharge.²⁰ In addition, based on conversations with EPA regional personnel involved with the SPCC program, EPA estimated that owners and operators of approximately 10 percent of all facilities would incur recordkeeping and reporting costs annually as a result of facility modifications, independent of those related to the five-year review.⁸

Maintain the SPCC Plan and Keep Records

Section 112.3 requires the owner or operator to maintain a copy of the SPCC Plan at the facility, if the facility is normally attended for at least four hours per day or, if not, at the nearest field office. The Plan must be available to the Regional Administrator for review during normal working hours (40 CFR 112.3(e)). In addition, a facility owner or operator is required to maintain (and update) Plan-specific records as outlined under §112.7(e). Plan maintenance and recordkeeping activities are estimated to involve almost entirely technical personnel time, although a small amount of clerical personnel time may also be required for these activities.

²⁰ Information Collection Request for the final rule to amend the oil pollution prevention regulation (40 CFR part 112), May 2002.

Per-facility burden hour estimates are based primarily on the best professional judgment of staff at ABB Environmental Services, who were experienced in preparing SPCC Plans, prior to the development of the economic analysis in support of the 2002 SPCC final rule. These estimates were developed for production and storage facilities of various sizes, and for clerical, technical/engineering, and management hours. The burden included new Plan preparation (site work, regulatory review, review of existing procedures, formulating new procedures, and preparing the Plan); Plan modification (site work, regulatory review, review of existing procedures, formulating new or changed procedures or recommendations, and preparing the amendment); formal review (site work, regulatory review, review of existing procedures, and preparing the review report); submittal of information after a discharge; and recordkeeping requirements (maintaining the Plan, and maintaining records of inspections and of equipment maintenance).

Estimated Paperwork-Related Activity Burden

For the 2002 rule ICR, EPA reviewed these estimates with EPA regional personnel involved with the SPCC program, and on several occasions EPA has solicited public comment concerning the burden estimates. No commenter has provided more-complete data on the annual burden for required information collection activities for typical facilities. When preparing an ICR renewal in 2004, EPA contacted representatives of nine facilities affected by SPCC requirements as well as engineering firms that prepare SPCC Plans, regarding the paperwork burden assumptions.²¹ The nine facilities were from the electric utility and petroleum industries and represented various SPCC facility sizes. The interviews provided insight into the reasonableness of EPA's burden estimates, and the paperwork burden owners and operators of facilities incur when complying with the SPCC rule. Therefore, EPA used these burden estimates for main paperwork-related compliance activities in this analysis. Exhibit 5-2 presents the estimated activity burden for individual compliance items in the baseline.

²¹ The contacted individuals are: Peter Wolberg at Western Gas Resources, Jerry Steckard at Hyperion Energy, Joanne Lupa at Massachusetts Electric Co., Kyle Mullens at Kaneb Pipe Line Partners, L.P., Jim Baker at Colonial Group Inc., Matt Yost at Martin Midstream Partners L.P., Sally Rogers at Sinclair Oil Corp. Casper Refinery, Block Andrews at Aquila, Inc., and Brad Bergman at Sun Ray Energy Co.

Exhibit 5-2
Baseline Activity Paperwork-Related Burden Estimates

Type of Facility ¹		Burden Hours				Burden Cost (2005\$)			
		Managerial (\$55.7/hr)	Technical (\$47.9/hr)	Clerical (\$25.3/hr)	Total Labor Hours	Paperwork O&M and Capital Costs	PE Cost (O&M) ²	Total Labor Cost	Total Cost
Preparation of New Plan									
Storage	Categories I&II	6.0	25.0	4.0	35.0	\$0	\$2,000	\$1,630	\$3,630
	Category III	6.0	44.0	6.0	56.0	\$0	\$2,550	\$2,590	\$5,140
	Category IV	6.0	76.0	8.0	90.0	\$0	\$3,110	\$4,180	\$7,290
Production	Categories I&II	6.0	28.0	4.0	38.0	\$0	\$2,000	\$1,780	\$3,780
	Category III	6.0	46.0	6.0	58.0	\$0	\$2,550	\$2,690	\$5,240
	Category IV	6.0	77.0	8.0	91.0	\$0	\$3,110	\$4,230	\$7,340
Modification of Plan									
Storage	Categories I&II	0.0	4.5	1.0	5.5	\$0	\$750	\$241	\$991
	Category III	0.0	4.5	1.0	5.5	\$0	\$1,030	\$241	\$1,270
	Category IV	0.0	4.5	1.0	5.5	\$0	\$1,310	\$241	\$1,550
Production	Categories I&II	0.0	4.5	1.0	5.5	\$0	\$750	\$241	\$991
	Category III	0.0	4.5	1.0	5.5	\$0	\$1,030	\$241	\$1,270
	Category IV	0.0	4.5	1.0	5.5	\$0	\$1,310	\$241	\$1,550
Five-year Review - No Plan Amendment									
Storage	Categories I&II	1.0	2.5	0.5	4.0	\$0	\$0	\$188	\$188
	Category III	1.0	4.5	1.0	6.5	\$0	\$0	\$297	\$297
	Category IV	1.0	8.0	1.0	10.0	\$0	\$0	\$464	\$464
Production	Categories I&II	1.0	3.5	0.5	5.0	\$0	\$0	\$236	\$236
	Category III	1.0	5.5	1.0	7.5	\$0	\$0	\$345	\$345
	Category IV	1.0	9.0	1.0	11.0	\$0	\$0	\$512	\$512

Exhibit 5-2
Baseline Activity Paperwork-Related Burden Estimates

Type of Facility ¹		Burden Hours				Burden Cost (2005\$)			
		Managerial (\$55.7/hr)	Technical (\$47.9/hr)	Clerical (\$25.3/hr)	Total Labor Hours	Paperwork O&M and Capital Costs	PE Cost (O&M) ²	Total Labor Cost	Total Cost
Five-year Review-Amendment									
Storage	Category I&II	1.0	7.0	2.0	10.0	\$0	\$750	\$442	\$1,190
	Category III	1.0	9.0	2.0	12.0	\$0	\$1,030	\$538	\$1,570
	Category IV	1.0	12.5	2.0	15.5	\$0	\$1,310	\$705	\$2,010
Production	Category I&II	1.0	8.0	2.0	11.0	\$0	\$750	\$490	\$1,240
	Category III	1.0	10.0	2.0	13.0	\$0	\$1,030	\$585	\$1,610
	Category IV	1.0	13.5	2.0	16.5	\$0	\$1,310	\$753	\$2,060
Oil Discharge									
Storage	Category I&II	1.0	1.0	0.0	2.0	\$14	\$0	\$104	\$114
	Category III	1.0	1.0	0.0	2.0	\$16	\$0	\$104	\$117
	Category IV	1.0	1.0	0.0	2.0	\$21	\$0	\$104	\$121
Production	Category I&II	1.0	1.0	0.0	2.0	\$14	\$0	\$104	\$114
	Category III	1.0	1.0	0.0	2.0	\$16	\$0	\$104	\$117
	Category IV	1.0	1.0	0.0	2.0	\$21	\$0	\$104	\$121
Recordkeeping									
Storage	Category I&II	0.0	2.0	0.5	2.5	\$200	\$0	\$108	\$108
	Category III	0.0	3.3	0.5	3.8	\$200	\$0	\$171	\$171
	Category IV	0.0	7.9	0.5	8.4	\$200	\$0	\$391	\$391
Production	Category I&II	0.0	1.5	0.5	2.0	\$200	\$0	\$85	\$85
	Category III	0.0	1.3	0.5	1.8	\$200	\$0	\$75	\$75
	Category IV	0.0	1.3	0.5	1.8	\$200	\$0	\$75	\$75

¹ See Chapter 4 for the definitions of the facility types.

² PE costs represent the cost of hiring an outside engineer.

5.2 Capital and Operation and Maintenance (O&M) Activities Costs

Capital and O&M costs include the cost of installing and maintaining secondary containment structures; conducting integrity testing of containers, valves, and piping; conducting spill prevention briefings; providing a drainage system for tank loading/unloading areas; and other activities. Below are descriptions of these activities followed by a discussion of their estimated unit costs.

5.2.1 Capital and O&M Activities

Integrity Testing

Sections 112.8(c)(6) and 112.12(c)(6) require the integrity testing of bulk storage containers on a regular schedule and whenever material repairs are done. Section 112.7(d) requires that if the installation of secondary containment is not practicable, the owner or operator must, among other measures, conduct periodic integrity tests for bulk storage containers and periodic integrity and leak testing of associated valves and piping.

Secondary Containment

Various sections of the rule require secondary containment to prevent discharges of oil to navigable waters and adjoining shorelines. For example, §§112.8(c)(2) and 112.12(c)(2) require secondary containment for the entire capacity of the largest single bulk storage container and sufficient freeboard to contain precipitation. Section 112.7(h) requires containment of at least the maximum capacity of any single compartment of a tank car or tank truck loaded or unloaded at the facility at a loading or unloading rack. Section 112.7(c) requires appropriate containment and/or diversionary structures or equipment to prevent a discharge as described in §112.1(b). Other secondary containment provisions apply to other circumstances such as those for mobile or portable containers (§§112.8(c)(11) and 112.12(c)(11)) or bulk storage containers at production facilities (§112.9(c)(2)).

Other Capital and Operational Activities

EPA estimated costs associated with several other relevant SPCC compliance activities. These costs consist of one-time initial costs to purchase and install equipment as well as costs of ongoing maintenance, upkeep, and training. Compliance activities include:

- Discharge prevention briefing. Section 112.7(f)(3) requires owners and operators to schedule and conduct discharge prevention briefings for facility personnel to ensure adequate understanding of the SPCC Plan.
- Drainage system for tank truck loading/unloading areas. Section 112.7(h)(1) requires a quick drainage system for tank truck loading/unloading areas where rack area drainage does not flow into a catchment basin or treatment facility designed to handle discharges.
- Valves for drainage from diked areas. Sections 112.8(b)(2) and 112.12(b)(2) require appropriate drainage from diked areas using valves of manual, open-and-closed design.

- Drainage systems from undiked areas. Sections 112.8(b)(3) and 112.12(b)(3) require drainage systems from undiked areas with a potential for a discharge to flow into ponds, lagoons, or catchment basins designed to retain oil or return it to the facility.
- Requirements for pump transfer. Sections 112.8(b)(5) and 112.12(b)(5) require that where drainage waters are treated in more than one treatment unit and such treatment is continuous and pump transfer is needed, then two “lift” pumps are provided and at least one of the pumps is permanently installed.

5.2.2 Capital and O&M Cost Estimates

One of the final rule amendments is to provide an optional alternative to the general secondary containment requirements for oil-filled operational equipment that meets qualifying criteria. For this analysis, EPA developed new cost estimates for performing integrity testing and for providing secondary containment at facilities with qualified oil-filled operational equipment. For other capital and O&M activities, the Agency used the cost estimates developed as part of the economic analysis in support of the 2002 SPCC rule, converted to 2005 dollars.²²

Integrity Testing

EPA estimated the annualized cost of conducting integrity testing at approximately \$120 for owners and operators of Category I facilities, \$350 for owners and operators of Category II facilities, \$2,640 for owners and operators of Category III facilities, and \$15,700 for owners and operators of Category IV facilities. The unit cost of integrity testing was estimated based on interviews with several tank inspectors and engineering firms.²³ The unit cost was estimated at \$700, \$1,000, \$3,000, and \$10,000 per tank for owners and operators of Category I, Category II, Category III, and Category IV facilities, respectively. The cost of performing integrity testing could vary significantly depending on the container type, capacity, type of oil, and other site-specific factors. For this analysis, according to industry standards (e.g., API-653 and STI SP-001), EPA assumed that tanks would be subject to inspection and integrity testing once every 10 years. In practice, however, the interval between successive inspections depends on the tank and service conditions (in particular, tank configuration, the shell thickness and expected corrosion rate) and can exceed 10 years. The maximum interval between inspections under the API-653 standard is 20 years. Therefore, in some cases, owners or operators of facilities may perform integrity testing less often than every 10 years. The 2002 SPCC rule allows the use of environmentally equivalent measures in lieu of inspection and integrity testing, consistent with good engineering practice. Such measures may have lower operational costs. For example, for shop-built containers with a shell capacity of 30,000 gallons or under, an environmentally equivalent measure might be to combine appropriate visual inspection with elevation of the container such that all sides are visible and corrosion is minimized. As a result, EPA's analysis

²² Screening Analysis of the Spill Prevention, Control, and Countermeasure Program Impacts on Small Entities, March 2002.

²³ The estimate was based on interviews with engineers at (1) InterSpec, LLC, an inspection and engineering services firm, in February 2004, and (2) engineering firms that specialize in SPCC-related activities at facilities that store oil, in July 2005.

may overestimate the cost of integrity testing incurred by an owner or operator of an average facility. EPA calculated the total cost of integrity testing per facility by multiplying the cost for a single tank by the number of tanks per facility.²⁴

Secondary Containment

EPA estimated the one-time cost of implementing secondary containment requirements at new facilities with qualified oil-filled operational equipment at approximately \$11,000, \$27,500, and \$60,000 per facility respectively for owners and operators of Categories I&II, Category III, and Category IV facilities. The unit costs of providing secondary containment were estimated based on an interview with a specialized engineering firm that provides secondary containment to electrical substations and subsequent comments provided by electric utilities.²⁵ The cost of constructing a secondary containment structure is a one-time capital expenditure that EPA assumed owners and operators would incur in the first year. Some burden is associated with maintenance of secondary containment such as debris removal, etc. EPA did not include a cost estimate for this type of maintenance activity, as the Agency assumed that the cost for these activities is embedded in the overall facility maintenance costs and is not significant. The Agency assumed that the cost of providing secondary containment for facilities of other industries would be similar to that for electrical substations.

Other Capital and O&M Activities

As part of the economic analysis in support of the 2002 SPCC rule, EPA estimated compliance costs associated with other capital and O&M activities. The estimates in Exhibit 5-3 present costs developed for the 2002 rule converted to 2005 dollars. The largest component of other capital and operational costs for owners and operators of new facilities is the costs related to the installation of a drainage system for tank truck loading/unloading areas. The first-year cost to install this system is estimated at \$33,800 to \$67,600 for owners and operators of Category III and IV facilities, respectively. The only compliance activity presented in Exhibit 5-3 that is directly impacted by the 2006 SPCC final rule is the cost of providing secondary containment for qualified oil-filled operational equipment. Other unit cost estimates are illustrated in Exhibit 5-3 for reference only.

Exhibit 5-3 below summarizes the estimated capital and O&M costs that owners and operators of facilities are assumed to incur to comply with SPCC regulations. The requirements vary between storage and production facilities.

²⁴ The number of tanks per facility estimated using state oil tank databases was two, four, nine, and 16 tanks for Category I, II, III, and IV facilities, respectively.

²⁵ The estimate was based on the interview with Bill Lawson at Portland General Electric in July 2005 and the NODA comments submitted to EPA.

Exhibit 5-3
Estimated Capital and O&M Costs by Facility Type

Cost Item	Categories I and II	Category III	Category IV
<u>New Facilities</u>			
<u>O&M Costs</u>			
Integrity Testing	\$170	\$2,640	\$15,700
Spill Prevention Briefing	\$163	\$404	\$656
<u>Capital Costs</u>			
Secondary Containment (Facilities with Oil-Filled Operational Equipment)	\$11,000-\$60,000		
Drainage System for Tank Truck Loading/Unloading Areas	\$0	\$33,800	\$67,600
Valves for Drainage from Diked Areas	\$730	\$2,300	\$14,400
Drainage Systems from Undiked Areas	\$2,700	\$5,400	\$93,100
Requirements for Pump Transfer (Storage Facilities)	\$0	\$3,440	\$13,800
Total¹ (Production Facilities)	\$14,800-\$63,800	\$56,300-\$105,000	\$203,000-\$252,000
Total¹ (Storage Facilities)	\$14,800-\$63,800	\$59,700-\$109,000	\$216,000-\$265,000
<u>Existing Facilities</u>			
<u>O&M Costs</u>			
Integrity Testing	\$170	\$2,640	\$15,700
Spill Prevention Briefing	\$154	\$380	\$618
<u>Capital Costs</u>			
Drainage System for Tank Truck Loading/Unloading Areas	\$0	\$69	\$137
Valves for Drainage from Diked Areas	\$56	\$165	\$931
Drainage Systems from Undiked Areas	\$0	\$0	\$0
Requirements for Pump Transfer (Storage Facilities)	\$0	\$69	\$274
Total¹ (Production Facilities)	\$389	\$3,280	\$17,400
Total¹ (Storage Facilities)	\$389	\$3,350	\$17,700

¹ The numbers do not add up to the total due to rounding.

5.3 Alternative Requirements Offered by the Final SPCC Rule

Oil Spill Contingency Plan for Facilities with Qualified OFE

In its final revisions to the SPCC rule, EPA is providing owners and operators of facilities with certain types of oil-filled operational equipment the option of preparing an oil spill contingency plan and a written commitment of manpower, equipment, and materials in lieu of providing secondary containment for qualified oil-filled operational equipment, without making an individual impracticability determination as required in §112.7(d).

EPA developed a unit-cost estimate for preparing an oil spill contingency plan in 2005 to evaluate the potential impacts of the final revisions to the SPCC rule.²⁶ A facility owner or operator, who chooses to prepare an oil spill contingency plan instead of providing secondary containment, would incur labor and capital costs. This section describes major activities involved in plan preparation and implementation, as well as capital expenditures.

EPA assumed that the activities associated with preparing a contingency plan are similar to those required by a Facility Response Plan (FRP). Therefore, the hour and cost burden estimates associated with preparing a contingency plan are based on burden estimates developed for an FRP.²⁷ Since an FRP is more complex than an oil spill contingency plan, the FRP cost estimates were adjusted downward to estimate the burden for the contingency plan. EPA assumed that the following elements would be included in the oil spill contingency plan preparation:

- Emergency Response;
- Hazard Evaluation;
- Discussion of Spill Scenarios;
- Discharge Detection; and
- Plan Implementation.

Given the smaller requirements for a contingency plan offered by the final SPCC rule compared to the FRP requirements, the cost associated with each of these elements was assumed to be half the FRP cost (except for discharge detection, which was assumed to be the same). The cost estimates were inflated to \$2005 using the Bureau of Labor Statistics= Producer Production Index. EPA assumed that the managerial, technical, and clerical percentage of the total labor burden associated with preparing a contingency plan is the same as that for preparing a new SPCC Plan. The typical annual cost of preparing an oil spill contingency plan is estimated at \$818.

Another labor component associated with the contingency plan option involves training facility personnel for future amendments to the contingency plan. Using best professional judgment, EPA estimated that it would take approximately five hours of technical personnel's time to perform contingency plan training at a typical facility.

The capital expenditures associated with contingency plan preparation and implementation consist of two major items, upgrading hand-held communication equipment and providing response equipment. A typical upgrade of communication equipment would require purchasing six two-way radios, five for facility personnel and one for a response coordinator. Based on comparable market prices, EPA estimated the cost of two-way radios at \$50 each. Response equipment required as part of the contingency plan varies across facilities depending

²⁶ Information Collection Request for the proposed rule to amend the oil pollution prevention regulation (40 CFR part 112), August 2005.

²⁷ For details, see "Regulatory Impact Analysis of Revisions to the Oil Pollution Prevention Regulation (40 CFR 112) to Implement the Facility Response Planning Requirements of the Oil Pollution Act of 1990," June 1994.

on industry profile and size. In its estimation of a typical cost of response equipment, EPA assumed that a facility owner or operator would need to provide approximately 100 feet of containment boom. The total cost for response equipment consists of (1) a 95-gallon Overpack Spill Response Kit, estimated at \$495²⁸, (2) oil containment boom, estimated at \$621²⁹, and (3) an oil skimmer, estimated at \$1,000.³⁰ Exhibit 5-4 presents the hour and cost burden estimated for a typical oil spill contingency plan.

Exhibit 5-4
Estimated Cost of Preparing a Typical Contingency Plan

Activity	Burden Hours				O&M Costs	Total Cost
	Management (\$55.7/hr)	Technical (\$47.9/hr)	Clerical (\$25.3/hr)	Total Labor Hours		
Prepare a contingency plan	2.5	12	4	18	-	\$815
Train personnel for contingency plan amendment	-	5	-	5	-	\$240
Upgrade hand-held communication equipment	-	-	-	-	\$300	\$300
Response equipment (site-specific)	-	-	-	-	\$2,120	\$2,120
Total¹	2.5	17	4	23	\$2,420	\$3,470

¹ The numbers do not add up to the total due to rounding.

5.4 State Overlap

Each state has its own regulations regarding the storage, handling, and containment of oil. In some cases, the effort required by these state regulations may be similar to or the same as what is required by the SPCC rule. Without taking into account similar requirements imposed by state regulations, the cost of compliance and cost savings associated with the regulatory changes could be overestimated.

The economic analysis of the 2002 SPCC rule attempted to account for overlap between the state requirements and that rule. The analysis revealed that 19 states had prevention planning requirements pursuant to state law. In certain cases, state regulations closely track or incorporate by reference federal SPCC requirements. In other cases, the degree of overlap is less complete but is still substantial. Based on a comparison of state regulations with a list of major SPCC planning requirements, EPA divided the 19 states into three overlap groups (complete, substantial, or partial), depending on the degree of overlap between the federal and state requirements. Based on the findings from the 19 states, EPA developed a nation-wide estimate for the degree of overlap between federal and state requirements. Exhibit 5-5 presents

²⁸ Source: Dawg Inc. at <http://www.dawginc.com/spill-kits/spill-kit-95-gallon-overpack.php>

²⁹ Source: New Pig at http://www.newpig.com/en_US/spill-absorbents/oil-spill-containment-booms.htm?jsessionid=UU2OUIFSN11ZUCTGIQVSFEQKMZCCWJVC

³⁰ Source: Versatech Products Inc. at http://www.versatech.com/recovery/RBS_skimmers.html.

the estimated percentage reduction on total burden attributed to overlap in requirements between the SPCC rule and state regulations.

Exhibit 5-5
Estimated Percentage Reduction in Total Burden Due to State Overlap

Degree of Overlap	Categories I and II	Category III	Category IV	Total
Complete Overlap	4.4%	11.2%	15.1%	5.9%
Substantial Overlap	3.1%	7.8%	10.8%	4.2%
Partial Overlap	2.1%	5.3%	7.6%	2.8%
Total	9.6%	24.2%	33.4%	13.0%

As part of the regulatory analysis for the 2005 proposed SPCC amendments, EPA studied the overlap of state regulations to determine whether to adjust the estimate to account more accurately for recent changes in state requirements and/or refine the previously generated estimates. As a result of this review, the Agency concluded that there was non-compelling evidence to adjust the overlap estimate between the SPCC final rule and state regulations. When assessing cost savings resulted from the reduced SPCC requirements, EPA takes into account the estimated degree of overlap to avoid double counting. However, the overlap estimates are applicable only to the regulatory relief options that involve the total cost of compliance, such as reduced requirements for motive power. The reduced burden due to state overlap was estimated by applying the percentages presented in Exhibit 5-5 to the total burden associated with each paperwork compliance activity.

5.5 Annualizing Estimated Changes in Compliance Costs

Changes in compliance costs presented in subsequent chapters (Chapter 6 through Chapter 9) are estimated in annualized net present values over a ten-year period. First, EPA calculated the net present value of a projected stream of future cost savings using the 3 and 7 percent discount rates.³¹ EPA defined the ten-year period of analysis as 2008 through 2017. The net present value of a projected stream of cost savings is calculated by multiplying the estimated savings in each year by a time-dependent weight, d_t , and adding all of the weighted values as follows:

$$NPV = NB_0 + d_1NB_1 + d_2NB_2 + \dots + d_nNB_n$$

where,

NB_t is the net benefits that accrue at the end of period, t , and the discounting weights are given by:

$$d_t = 1/(1+r)^t$$

where r is the discount rate and n is the last year of the analysis.

³¹ These discount rate values reflect guidance from the Office of Management and Budget regulatory analysis guidance document, Circular A-4 (OMB, 2003).

After the present value of costs is calculated using the *NPV* formula above, this present value is then annualized according to the following formula:

$$AC = PVC \times \frac{r \times (1 + r)^n}{(1 + r)^n - 1}$$

where,

AC = annualized cost accrued at the end of each of *n* periods;

PVC = present value of costs;

r = the discount rate per period; and

n = the analysis period.

Note that the annualized cost is the amount one would have to pay at the end of each period to add up to the same cost in present value terms as the stream of costs being annualized.³²

³² Guidelines for Preparing Economic Analyses, Chapter 6 "Analysis of Social Discounting", EPA, September 2000.

6 Qualified Facilities

EPA is amending the Oil Pollution Prevention regulation (40 CFR part 112) to provide an option to the owner or operator of a facility that meets specific qualifying criteria (hereafter referred to as a “qualified facility”) to self-certify his/her SPCC Plan in lieu of certification by a PE. The eligibility criteria are included in a new section of the rule at §112.3(g). According to §112.3(g), the self-certification option is available to the owners and operators of those facilities that (1) have had no single discharge as described in §112.1(b) greater than 1,000 gallons, and no two discharges as described in §112.1(b) each greater than 42 gallons within any 12-month period during the three years prior to the SPCC Plan self-certification date, or since becoming subject to 40 CFR part 112 if the facility has been in operation for less than three years; and (2) have 10,000 gallons or less in aggregate aboveground oil storage capacity.

EPA is amending §112.6 of the rule to outline the requirements that apply to qualified facilities with 10,000 gallons or less in aggregate oil storage capacity.

The rest of this chapter is organized as follows:

- Section 6.1 summarizes the changes in regulatory requirements applicable to qualified facilities.
- Section 6.2 describes the projected universe of affected facilities.
- Section 6.3 provides an estimate of cost savings resulting from the rule changes.

6.1 Changes in Regulatory Requirements

In §112.6(b), EPA describes the requirements applicable to qualified facilities (those that have 10,000 gallons or less in storage capacity). Owners or operators of qualified facilities have the option of self-certifying the SPCC Plan for their facility. Self-certified Plans for these facilities may include “environmentally equivalent” deviations to required Plan elements, as provided in §112.7(a)(2), or impracticability determinations with respect to any secondary containment requirements as provided in §112.7(d). However, such deviations or determinations must be reviewed and certified in writing by a PE. EPA outlines the requirements for PE certification of parts of a self-certified plan in §112.6(b)(4).

The option to self-certify a facility-specific SPCC Plan according to the requirements in §112.6(b) is available to any qualified facility having 10,000 gallons or less in storage capacity. EPA assumed that owners and operators of all new qualified facilities with storage capacity of less than 10,001 gallons would self-certify the Plan instead of having it certified by a PE. The Agency also assumed that under the new requirements, owners and operators of all existing qualified facilities would not use a PE to certify a technical amendment to their Plan.

6.2 Universe of Affected Facilities

EPA estimated that approximately 327,000 facilities with oil storage capacities of 10,000 gallons or less would be subject to SPCC in the first year of the amended rule. Over the next 10

years, approximately 345,000 facilities with storage capacities of 10,000 gallons or less will be subject to SPCC each year on average.³³

Exhibit 6-1 and Exhibit 6-2 present the projected number of existing and new qualified facilities from 2008 through 2017, respectively. The projected average annual numbers of existing and new qualified facilities are 337,000 and 7,260, respectively. The presented values in exhibits of this and subsequent chapters were not rounded to preserve the precision of the estimates that do not show a substantial change from year to year.

³³ See Chapter 4 on the SPCC universe for more information regarding how the industry estimates were calculated.

**Exhibit 6-1
Projected Total Number of Existing Qualified Facilities by Year and Industry Sector¹**

Industry	Number of Existing Facilities										Ten-Year Average
	2008 Year 1	2009 Year 2	2010 Year 3	2011 Year 4	2012 Year 5	2013 Year 6	2014 Year 7	2015 Year 8	2016 Year 9	2017 Year 10	
Oil Production	23,500	24,700	26,400	27,500	28,300	29,500	30,700	31,900	33,100	34,600	29,000
Farms	141,000	141,000	140,000	140,000	139,000	138,000	138,000	137,000	136,000	136,000	139,000
Electric Utility Plants	20,600	21,300	22,000	22,700	23,400	24,100	24,900	25,700	26,500	27,400	23,900
Petroleum Refining and Related Industries	85	85	86	86	87	87	88	88	89	89	87
Chemical Manufacturing	1,050	1,050	1,050	1,050	1,060	1,060	1,060	1,070	1,070	1,070	1,060
Food Manufacturing	1,670	1,680	1,690	1,700	1,710	1,720	1,740	1,750	1,760	1,770	1,720
Manufacturing Facilities Using and Storing AFVO	2,580	2,590	2,600	2,620	2,630	2,640	2,650	2,660	2,670	2,680	2,630
Metal Manufacturing	1,630	1,640	1,650	1,650	1,660	1,670	1,680	1,680	1,690	1,700	1,660
Other Manufacturing	8,760	8,750	8,730	8,720	8,700	8,690	8,670	8,660	8,640	8,620	8,690
Real Estate Rental and Leasing	24,100	24,600	25,100	25,700	26,200	26,700	27,300	27,800	28,400	29,000	26,500
Retail Trade	14,100	14,100	14,100	14,200	14,200	14,200	14,300	14,300	14,400	14,400	14,200
Contract Construction	11,100	11,300	11,500	11,700	11,900	12,200	12,400	12,600	12,900	13,100	12,100
Wholesale Trade	9,410	9,420	9,430	9,440	9,450	9,460	9,470	9,480	9,490	9,500	9,460
Other Commercial	11,200	11,700	12,200	12,700	13,300	13,900	14,500	15,100	15,800	16,500	13,700
Transportation	8,080	8,280	8,480	8,690	8,900	9,120	9,340	9,570	9,800	10,000	9,030
Arts Entertainment & Recreation	11,800	12,100	12,400	12,800	13,100	13,500	13,800	14,200	14,600	15,000	13,300
Other Services (Except Public Administration)	6,280	6,340	6,390	6,450	6,500	6,560	6,620	6,670	6,730	6,790	6,530
Education	1,880	1,970	2,050	2,140	2,230	2,330	2,430	2,540	2,650	2,760	2,300
Petroleum Bulk Stations and Terminals	467	441	417	393	372	351	331	313	295	279	366
Hospitals & Other Health Care	5,300	5,370	5,450	5,530	5,600	5,680	5,760	5,840	5,930	6,010	5,650
Accommodation and Food Services	4,530	4,590	4,660	4,720	4,790	4,860	4,920	4,990	5,060	5,130	4,830
Fuel Oil Dealers	303	300	296	293	290	287	284	281	277	274	289
Gasoline stations	1,870	1,850	1,830	1,810	1,790	1,770	1,750	1,730	1,710	1,700	1,780
Information Finance and Insurance	3,500	3,580	3,670	3,760	3,850	3,940	4,030	4,130	4,230	4,330	3,900
Mining	1,270	1,270	1,270	1,270	1,270	1,270	1,270	1,260	1,260	1,260	1,270
Religious Organizations	1,450	1,470	1,490	1,520	1,540	1,560	1,590	1,610	1,630	1,660	1,550
Warehousing and Storage	928	1,060	1,210	1,390	1,580	1,810	2,070	2,360	2,700	3,090	1,820
Military Installations	152	155	157	159	162	164	167	169	172	174	163
Pipelines	673	665	657	649	641	633	625	618	610	603	637
Government	569	577	586	595	604	613	622	631	641	651	609
Total	320,000	324,000	328,000	331,000	335,000	339,000	343,000	347,000	351,000	356,000	337,000

¹ The level of precision of the numeric values reflects underlying data.

Exhibit 6-2
Projected Total Number of New Qualified Facilities by Year and Industry Sector¹

Industry	Number of New Facilities										Ten-Year Average
	2008 Year 1	2009 Year 2	2010 Year 3	2011 Year 4	2012 Year 5	2013 Year 6	2014 Year 7	2015 Year 8	2016 Year 9	2017 Year 10	
Oil Production	1,220	1,720	1,080	804	1,160	1,200	1,250	1,140	1,560	1,020	1,220
Farms	1,270	1,260	1,260	1,250	1,250	1,240	1,240	1,230	1,230	1,220	1,240
Electric Utility Plants	679	701	723	746	770	795	820	846	873	901	786
Petroleum Refining and Related Industries	2	2	2	2	2	2	2	2	2	2	2
Chemical Manufacturing	26	26	26	26	26	26	27	27	27	27	26
Food Manufacturing	40	40	41	41	41	41	42	42	42	42	41
Manufacturing Facilities Using and Storing AFVO	62	62	62	62	63	63	63	63	64	64	63
Metal Manufacturing	24	25	25	25	25	25	25	25	25	25	25
Other Manufacturing	208	208	207	207	206	206	206	205	205	205	206
Real Estate Rental and Leasing	532	543	554	565	577	589	601	613	626	639	584
Retail Trade	333	334	335	336	337	337	338	339	340	341	337
Contract Construction	322	328	334	341	347	354	360	367	374	381	351
Wholesale Trade	195	196	196	196	196	196	197	197	197	197	196
Other Commercial	517	540	564	589	615	642	671	700	731	764	633
Transportation	256	263	269	276	282	289	296	303	311	318	286
Arts Entertainment & Recreation	325	334	343	352	362	372	382	392	402	413	368
Other Services (Except Public Administration)	121	122	123	124	125	126	127	128	129	130	125
Education	86	89	93	97	101	106	110	115	120	125	104
Petroleum Bulk Stations and Terminals	8	7	7	6	6	6	5	5	5	5	6
Hospitals & Other Health Care	76	77	78	79	81	82	83	84	85	86	81
Accommodation and Food Services	77	78	79	80	82	83	84	85	86	87	82
Fuel Oil Dealers	5	5	5	5	5	5	5	5	5	5	5
Gasoline stations	20	19	19	19	19	19	18	18	18	18	19
Information Finance and Insurance	97	99	101	104	106	109	111	114	117	119	108
Mining	19	19	19	19	19	19	19	19	19	19	19
Religious Organizations	22	23	23	23	24	24	24	25	25	25	24
Warehousing and Storage	155	177	202	231	264	302	345	394	451	515	303
Military Installations	2	2	2	2	2	3	3	3	3	3	3
Pipelines	6	6	6	6	6	5	5	5	5	5	6
Government	9	9	9	9	9	9	10	10	10	10	9
Total	6,720	7,310	6,780	6,630	7,100	7,280	7,460	7,510	8,080	7,710	7,260

¹ The level of precision of the numeric values reflects underlying data.

The facility estimates presented in Exhibit 6-1 and Exhibit 6-2 above represent the projected number of facilities that could potentially be “qualified facilities” based on their storage capacity alone. Eligibility for the alternative rule requirements, however, also considers the facility’s discharge history. In the amended rule, a qualified facility cannot have had a single discharge (as defined in §112.1(b)) greater than 1,000 gallons or two discharges each greater than 42 gallons during any 12-month period in the past three years.

To evaluate the extent to which qualified facilities might not be eligible for relief, EPA examined National Response Center (NRC) spill data to identify oil discharges involving storage tanks of at least 55 gallons, and where the volume spilled was at least 42 gallons but not more than 10,000 gallons. Since NRC does not record the total oil storage capacity of the facility involved in a reported discharge, EPA developed estimates based on the assumptions that 25 percent, 50 percent, and 75 percent of discharges greater than or equal to 42 gallons, and less than or equal to 10,000 gallons, were from qualified facilities. Exhibit 6-3 presents the estimated number of potential qualified facilities that reported discharges over the last three years, based on the NRC data.

Exhibit 6-3
Estimated Number of Facilities with Oil Discharges within the Last Three Years

Percentage of Qualified Facilities	Number of Facilities with Oil Discharges	Percent of Facilities with Oil Discharges¹
Total in NRC Database	593	0.47%
25% Scenario	148	0.12%
50% Scenario	297	0.23%
75% Scenario	445	0.35%

¹ Calculated percentages are based on the number of existing facilities only, since new facilities do not yet have a three-year discharge history.

Because the NRC database does not provide information on the aggregate aboveground storage capacity of facilities, and the number of facilities with oil discharges of 10,000 gallons or less represents a small percentage of potential qualified facilities, EPA ultimately decided not to adjust the estimated number of existing and new facilities with 10,000 gallons or less of oil that could potentially qualify for this relief based on the NRC spill data. Exhibit 6-4 presents the projected 10-year average numbers of existing and new qualified facilities used in the remainder of this analysis.

Exhibit 6-4
Projected Number of Existing and New Qualified Facilities
(10-Year Average)

Qualified Facilities	Total
Existing	337,000
New	7,260
Total	345,000

As with all of the options considered in developing amendments to the rule, facility owners or operators would have the choice of complying with the existing SPCC rule (as amended in 2002) or taking advantage of the offered requirements for qualified facilities outlined in §112.6. EPA does not know how many facility owners or operators will choose to avail themselves of the “qualified facility” options.³⁴ EPA assumed that owners or operators would likely choose the alternative requirements if their facility met the qualifying criteria because it would be less costly than following the requirements that apply to all other facilities. In this analysis, EPA assumed that owners and operators of all facilities that meet the qualified facilities criteria would take advantage of the relief provided in these amendments.

6.3 Compliance Cost Savings

To assess the impact of §112.6, EPA estimated the difference in compliance costs for owners and operators of qualified facilities between the 2002 SPCC rule and the final rule amendments.

Based on the different compliance requirement options available to owners and operators of qualified facilities, EPA estimated that annual cost savings for owners and operators of existing and new qualified facilities would be \$72.30 and \$1,880, respectively. Exhibit 6-5 itemizes the individual cost components owners and operators of qualified facilities could be required to fulfill based on the current SPCC requirements and the compliance cost savings associated with the lessened requirements of the final rule. These costs are averaged over all qualified facilities, accounting for the probability that owners and operators of individual facilities will incur the cost in a particular year. As a result, low probability costs (e.g., complying with §112.4(c)) distributed across owners and operators of many facilities yield only nominal per-facility costs.

³⁴ The projected number of affected facilities under the SPCC requirements includes farms. Although EPA is extending the compliance dates for farms until it determines specific requirements for this industry, the Agency does not expect these requirements to be more stringent than the rule requirements for qualified facilities. Therefore, EPA expects farms to accrue the cost savings as much as qualified facilities from other industries.

Exhibit 6-5

Annual Compliance Costs and Potential Compliance Cost Savings per Qualified Facility

Compliance Requirements	Annual Cost ¹		Annual Cost Savings of SPCC Rule without PE Certification Requirements
	2002 SPCC Rule	SPCC Rule without PE Certification Requirements	
Existing Qualified Facilities			
Five -Year Review - 112.5(b)	\$46.4	\$41.9	\$4.50
Oil Discharge – 112.4(c)	\$0.17	\$0.17	-
Modification of Plan - 112.4(a) and 112.5(a)	\$89.6	\$21.8	\$67.8
Recordkeeping	\$89.8	\$89.8	-
Total paperwork-related	\$226	\$154.0	\$72.3
Integrity Testing	\$119	\$119	-
Other Capital	\$206	\$206	-
Total Capital	\$325	\$325	-
Total	\$552	\$479	\$72.3
New Qualified Facilities			
New Plan - 112.3(a)	\$3,320	1,520	\$1,810
Oil Discharge - 112.4(c)	\$0.17	\$0.17	-
Modification of Plan - 112.5(a)	\$89.6	\$21.8	\$67.8
Recordkeeping	\$130	\$130	-
Total paperwork-related	\$3,540	\$1,670	\$1,880
Integrity Testing	\$119	\$119	-
Other Capital	\$3,590	\$3,590	-
Secondary Containment	\$4,000	\$4,000	-
Total Capital	\$7,710	\$7,710	-
Total	\$11,300	\$9,380	\$1,880

¹ These cost estimates only reflect major compliance activities and do not account for all costs associated with the SPCC requirements.

EPA calculated the total compliance cost savings for owners and operators of qualified facilities using the projected number of existing and new qualified facilities and their corresponding per-facility compliance cost savings estimates. The estimation process is summarized in the equation below:

$$Total\ Cost\ Savings = \sum [(EFac * ECost\ Savings) + (NFac * NCost\ Savings)]$$

where,

EFac = the projected number of existing affected qualified facilities

NFac = the projected number of new affected qualified facilities

ECost Savings = the per facility cost savings based on compliance options available to existing qualified facilities

NCost Savings = the per facility cost savings based on compliance options available to new qualified facilities

Using the equation above, EPA estimated that the final SPCC rule would reduce compliance costs by \$37.9 million and \$37.7 million per year, discounted at 3 percent and 7 percent, respectively. Exhibit 6-6 presents the annual, total, and annualized cost savings for qualified facilities each year.

Exhibit 6-6
Total Projected Compliance Cost Savings for Qualified Facilities

	Projected Annual Compliance Cost Savings										Ten-Year Average	Annualized
	2008 Year 1	2009 Year 2	2010 Year 3	2011 Year 4	2012 Year 5	2013 Year 6	2014 Year 7	2015 Year 8	2016 Year 9	2017 Year 10		
Total - not discounted	35.8	37.1	36.4	36.4	37.5	38.2	38.8	39.2	40.6	40.2	380.2	38.0
Total - 3% discounted	34.7	35.0	33.3	32.3	32.4	32.0	31.5	30.9	31.1	29.9	323.3	37.9
Total - 7% discounted	33.4	32.4	29.7	27.8	26.8	25.4	24.2	22.8	22.1	20.4	265.0	37.7

6.4 Alternative Considered

In November 2005, EPA proposed to amend the SPCC rule to provide an option to allow the owner or operator of a facility that meets the qualifying criteria to self-certify his/her SPCC Plan in lieu of certification by a PE. Under the proposed amendment, a qualified facility would have been a facility subject to the SPCC rule that (1) had an aggregate facility oil storage capacity of 10,000 gallons or less; and (2) had no discharges as described in §112.1(b) during the 10 years prior to self-certification or since becoming subject to SPCC requirements if it had been in existence less than 10 years. Facilities subject to SPCC for less than 10 years, including new facilities, would have needed to demonstrate no discharges as described in §112.1(b) only for the period of time they had been subject to the SPCC regulation. Self-certified Plans would not have been able to include “environmentally equivalent” deviations to required Plan elements as provided in §112.7(a)(2), or impracticability determinations with respect to any secondary containment requirements as provided in §112.7(d). However, flexibility would have been provided for the security (§112.7(g)) and integrity testing (§§112.8(c)(6) and 112.12(c)(6)) provisions of the rule.

The projected reduction in compliance costs associated with this proposed amendment for owners and operators of qualified facilities was based on an average of an estimated 324,000 qualified facilities being eligible for the self-certification option and reduced integrity testing requirements. EPA estimated that compliance costs for owners and operators of qualified facilities would have decreased by \$36.3 million and \$36.2 million based on the relief offered to the owners and operators by not requiring PE certification of their Plans and providing lessened requirements for integrity testing, discounted at 3 percent and 7 percent, respectively.

7 Facilities with Qualified Oil-Filled Operational Equipment

EPA is amending the Oil Pollution Prevention regulation (40 CFR part 112) to provide a definition of oil-filled operational equipment (OFE) and an optional alternative to the general secondary containment requirements for oil-filled operational equipment that meets qualifying criteria (hereafter referred to as "qualified oil-filled operational equipment"). Section 112.7(k) of the final rule allows owners and operators of facilities with qualified oil-filled operational equipment to prepare an oil spill contingency plan and a written commitment of manpower, equipment, and materials to expeditiously control and remove any oil discharged that may be harmful, without having to make an individual impracticability determination as required in §112.7(d). Owners or operators who pursue this alternative are required to establish and document an inspection or monitoring program to detect equipment failure and/or a discharge from this qualified oil-filled operational equipment, in lieu of providing secondary containment.

EPA is adding §112.7(k)(1) to define the eligibility criterion that oil-filled operational equipment must meet in order to be considered qualified. This criterion specifically prohibits an owner or operator from pursuing the option if the facility has had a single discharge as described in §112.1(b) from any oil-filled operational equipment exceeding 1,000 U.S. gallons or no two discharges as described in §112.1(b) from any oil-filled operational equipment each exceeding 42 U.S. gallons within any twelve month period in the three years prior to the SPCC Plan certification date, or since becoming subject to 40 CFR part 112 if the facility has been in operation for less than three years.

7.1 Universe of Affected Facilities

The final changes for qualified oil-filled operational equipment address such items as hydraulic systems, lubricating systems (e.g., those for pumps, compressors, pumpjacks, and other rotating equipment including pumpjack lubrication systems), gear boxes, machining coolant systems, heat transfer systems, transformers, circuit breakers, electrical switches, and other systems that contain oil to enable operation of the devices.

EPA does not have data on the number of facilities with oil-filled operational equipment. To estimate the number of facilities affected by §112.7(k), EPA compiled a list of sectors using oil-filled operational equipment based on a review of the type of equipment covered by the definition and professional judgment regarding sectors that commonly use this equipment. EPA estimated the number of facilities in the electric utility sector, all of which are assumed to have oil-filled operational equipment, using data on the number of power plants provided by the EIA and the number of substations listed by each major utility reporting to the Federal Energy Regulatory Commission (FERC).³⁵

EPA assumed that existing SPCC-regulated facilities with qualified oil-filled operational equipment would already have secondary containment installed or a determination of the

³⁵ For detailed description of the methodology used to estimate the number of electric utilities, see Appendix C.

impracticability of secondary containment in accordance with §112.7(d). In such cases, owners and operators of facilities would not benefit from the reduced requirements.

EPA estimated that the total number of new facilities with oil-filled operational equipment would be approximately 7,410 in the first year. Over the next 10 years, an average of approximately 7,960 new facilities with OFE is projected to become regulated each year. Exhibit 7-1 presents the projected number of new SPCC-regulated facilities each year by industry sector. To estimate the number of facilities within these sectors that have OFE, EPA arbitrarily developed three scenarios whereby 25 percent, 50 percent, and 75 percent of the facilities in sectors thought to have oil-filled operational equipment may be affected by the 2006 rule amendments. EPA estimated that over the next 10 years, on average approximately 3,570 new facilities would have oil-filled equipment under the 25-percent scenario; 5,040 facilities under the 50-percent scenario; and 6,500 facilities under the 75-percent scenario. Exhibit 7-1 also presents the projected annual number of new SPCC-regulated facilities expected under each of these scenarios by industry sector.

Exhibit 7-1
Projected Number of New Facilities with Oil-Filled Operational Equipment by Industry Sector¹

Industry	Annual Number of New Facilities										10-Year Average			
	2008 Year 1	2009 Year 2	2010 Year 3	2011 Year 4	2012 Year 5	2013 Year 6	2014 Year 7	2015 Year 8	2016 Year 9	2017 Year 10	All Fac.	25% of Fac.	50% of Fac.	75% of Fac.
Electric Utility Plants ²	1,820	1,880	1,940	2,000	2,070	2,130	2,200	2,270	2,350	2,420	2,110	2,110	2,110	2,110
Oil Production ³	1,020	998	976	956	935	915	896	877	858	840	927	232	463	695
Farms ⁴	1,340	1,330	1,330	1,320	1,310	1,310	1,300	1,300	1,290	1,280	1,310	328	655	983
Petroleum Refining and Related Industries	37	37	37	37	38	38	38	38	38	39	38	9	19	28
Chemical Manufacturing	64	64	64	64	64	65	65	65	65	65	65	16	32	48
Food Manufacturing	84	85	85	86	86	87	87	88	89	89	87	22	43	65
Manufacturing Facilities Using and Storing AFVO	180	181	181	182	183	184	185	185	186	187	183	46	92	138
Metal Manufacturing	41	41	41	42	42	42	42	42	42	43	42	10	21	31
Other Manufacturing	368	368	367	366	366	365	364	364	363	362	365	91	183	274
Contract Construction	454	463	472	481	490	499	509	519	529	539	495	124	248	372
Other Commercial	698	729	761	795	830	866	905	945	987	1,030	854	214	427	641
Transportation	443	453	464	476	487	499	511	524	536	549	494	124	247	371
Arts Entertainment & Recreation	363	373	383	394	404	415	426	438	449	461	411	103	205	308
Education	341	356	371	388	404	422	440	459	479	500	416	104	208	312
Hospitals & Other Health Care	97	98	100	101	103	104	105	107	108	110	103	26	52	78
Mining	47	47	47	47	47	47	47	47	47	47	47	12	24	35
Pipelines	6	6	6	6	6	5	5	5	5	5	6	1	3	4
Government	9	9	9	9	9	9	10	10	10	10	9	2	5	7
Total⁵	7,410	7,520	7,630	7,750	7,880	8,010	8,140	8,280	8,430	8,580	7,960	3,570	5,040	6,500

¹ The level of precision of the numeric values reflects underlying data.

² EPA assumed that all facilities with all oil-filled equipment in the Electrical Utility Plant sector would be affected by this rule. The 25, 50 and 75 percent scenarios do not apply to this industry.

³ The number of oil production facilities was obtained from U.S. Energy Information Administration's Distribution and Production of Oil and Gas Wells by State (http://www.eia.doe.gov/pub/oil_gas/petrosystem/petrosysog.html). EPA assumed that each facility has four oil wells.

⁴ Growth rates for farms are based on data from U.S. Department of Agriculture.

⁵ The numbers do not add up to the total due to rounding.

The main benefit of §112.7(k), described earlier in this section, is to allow owners or operators of certain facilities to avoid the costs of secondary containment for OFE without the need for an impracticability determination. EPA recognizes that some owners and operators of new facilities will need to make an impracticability determination for their facilities due to oil storage other than their OFE storage. For owners and operators of these facilities, the cost savings will be lower, since they will be avoiding only an impracticability determination rather than secondary containment. EPA does not know what fraction of facilities falls into this category, and has decided not to incorporate this scenario in the analysis. As a result, EPA's analysis may overestimate the cost savings to owners and operators of facilities from the final rule amendments.

7.2 Compliance Cost Savings

To assess the impact of §112.7(k), EPA estimated the cost of the contingency plan and of a written commitment of the manpower, equipment, and materials that owners or operators of affected facilities would develop in lieu of providing secondary containment. A contingency plan prepared in accordance with 40 CFR 112.7(d) defines procedures and tactics for responding to discharges of oil into navigable waters or adjoining shorelines of the United States. The contingency plan is implemented whenever a discharge of oil has reached, or threatens, navigable waters or adjoining shorelines. EPA included the following elements in the cost estimate for a contingency plan: emergency response, hazard evaluation, discharge detection, discussion of spill scenarios, and plan implementation. The Agency estimated the total cost of a contingency plan at \$3,470, which includes the costs of paperwork-related activities, such as Plan preparation, and capital investments, such as equipment purchase and upgrade.

EPA calculated cost savings based on the assumption that owners and operators of new facilities with qualified oil-filled operational equipment would save the difference between the cost of secondary containment and the cost of preparing a contingency plan and a written commitment of manpower, equipment, and materials.³⁶ EPA estimated annual per-facility cost savings of \$7,530 to \$56,500 for new facilities, depending on a facility size (Category I through IV facilities), as can be seen in Exhibit 7-2.

³⁶ See Chapter 5 on Unit Compliance Costs for more information regarding the cost estimates associated with preparing a contingency plan.

Exhibit 7-2
Estimated Annual Affected Compliance Costs and Compliance Cost Savings by Size Category

Activity	Burden Hours				O&M Costs			Total Cost		
	Managerial (\$55.7/hr) ²	Technical (\$47.9/hr) ²	Clerical (\$25.3/hr) ²	Total Burden Hours	Categories I & II	Category III	Category IV	Categories I & II	Category III	Category IV
Relief from Compliance Costs Associated with Secondary Containment (A)										
Secondary containment cost savings	0.0	0.0	0.0	0.0	\$11,000	\$27,500	\$60,000	\$11,000	\$27,500	\$60,000
Added Compliance Costs Associated with Preparing a Contingency Plan (B)										
Prepare a contingency plan	2.5	12.0	4.0	18.0	-	-	-	\$815		
Train personnel for contingency plan amendment	0.0	5.0	0.0	5.0	-	-	-	\$240		
Upgrade hand-held communication equipment	0.0	0.0	0.0	0.0	\$300	\$300	\$300	\$300		
Response equipment (site-specific)	0.0	0.0	0.0	0.0	\$2,120	\$2,120	\$2,120	\$2,120		
Total ¹	2.5	17.0	4	23.0	\$2,420	\$2,420	\$2,420	3,470	3,470	3,470
Compliance Cost Savings per Facility with Qualified Oil-Filled Operational Equipment (equals A – B)¹								\$7,530	\$24,000	\$56,500

¹ The numbers do not add up to the total due to rounding.

² Wage rates are taken from the U.S. Department of Labor's Employment Cost Indexes and Levels, available at: <http://www.bls.gov/news.release/ecec.t11.htm>. Wage rates include wages and salaries; benefit costs include paid leave, supplemental pay, insurance, retirement and savings, legally required benefits, severance pay, and supplemental unemployment benefits. Overhead costs are computed separately from BLS data and assumed to be an additional 17% of the total wage rate, which comprises direct wages and salaries and employee benefits, as reported by BLS. The Employment Cost Index (ECI) was used to adjust labor rates to current dollars (September 2005\$).

To estimate the total compliance cost savings, EPA used the following formula:

$$\text{Total Cost Savings} = \sum [(NFac_s * \text{Cost Savings}_s)]$$

where,

NFac = the projected number of new affected facilities by size category, *s*

Cost Savings = the per facility cost savings based on exemptions for oil-filled operational equipment by size category, *s*

s = facility size categories: Categories I & II, Category III, and Category IV

EPA calculated total compliance cost estimates based on the three arbitrarily developed scenarios whereby 25 percent, 50 percent, and 75 percent of the facilities in sectors with oil-filled operational equipment may be affected by the final rule. The projected number of new facilities under these three scenarios by facility size is shown in Exhibit 7-3. EPA applied the cost savings presented in Exhibit 7-2 to the universe of affected facilities (Exhibit 7-3) to calculate the total cost savings for each scenario (Exhibit 7-4).³⁷

³⁷ For example, under the 25-percent scenario, there are, on average, a projected 24 new Category IV facilities with estimated compliance cost savings of \$56,500 per facility, which results in total cost savings of \$1.37 million for this category of new facilities.

Exhibit 7-3

Projected Number of New Facilities with Qualified Oil-Filled Operational Equipment by Size Category

	Projected Number of New Facilities with Qualified On-Filed Operational Equipment by Size Category										10-Year Average
	Annual Number of New Facilities										
	2008 Year 1	2009 Year 2	2010 Year 3	2011 Year 4	2012 Year 5	2013 Year 6	2014 Year 7	2015 Year 8	2016 Year 9	2017 Year 10	
Category I & II Facilities											
25% Scenario	2,600	2,650	2,710	2,770	2,830	2,890	2,960	3,020	3,090	3,170	2,870
50% Scenario	3,830	3,900	3,960	4,030	4,110	4,190	4,270	4,350	4,440	4,530	4,160
75% Scenario	5,060	5,140	5,220	5,300	5,390	5,480	5,580	5,680	5,780	5,890	5,450
Category III Facilities											
25% Scenario	607	622	639	656	673	691	710	729	749	770	684
50% Scenario	762	779	797	816	835	855	875	896	918	941	848
75% Scenario	918	937	956	976	997	1,020	1,040	1,060	1,090	1,110	1,010
Category IV Facilities											
25% Scenario	19	19	20	20	21	21	22	22	23	23	21
50% Scenario	27	28	28	29	29	30	31	31	32	33	30
75% Scenario	36	36	37	37	38	39	39	40	41	42	38

Exhibit 7-4
Projected Annual Compliance Cost Savings

	Total Cost Savings (Million \$)											
	2008 Year 1	2009 Year 2	2010 Year 3	2011 Year 4	2012 Year 5	2013 Year 6	2014 Year 7	2015 Year 8	2016 Year 9	2017 Year 10	10-year Total	Annualized
Not Discounted												
25% Scenario	\$35.2	\$36.0	\$36.9	\$37.7	\$38.6	\$39.6	\$40.5	\$41.5	\$42.6	\$43.7	\$392	\$39.2
50% Scenario	\$48.7	\$49.6	\$50.6	\$51.6	\$52.7	\$53.7	\$54.9	\$56.0	\$57.3	\$58.5	\$534	\$53.4
75% Scenario	\$62.2	\$63.2	\$64.3	\$65.5	\$66.7	\$67.9	\$69.2	\$70.6	\$72.0	\$73.4	\$675	\$67.5
3% discounted												
25% Scenario	\$34.2	\$33.9	\$33.7	\$33.5	\$33.3	\$33.1	\$33.0	\$32.8	\$32.6	\$32.5	\$333	\$39.0
50% Scenario	\$47.3	\$46.8	\$46.3	\$45.8	\$45.4	\$45.0	\$44.6	\$44.2	\$43.9	\$43.6	\$453	\$53.1
75% Scenario	\$60.4	\$59.6	\$58.9	\$58.2	\$57.5	\$56.9	\$56.3	\$55.7	\$55.1	\$54.6	\$573	\$67.2
7% discounted												
25% Scenario	\$32.9	\$31.5	\$30.1	\$28.8	\$27.5	\$26.4	\$25.2	\$24.2	\$23.2	\$22.2	\$272	\$38.7
50% Scenario	\$45.5	\$43.3	\$41.3	\$39.4	\$37.5	\$35.8	\$34.2	\$32.6	\$31.2	\$29.8	\$371	\$52.8
75% Scenario	\$58.1	\$55.2	\$52.5	\$50.0	\$47.5	\$45.3	\$43.1	\$41.1	\$39.1	\$37.3	\$470	\$66.8

Under the 25-percent scenario, EPA estimated that the amendments to §112.7(k) could reduce compliance costs by as much as \$39.0 million and \$38.7 million per year, discounted at 3 percent and 7 percent, respectively. Under the scenario where owners and operators of 50 percent of the facilities in industries identified as having oil-filled equipment will take advantage of the exemption, compliance costs would decrease by \$53.1 million and \$52.8 million per year, discounted at 3 percent and 7 percent, respectively. Under the 75-percent scenario, annual compliance costs would decrease by \$67.2 million and \$66.8 million, discounted at 3 percent and 7 percent, respectively.

7.3 Alternatives Considered

In the proposed SPCC rule, EPA considered allowing owners and operators of facilities with qualified oil-filled operational equipment to prepare an oil spill contingency plan and a written commitment of manpower, equipment, and materials to expeditiously control and remove any oil discharged that may be harmful, without having to make an individual impracticability determination as required in §112.7(d). The proposed rule contained an eligibility criterion that restricted exemptions to owners and operators of facilities that had no reportable discharges from oil-filled operational equipment within 10 years prior to the SPCC plan certification date. For the 2006 final rule, EPA narrowed this restriction to owners and operators of facilities that have not had a 1,000-gallon discharge or two 42-gallon discharges (as described in §112.4(a)) within 12 months in the last three years.

The projected reduction in compliance costs associated with this proposed exemption for qualified oil-filled operational equipment was based on the estimated cost savings for a projected 2,450 new electric utility facilities expected to become regulated each year. The cost savings that EPA estimated in the proposed SPCC rule were as high as \$60.9 million and \$60.1 million, discounted at 3 percent and 7 percent, respectively. The projected cost savings under the proposed rule were estimated only for owners and operators of facilities in the electric utility sector. When estimating compliance cost savings for the 2006 final rule, EPA included facilities using oil-filled operational equipment from other industry sectors.

By extending the proposed exemption for oil-filled operational equipment to all potentially affected industries, EPA estimated changes in compliance cost savings under the 25 percent, 50 percent, and 75 percent scenarios. Under the 25-percent scenario, cost savings are expected to decrease by \$21.9 million to \$21.4 million discounted at 3 percent and 7 percent, respectively. Under the 50-percent scenario, cost savings are expected to decrease by \$7.77 million and \$7.36 million discounted at 3 and 7 percent, respectively. Under the 75-percent scenario, cost savings are expected to increase by \$6.33 million and \$6.69 million discounted at 3 and 7 percent, respectively.

8 Facilities with Motive Power Containers

EPA is amending the Oil Pollution Prevention regulation (40 CFR part 112) to exempt motive power containers, defined as “onboard bulk storage containers used solely to power the movement of a motor vehicle, or ancillary onboard oil-filled operational equipment used solely to facilitate its operation.” This definition includes only motor vehicles that have the ability to move (provide propulsion) to another physical location. Examples of motive power containers include fuel tanks that provide fuel for a motor vehicle’s movement, or the oil-filled containers that provide the hydraulic and lubrication ancillary functions of a motor vehicle. This definition does not include oil drilling or workover equipment. Specifically, it does not apply to the drilling or workover rigs themselves; however, other earthmoving equipment (such as a bulldozer) located at a drilling or workover facility is included in the scope of the definition.

Although EPA has no empirical data on the amount of such oil storage at facilities regulated by the SPCC rule, EPA has little or no reason to suspect that many facility owners and operators with existing SPCC Plans have included motive power containers in their oil storage capacity calculations and their Plans. For those who have considered motive power storage, EPA assumed that the volume that would be exempt under the final rule would not represent a large fraction of the facility’s aggregate capacity.

8.1 Universe of Affected Facilities

To identify industries that are potentially affected by motive power exemptions, EPA started with information from industry comments to the 2002 SPCC rule. Commenters from the crop production, forestry/logging, and utilities industries indicated that they had motive power equipment. EPA identified additional industry categories by examining industries targeted by major motive power equipment manufacturers such as Caterpillar Inc.³⁸, Deere & Company³⁹, Kubota Corporation⁴⁰, Joy Global Inc.⁴¹, CNH Global NV⁴², and Terex Corporation⁴³. Each of these companies lists the industries targeted by their products. EPA used these listings as the basis for classifying industries likely to have motive power containers.

EPA does not have data on the number of facilities with motive power containers with oil storage capacity of 55 gallons or greater. To estimate the number of facilities affected by the “motive power” final rule, EPA arbitrarily developed three scenarios whereby 10 percent, 25 percent, and 50 percent of the facilities in sectors with motive power containers may be affected

³⁸ Caterpillar, Inc. 2006. List of Industries Served. Available at: <http://www.cat.com/cda/layout?m=37403&x=7>.

³⁹ Deere & Company. 2006. List of Industries Served. Available at: http://www.deere.com/en_US/deerecom/usa_canada.html.

⁴⁰ Kubota Corporation. 2006. List of Products. Available at: <http://www.kubota.com/f/products/products.cfm>.

⁴¹ Joy Global, Inc. 2006. Company Overview. Available at: http://www.joyglobal.com/company_overview/index.jsp.

⁴² CNH Global NV. 2006. Lines of Business. Available at: <http://www.cnh.com/home.asp>.

⁴³ Terex Corp. 2006. List of Industries Served. Available at: <http://www.terex.com/main.php?obj=industries&action=BROWSE&nav=indust&texsess=46f350a492cf096942b6e7c55d34e7c0>.

by the final rule amendments. EPA estimated that over the next 10 years, on average approximately 29,100 facilities would have “motive power” oil storage under the 10-percent scenario; 72,600 facilities under the 25-percent scenario; and 145,000 facilities under the 50-percent scenario. This represents an increase of approximately one percent over estimates used in the November 2005 proposed rule RIA and is due to adjustments made in the SPCC universe estimates (as described earlier under Chapter 4 of this analysis). Exhibit 8-1 presents the projected number of existing and new SPCC-regulated facilities with motive power containers whose owners and operators are expected to take advantage of the final action.

Exhibit 8-1
Projected Number of Existing and New Facilities with Motive Power Containers (10-Year Average)¹

Industry	Existing				New				Total			
	Total	10% of Fac.	25% of Fac.	50% of Fac.	Total	10% of Fac.	25% of Fac.	50% of Fac.	Total	10% of Fac.	25% of Fac.	50% of Fac.
Farms	147,000	14,700	36,800	73,700	1,310	131	328	655	149,000	14,900	37,200	74,300
Contract Construction	17,500	1,750	4,380	8,760	495	50	124	248	18,000	1,800	4,500	9,010
Gasoline Stations	3,700	370	924	1,850	38	4	10	19	3,740	374	934	1,870
Transportation	16,100	1,610	4,020	8,040	494	49	124	247	16,600	1,660	4,140	8,290
Real Estate Rental and Leasing	30,800	3,080	7,690	15,400	663	66	166	332	31,400	3,140	7,860	15,700
Electric Utility Plants	66,200	6,620	16,600	33,100	2,110	211	527	1,060	68,300	6,830	17,100	34,200
Mining	3,140	314	785	1,570	47	5	12	24	3,190	319	797	1,590
Pipelines	643	64	161	321	6	1	1	3	648	65	162	324
Total	285,000	28,500	71,400	143,000	5,160	516	1,290	2,580	291,000	29,100	72,600	145,000

¹ The level of precision of the numeric values reflects underlying data.

8.2 Compliance Cost Savings

The main benefit of the 2006 rule amendments would be to provide greater clarity of EPA's regulatory intent. EPA estimated that the final rule would reduce compliance costs by \$1.07 million and \$1.07 million per year, discounted at 3 percent and 7 percent, respectively, which were calculated using the equation below.⁴⁴

$$\text{Total Cost Savings} = \sum [(EFac * ECost Savings) + (NFac * NCost Savings)]$$

where,

EFac = the projected number of existing affected facilities

NFac = the projected number of new affected facilities

ECost Savings = the per existing facility cost savings based on SPCC Rule Exemptions

NCost Savings = the per new facility cost savings based on SPCC Rule Exemptions

EPA assumed that owners and operators of up to 10 percent of the facilities in industries identified as having motive power storage might take advantage of the exemption. Other facilities could also have motive power storage; EPA expects, however, that owners and operators of those facilities have not considered such storage as part of their compliance with the SPCC rule. Because EPA expects most facilities with motive power storage to meet the SPCC rule's oil storage thresholds regardless of oil storage for motive power, EPA assumed that the cost savings from the exemption would be modest (perhaps five percent compliance cost savings). As a result of the changes, owners and operators of existing and new facilities with motive power containers would save approximately five percent of the major compliance costs, which are presented in Exhibit 8-2.

⁴⁴ Estimated reductions in compliance costs are on an annualized basis.

Exhibit 8-2
Estimated Annual Compliance Costs¹

Compliance Item	Annual Hours Burden			Total Burden Hours	Capital/ O&M Costs	PE Cost	No Exemption
	Management (\$55.7/hr)	Technical (\$47.9/hr)	Clerical (\$25.3/hr)				
Existing Facilities							
Five -Year Review - 112.5(b)	0.20	0.59	0.11	0.89	\$0.00	\$4.50	\$46.4
Oil Discharge - 112.4(c)	0.00	0.00	0.00	0.00	\$0.02	\$0.00	\$0.18
Modification of Plan - 112.4(a) and 112.5(a)	0.00	0.41	0.09	0.50	\$0.00	\$67.8	\$89.6
Recordkeeping	0.00	1.64	0.45	2.09	\$0.00	\$0.00	\$89.8
Total Paperwork-Related	0.20	2.63	0.65	3.48	\$0.02	\$72.3	\$226
O&M Costs: Integrity Testing	-	-	-	-	-	-	\$119
Capital Costs	-	-	-	-	-	-	\$206
Total O&M and Capital Costs	-	-	-	-	-	-	\$325
Total	-	-	-	-	-	-	\$552
New Facilities							
New Plan - 112.3(a)	5.43	23.4	3.62	32.4	\$0.00	\$1,810	\$3,320
Oil Discharge - 112.4(c)	0.00	0.00	0.00	0.00	\$0.02	\$0.00	\$0.18
Modification of Plan - 112.5(a)	0.00	0.41	0.09	0.50	\$0.00	\$67.8	\$89.6
Recordkeeping	0.00	1.64	0.45	2.09	\$40.0	\$0.00	\$130
Total Paperwork-Related	5.43	25.4	4.16	35.0	40.0	\$1,880	\$3,540
Integrity Testing	-	-	-	-	-	-	\$119
Other Capital	-	-	-	-	-	-	\$3,590
Secondary Containment	-	-	-	-	-	-	\$4,000
Total O&M and Capital Costs	-	-	-	-	-	-	\$7,710
Total	5.43	25.4	4.16	35.0	\$40.0	\$1,880	\$11,300

¹ Estimates are based on Exhibit 5-2 and Exhibit 5-3. These cost estimates only reflect major compliance activities and do not account for all costs associated with the SPCC requirements.

Based on these total annual compliance costs, the estimated per-facility cost savings associated with the final amendments are \$28 for owners and operators of existing facilities and \$563 for owners and operators of new facilities. The cost savings for owners and operators of new facilities are higher than those for owners and operators of existing facilities because of greater expenses associated with preparing a new SPCC Plan and initial start-up and capital costs.

Under the scenario where owners and operators of 25 percent of industries identified as having motive power storage would take advantage of the exemption, compliance costs would

decrease by \$2.69 million and \$2.68 million per year, discounted at 3 percent and 7 percent, respectively. Under the 50-percent scenario, annual compliance costs would decrease by \$5.37 million and \$5.35 million, discounted at 3 percent and 7 percent, respectively.

9 Facilities with Mobile Refuelers

EPA is amending the Oil Pollution Prevention regulation to exempt mobile refuelers from the specifically sized bulk storage secondary containment requirements of §§112.8(c)(2) and (11). EPA defines a mobile refueler as a “bulk storage container onboard a vehicle or towed, that is designed or used solely to store and transport fuel for transfer into or from an aircraft, motor vehicle, locomotive, vessel, ground service equipment, or other oil storage container.”⁴⁵ The general secondary containment requirements of §112.7(c) will still apply to these mobile refuelers and to the transfers associated with this equipment. Since mobile refuelers are mobile or portable bulk storage containers, the other provisions of §112.8(c) still apply.

The industry sector most frequently associated with mobile refuelers is the aviation industry. EPA researched the regulatory compliance of airports with SPCC requirements for secondary containment, and found that some airports do not have sized secondary containment in place. EPA found that secondary containment for mobile refuelers is not a common practice and that mobile refuelers rarely have a designated area to park. Factors such as the land value at many commercial airports prohibits a single, designated parking area for mobile refuelers. Additionally, members of the regulated community have expressed concern that requiring sized secondary containment for airport mobile refuelers is not practical for safety and security reasons.

EPA analyzed potential cost savings to all affected industries using an assumption that owners and operators of new facilities would have to provide sized secondary containment in accordance with §§112.8(c)(2) and (11) for mobile refuelers. Therefore, the estimated annual cost savings consist of the avoided potential expenditures of providing sized secondary containment for new mobile refuelers.

9.1 Universe of Affected Facilities

For the aviation industry sector, EPA estimated the total number of new airports would be approximately 515 in the first year. Over the next 10 years, approximately 575 new airports are expected to be added annually on average.⁴⁶ EPA does not have empirical data on the number of facilities with mobile refuelers with oil storage capacity of 55 gallons or greater outside the aviation industry sector. To identify industries besides aviation that will be potentially affected by the mobile refueler exemption, EPA started with information from industry comments in response to the SPCC rule. Commenters from the following industry categories indicated that they may have mobile refuelers at their facilities: agriculture, automotive, chemical, construction, food, military, paper/forestry, petroleum, railroad, retail fuel delivery,

⁴⁵ The definition is intended to describe vehicles of various sizes equipped with a bulk storage container such as a cargo tank (tank trucks, tank full trailers, tank semitrailers, etc.) that are used to fuel or defuel aircraft, motor vehicles, locomotives, and vessels. The definition does not include other mobile or portable oil storage containers, which must comply with §112.8(c)(11). In addition, EPA intends the exemption to cover vehicles used for fueling, and not vehicles used primarily for the bulk storage of oil, in place of stationary containers.

⁴⁶ Based on the estimated number of existing airports and the estimated annual growth in the airport universe (see http://www.faa.gov/airports_airtraffic/airports/resources/data_stats/ and Section 4 of this analysis).

transport/trucking, utilities, and waste management. EPA identified and confirmed additional industry sectors most likely to have mobile refuelers based on information provided by manufacturers of mobile refuelers⁴⁷ and mobile refueling equipment,⁴⁸ and from personal communication with the Fire Marshalls' offices in Henderson, NV,⁴⁹ and Houston, TX,⁵⁰ which both require permits for mobile refueling activities.

To estimate the number of facilities within non-aviation industry sectors affected by the "mobile refuelers" amendment of the final rule, EPA arbitrarily developed three scenarios whereby 25 percent, 50 percent, and 75 percent of the facilities in other identified sectors with mobile refuelers may be affected by the 2006 final rule. EPA projected that over the next 10 years, on average there would be approximately 1,760 new facilities with "mobile refuelers" under the 25-percent scenario; 2,940 new facilities under the 50-percent scenario; and 4,130 new facilities under the 75-percent scenario. Exhibit 9-1 presents the projected number of new SPCC-regulated facilities whose owners and operators are expected to take advantage of the "mobile refuelers" amendment of the final rule.

⁴⁷ The contacted individual is Kovatch Corporation – Sales Department .

⁴⁸ Scully Signal Company. 2006. List of Industries Served Product Transferring Equipment. Available at: http://www.scully.com/is_index.html.

⁴⁹ The contacted individual is Deputy Fire Marshall JT O'Neil at Henderson, NV Fire Marshall's Office.

⁵⁰ The contacted individual is Charles Key at Houston, TX Fire Marshall's Office.

Exhibit 9-1
Projected Number of New Facilities with Mobile Refuelers (10-Year Annual Average)

Industry	Projected Number of New Facilities			
	Total	25%	50%	75%
Airports ¹	575	575	575	575
Farms	1,310	328	655	983
Transportation	494	124	247	371
Chemical Manufacturing	65	16	32	48
Contract Construction	495	124	248	372
Food Manufacturing	87	22	43	65
Government	9	2	5	7
Military Installations	12	3	6	9
Mining	47	12	24	35
Petroleum Bulk Stations and Terminals	70	17	35	52
Gasoline Stations	38	10	19	29
Electric Utility Plants	2,110	527	1,060	1,580
Total	5,310	1,760	2,940	4,130

¹ Airports are the only industry for which EPA has empirical evidence to support the number of mobile refuelers per facility. Other potentially impacted industries were considered based on an arbitrary range of scenarios (25%, 50%, and 75%) of affected facilities.

9.2 Compliance Cost Savings

To assess the impact of giving owners and operators of facilities an exemption from sized secondary containment for mobile refuelers, EPA estimated the compliance cost associated with providing sized secondary containment to an individual mobile refueler. Because insufficient data are available to differentiate cost estimates for sized versus unsized secondary containment, EPA used a general cost estimate for secondary containment of \$6,500 per mobile refueler at an average size facility. For both the aviation and other industry sectors, EPA estimated that each facility has two mobile refuelers based on the assumption that there are one to three mobile refuelers per airport. To estimate the total cost savings, the Agency multiplied the number of projected new facilities believed to have mobile refuelers by the cost of providing sized secondary containment, which is \$13,000 per facility, as presented in the following equation:

$$Total\ Cost\ Savings = \sum (NFac * Cost\ Savings)$$

where,

NFac = the projected number of new affected facilities

Cost Savings = the per facility cost savings based on exemptions from sized secondary containment for mobile refuelers

EPA calculated total compliance cost estimates based on the three arbitrarily developed scenarios whereby 25 percent, 50 percent, and 75 percent of the facilities in sectors with mobile refuelers may be affected by the final rule. EPA applied the \$13,000 per facility cost savings to the projected universe of new affected facilities under these three scenarios to calculate the total cost savings for each scenario. Then the Agency annualized the total cost savings over the ten-year analytical period using the method described in Chapter 3 of this analysis, as shown in Exhibit 9-2.

Exhibit 9-2
Estimated Annual Compliance Cost Savings

	Total Cost Savings (Million \$)											
	2008 Year 1	2009 Year 2	2010 Year 3	2011 Year 4	2012 Year 5	2013 Year 6	2014 Year 7	2015 Year 8	2016 Year 9	2017 Year 10	10-year Total	Annualized
<i>Not Discounted</i>												
25% Scenario	16.0	16.2	16.5	16.8	17.1	17.4	17.7	18.0	18.3	18.7	172.7	\$17.3
50% Scenario	32.0	32.5	33.0	33.6	34.2	34.8	35.4	36.0	36.7	37.3	345.4	\$34.5
75% Scenario	48.0	48.7	49.5	50.4	51.2	52.1	53.1	54.0	55.0	56.0	518.0	\$51.8
<i>3% discounted</i>												
25% Scenario	15.5	15.3	15.1	14.9	14.7	14.6	14.4	14.2	14.1	13.9	146.7	\$17.2
50% Scenario	31.0	30.6	30.2	29.8	29.5	29.1	28.8	28.4	28.1	27.8	293.4	\$34.4
75% Scenario	46.6	45.9	45.3	44.8	44.2	43.7	43.1	42.6	42.2	41.7	440.0	\$51.6
<i>7% discounted</i>												
25% Scenario	14.9	14.2	13.5	12.8	12.2	11.6	11.0	10.5	10.0	9.49	120.1	\$17.1
50% Scenario	29.9	28.4	27.0	25.6	24.4	23.2	22.0	21.0	19.9	19.0	240.2	\$34.2
75% Scenario	44.8	42.6	40.4	38.4	36.5	34.7	33.0	31.4	29.9	28.5	360.4	\$51.3

Under the 25-percent scenario, EPA estimated that the 2006 rule amendments would reduce compliance costs by \$17.2 million and \$17.1 million per year, discounted at 3 percent and 7 percent, respectively, which EPA calculated assuming that owners and operators of all airports and approximately 25 percent of the facilities in non-aviation industries identified as having mobile refuelers might take advantage of the exemption. Under the scenario where owners and operators of 50 percent of the facilities in industries identified as having mobile refuelers would take advantage of the exemption, compliance costs would decrease by \$34.4 million and \$34.2 million per year, discounted at 3 percent and 7 percent, respectively. Under the 75 percent scenario, annual compliance costs would decrease by \$51.6 million and \$51.3 million, discounted at 3 percent and 7 percent, respectively.

9.3 Alternatives Considered

In the December 2005 proposed revisions to the Oil Pollution Prevention Regulation, EPA proposed to exempt airport mobile refuelers from the specifically sized bulk storage secondary containment requirements of §§112.8(c)(2) and (11). EPA's definition of an airport mobile refueler is a "vehicle with an onboard bulk storage container designed for, or used to, store and transport fuel for transfer into or from aircraft or ground service equipment."

The proposed reduction in compliance costs associated with this exemption for airport mobile refuelers was based on estimates of approximately 535 new airports added annually, and the assumption that each airport would have an average of two mobile refuelers. The estimated reductions in compliance costs that correspond to these cost savings are \$6.92 million and \$6.86 million, discounted at 3 percent and 7 percent, respectively. Based on adjustments in the universe of affected airports and estimated growth rates used in this analysis, EPA estimated that approximately 575 new airports would be added annually on average over the next 10 years, an increase of 7.5 percent (40 airports) over earlier estimates used in the November 2005 regulatory impact analysis of the proposed rule.

Upon receipt and review of public comments on the proposed changes to sized bulk storage secondary containment requirements of §§112.8(c)(2) and (11) for mobile refuelers, EPA agreed with stakeholders' argument that similar equipment and intra-facility operations merit the same consideration and that the changes be extended beyond airports. As described earlier under Section 9.1, EPA evaluated other forms and use of mobile refuelers at mining sites, chemical complexes, construction sites, seaport terminals, facilities with tank truck home base operations, and other scenarios. By extending the proposed exemption for airport mobile refuelers to all industries with mobile refuelers, EPA estimated an increase in the reduction of compliance costs beyond those proposed, ranging from \$10.3 million to \$44.7 million discounted at 3 percent, and \$10.2 million to \$44.4 million discounted at 7 percent. These estimates used for comparison assume that owners and operators of all airports, and approximately 25 percent of the facilities in non-aviation industries identified as having mobile refuelers, might take advantage of the exemption.

EPA also considered extending sized bulk storage secondary containment relief to certain other mobile portable containers such as rail cars and towed Ground Service Equipment

(GSE) that are not themselves self-powered. However, no convincing justification could be made to differentiate railcars used at non-transportation facilities as bulk storage containers from other bulk storage containers. EPA determined that it is reasonable to plan and provide for the same level of secondary containment in these situations.

10 Projected Impacts on Human Health, Welfare, and the Environment

The purpose of this chapter is to qualitatively describe the anticipated environmental and socioeconomic impacts (Section 10.1), benefits (Section 10.2), and distributional impacts (Section 10.3) of the SPCC rule.

10.1 Environmental and Socioeconomic Impacts of Oil Spills

Discharges of both petroleum and non-petroleum oils into the nation's marine and freshwater environments can cause damage to public health and welfare, and to the environment. Discharges from SPCC facilities can occur whenever oil is handled, stored, produced, transferred, used, or disposed. Causes of discharges include human error (e.g., overfilling tanks during transfer operations), equipment failure (e.g., deteriorated seals and ruptured pipes or tanks), and improper storage or abandonment.

The impact of such discharges into either the marine or freshwater environment can be devastating in the short term, and some effects may last for years or even decades. Although studies have documented nature's ability to recover over time from the damage caused by a large oil discharge, both the extent of biological damage and the speed of recovery depend on many factors, including the geographic location, quantity of oil discharged, characteristics of the area affected, weather conditions, the season, the type of oil, and the nature of the response.

Physical, chemical, and biological transformations of discharged oil begin immediately upon the oil's introduction to marine or freshwater environments. The rate and degree of transformation depend on several factors related to advective and spreading processes. Advection is caused by the influence of overlying winds and underlying currents on the oil, while spreading results from the interplay among the forces of gravity, inertia, friction, viscosity, and surface tension.

The toxicity of a discharge depends on the type of oil. Freshly discharged crude is more acutely toxic than weathered oil because of the presence of the more toxic volatile constituents, which quickly evaporate or dissolve. Similarly, lighter refined products (e.g., diesel fuel and gasoline) are more acutely toxic than crude but dissipate more rapidly.

The extent of environmental damage caused by an oil discharge also depends on the physical, chemical, and biological characteristics of the surrounding ecosystem. These characteristics influence the intensity, time, and spatial extent of contact of aquatic organisms with the oil products. In general, oil discharges that affect biologically sensitive areas (e.g., near-shore areas that have high concentrations of aquatic organisms, or provide spawning and nursing areas for fish, and nesting habitat for birds or critical habitats for rare species) will have greater ecological impacts than, for example, offshore spills.

Oil discharges can be particularly damaging to estuarine environments. Unlike ocean discharges that are dispersed by wind and wave action, oil discharged near the shoreline typically concentrates and mixes with near-shore waters or collects along shorelines. As a

result, wetlands, seagrass beds, beaches, rocky habitats, coral reefs, inter-tidal areas, and terrestrial ecosystems may be damaged. Oil deposited in near-shore sediments persists longer than in ocean sediments. Oil is particularly persistent in low-energy, wetland habitats.⁵¹

To varying degrees, coastal marine and freshwater environments throughout the United States serve as breeding and nursing areas for resident and migratory species of fish and aquatic birds. Fish can be affected through ingestion of oil or oiled prey and uptake of dissolved petroleum compounds through the gills, or by changes in the ecosystem. Damage to fish eggs and larvae also may occur. Aquatic birds, especially diving birds, are highly vulnerable to oil discharged in coastal areas. Feathers that are coated with oil become water-logged and lose their insulating properties. As a result, birds may drown or die of hypothermia.

Oil discharges may also disrupt the structure and function of aquatic ecosystems. For example, oil spills may cause long-term damage to wetlands by adversely affecting the root system of wetland vegetation. As a result, wetlands may not be able to provide suitable habitat for fish and birds. Differential rates of mortality resulting from oil discharges also shift food web relationships. Changes in resource availability, competition, and predation affect individual organisms. Populations of species that are dependent on affected prey or habitats (e.g., wetlands) will decline, while opportunistic species may increase. Rare species, small local populations, or species that are seasonally concentrated in the impacted habitat are the most likely to decline as a result of an oil discharge.

Coastal marine and freshwater environments also provide a variety of resources and services to the public. The public uses some of these resources and services directly (e.g., the aesthetic qualities of the waterfront, recreational fishing, swimming, boating, picnicking, and waterfowl hunting) while others are useful indirectly. These indirect uses may include many ecological functions provided by wetlands (e.g., flood control, and the support of fish and wildlife habitats that in turn have recreational uses). Still other environmental resources and services may support non-use values to the public (e.g., knowledge that endangered species continue to exist, or that aquatic environments provide healthy habitat to fish).

In response to oil spills, local authorities could close recreational areas for several weeks, which may lead to significant welfare losses to recreational users. In addition to these welfare losses resulting from lost user days, significant welfare effects may also be associated with lost use and non-use values of the affected aquatic resources. Consider for example, the period over which environmental services provided by wetlands are lost, which could be several years for areas of moderate to heavy oil contamination and several months for lightly oiled wetlands. Although some of the wetlands affected by oil discharges may recover over time, others may require restoration. Returning the set of injured resources to pre-spill conditions

⁵¹ U.S. Department of Energy, Report to Congress on Candidate Sites for Expansion of the Strategic Petroleum Reserve to One Billion Barrels, Office of Strategic Petroleum Reserve, March 1991, Document Number DOE/FE-0221P.

may be costly. For example, the cost per acre to plant new wetlands ranges from \$2,000 to \$4,200.⁵²

Oil pollution in aquatic environments can also pose risk to human health. The main concern regarding the risk to humans is the known carcinogenicity of several oil components, and the exposure to toxic elements in oil through direct exposure or through oil-tainted food. The most likely pathway for people to be exposed to oil contaminants is by direct contact with bare skin. Children may be at increased risk of exposure to oil contaminants while playing. In addition, oil contaminants can adhere to the fur of pets, and the contamination can be transferred to people who touch or groom their pets. Human health risks also include hazards encountered by workers during cleanup operations. Prolonged dermal contact with crude oil and petroleum products can cause skin erythema (reddening), edema, and burning. The dermal effects can be exacerbated by subsequent exposure to ultraviolet light from the sun. Human epidemiological studies have shown that high-dose, chronic, occupational exposure to mineral oils can cause skin cancer. An increased risk of skin cancer, sinonasal cancer, gastrointestinal cancer, and bladder cancer have been reported in occupations with prolonged contact with mineral oils.

Additionally, oil dischargers may impact drinking water and industrial water intakes. Thick oil may clog the equipment. Other oil types could make the source water unusable for drinking or other uses.

10.2 Benefits of the Final Regulation

The main benefit of the final rule is lower compliance costs for owners and operators of certain types of facilities and equipment. EPA expects these reduced expenditures to translate to net social benefits. These benefits may be partially offset by potential increases in risk of oil discharges due to the final rule's having less-stringent requirements than the existing SPCC rule. For example, owners and operators of qualified oil-filled operational equipment that implement a contingency plan and a written commitment of manpower, equipment, and materials, instead of implementing preventive measures such as secondary containment, could see an increase in the risk of discharges. Nevertheless, it is reasonable to assume that any non-compliance with SPCC regulations is at least partially attributable to the costs of compliance. To the extent that this is true, reducing the costs of complying with SPCC requirements may induce owners and operators of some previously non-compliant facilities to implement oil pollution prevention measures – thereby reducing risk of discharge.

EPA has designed the final rule to minimize increases in environmental risk. For example, regulatory relief for owners and operators of qualified facilities focuses on facilities that store relatively small amounts of oil and demonstrate that they have had no discharge greater than 1,000 gallons, or no two discharges greater than 42 gallons in a 12-month period during the past three years. Furthermore, EPA allows owners and operators of qualified facilities the

⁵² Mazzotta, Marisa J., J. J. Opaluch and T. Grigalunas. 1994. Natural Resource Damage Assessment: The Role of Resource Restoration. *Natural Resources Journal*. Vol. 34. Winter, 1994.

option of avoiding PE certification, but maintains that any decision to apply environmental equivalence or pursue an impracticability claim still requires PE certification.

For qualified oil-filled operational equipment, EPA believes the complexity and the nature of the equipments' use may not lend itself to traditional secondary containment methods for bulk storage containers. Flexibility for such equipment is appropriate in this area, and may improve compliance with oil pollution prevention measures. Most facilities where these units are located will have general secondary containment to help prevent discharges as described in §112.1(b). In summary, although the final rule may increase the risk of discharge by an unknown magnitude, EPA believes that any environmental impact will be minimal, and will be offset by the benefits of increased compliance with the SPCC rule.

10.3 Distributional Analysis

The SPCC rule results in direct and indirect effects that may precipitate the transfer of economic benefits among various industry sectors. One direct impact of the rule is the alternative offered to owners and operators of qualified facilities that allows them to avoid using a licensed PE to certify their Plans. Additionally, facilities that store oil solely for motive power are no longer regulated, while owners and operators of facilities with oil storage in addition to motive power containers will incur lower compliance costs. This revised SPCC rule also allows greater use of contingency plans with a written commitment of manpower, equipment, and materials without requiring an impracticability determination as an alternative to secondary containment for qualified oil-filled operational equipment. Finally, the rule allows mobile refuelers to fall under a facility's general secondary containment requirements rather than requiring specific sized secondary containment.

Indirect effects of the rule include changes in demand for secondary containment for mobile refuelers as well as the reduced plan certification requirements. The reduction in demand for secondary containment results in a transfer of income from suppliers to owners and operators of facilities with mobile refuelers. In the same way the fee that was previously charged by professional engineers for Plan certification is instead transferred back to owners and operators of qualified facilities who choose self certification. The net impact on a comprehensive measure of social welfare such as social cost has not been estimated.

Another aspect of the distributional analysis is the spatial impact of the rule with respect to the location of industry-wide regulated facilities. EPA's technique for estimating the SPCC universe described in Chapter 4 limits the capacity to meaningfully consider the spatial distribution of SPCC-regulated facilities. However, EPA acknowledges that clustering of SPCC-regulated facilities exists (such as oil production facilities in the Gulf of Mexico coastal states), and, therefore, nationally estimated impacts on owners and operators of regulated facilities may be spatially disproportional.

11 Small Business Analysis

The Regulatory Flexibility Act (RFA) requires federal agencies to determine whether their regulatory actions will have a significant economic impact on a substantial number of small entities. If an agency does not or cannot certify that a final regulation will not have a significant economic impact on a substantial number of small entities, it must prepare a regulatory flexibility analysis and examine alternatives to the regulation that may reduce adverse economic effects on significantly impacted small entities.

In 1996, Congress enacted the Small Business Regulatory Enforcement Fairness Act (SBREFA), which amended the RFA to strengthen its analytical and procedural requirements and to expedite Congressional review of rules. SBREFA amended the RFA to reference the definition of a “small entity” found in the Small Business Act, which itself authorizes the Small Business Administration (SBA) to further define “small business” by regulation. The SBA’s small business definitions are codified at 13 CFR 121.601 and the SBA reviews and reissues these definitions every year.

In determining whether a rule has a significant economic impact on a substantial number of small entities, the impact of concern is any significant adverse economic impact on small entities, since the primary purpose of the regulatory flexibility analyses is to identify and address regulatory alternatives “which minimize any significant economic impact of the final rule on small entities.” 5 U.S.C. 603 and 604. Thus, an agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, or otherwise has a positive economic effect on all of the small entities subject to the rule.

The amendments to the SPCC rule reduce the burden on small businesses to the extent that these businesses are eligible for reduced regulatory requirements for qualified facilities, facilities with qualified oil-filled operational equipment, facilities with motive power containers, and facilities with mobile refuelers. Because the SPCC rule categorizes affected entities based on oil storage capacity while SBA defines small businesses based on the business’ total number of employees or total annual revenue, EPA does not know how many SPCC-regulated facilities are also SBA-defined small businesses.⁵³ Nevertheless, given their resource constraints, owners and operators of small businesses are likely to take advantage of and benefit from the regulatory burden relief offered by the current amendments.⁵⁴

Exhibit 11-1 summarizes cost savings for these rule components for owners and operators of Category I facilities (10,000 gallons or less). Because some facilities fall into more

⁵³ According to the economic analysis of the 2002 SPCC final rule, EPA estimated that 94 percent or more of the total number of SPCC-regulated facilities were also SBA-defined small businesses. U.S. Environmental Protection Agency (EPA). “Economic Analysis for the Final Revisions to the Oil Pollution Prevention Regulation (40 CFR Part 112)”, May 2002.

⁵⁴ This assumption is consistent with an earlier study of PE certification cost impacts on small businesses conducted by the SBA. Jack Faucett Associates for SBA Office of Advocacy, “Proposed Reforms to the SPCC Professional Engineer Certification Requirement: Designing a More Cost Effective Approach for Small Facilities”, June 2004.

than one rule component category, the number of facilities and cost savings across rule categories are not additive. The cost saving estimates presented for each of these components are based on the estimated number of Category I affected facilities described in Chapter 4, which are mapped into the rule categories for which they are eligible, and the unit cost estimates for affected compliance activities described in Chapter 5 of this report. Thus, the Agency concludes that the final amendments to the 2002 SPCC rule provide regulatory relief for relatively small entities based on oil storage capacity, and therefore do not have any adverse impact on small businesses.

**Exhibit 11-1
Estimated Cost Savings for Category I SPCC-Regulated Facilities**

Rule Component	Number of Facilities (10-Year Average)			Total Cost Savings (millions \$, discounted 3%)	Total Cost Savings (millions \$, discounted 7%)
	Existing	New	Total		
Qualified Facilities	337,000	7,260	345,000	37.9	37.7
Qualified OFE	N/A	2,580	2,580	31.2	31.0
Motive Power	21,700	329	22,000	1.1	1.1
Mobile Refuelers	N/A	1,400	1,400	34.4	34.2
Total	359,000	11,600	371,000	105.0	104.0

It is important to note that cost savings for owners and operators of Category I facilities under the amendments to the SPCC rule (Exhibit 11-1) represent a higher level of overall savings as compared to the proposed rule for two primary reasons. First, this regulatory impact analysis used the most currently available data to estimate a larger number of SPCC-regulated facilities than the analysis conducted for the proposed rule.⁵⁵ Second, the final SPCC amendments offer a greater degree of regulatory relief to owners and operators of SPCC-regulated facilities than the proposed revisions.

⁵⁵ The regulatory analysis for the 2005 proposed rule estimated a universe of 335,000 Category I facilities, whereas this analysis estimated a universe of 345,000 Category I facilities. The 2006 estimates are not equal to individual estimates for the Category I capacity categories as presented in Exhibit 11-1, due to double counting of facilities across rule components.

12 Limitations and Key Assumptions

According to Executive Order 12866, agencies are required to assess all costs and benefits of regulatory activities, including quantitative and qualitative measures. The Executive Order also requires assessment of social benefits and costs including but not limited to those related to the environment, public health and safety, distributive impacts, and issues of equity.

This regulatory impact analysis estimates the reductions in compliance costs resulting from the final rule. The benefits of the major components of the final rule are assessed qualitatively and limited to reductions in expenditures accruing from lower compliance costs. The Agency also considered whether the streamlined requirements in the final rule might increase the risk of discharges, with adverse consequences for the environment, human health, and welfare. Because EPA has designed the final rule to minimize increases in environmental risk, the frequency of oil spills is not expected to increase. While this regulatory impact analysis provides an assessment of projected impact on human health, welfare, and the environment, as well as estimated reductions in compliance costs, it is not a full accounting of all social costs and benefits as required by Executive Order 12866.

Many of the assumptions as well as the estimates of unit cost savings and the number of affected facilities presented in this RIA are inherently uncertain. EPA made the best use of the available data to make informed decisions regarding assumptions used in the analysis. To address major uncertainties involved in estimating the total cost savings from the final SPCC rule, the Agency examined up to three scenarios for various components of the final rule to provide a sensitivity approach to estimating the range of cost savings. Major limitations of the analysis are described in this chapter. In Section 12.6, a potential impact of technology innovations is described in relation to compliance requirements of the SPCC rule.

12.1 General Limitations

Estimated Number of Facilities

One of the main limitations of the regulatory analysis is EPA's lack of data on facilities regulated under the SPCC rule. The rule does not include a notification requirement and, with certain exceptions, regulated entities do not need to submit any information to EPA. Without conducting a statistically valid survey, EPA is limited to data already collected by state or federal agencies or by proprietary sources. Such data are collected for diverse purposes and are not ideal for identifying SPCC-regulated facilities, as the data do not normally provide information on smaller storage tanks or non-petroleum oil. Therefore, evaluating regulatory changes involves some uncertainties because the collected data often omit portions of the regulated universe or lack sufficient detail to ascertain the impacts of changes in certain requirements.

Estimated Cost of Compliance

Compliance costs incurred by owners and operators of facilities in the baseline depend not only on the volume of oil stored and handled, but also on the types of oil at a site, the

number of tanks (and their volume), and the locations of the tanks across the site. Given a wide range of industries and facility sizes affected by the SPCC rule – as well as geographical and climatic conditions that affect facility's configuration and operation patterns – a realistic baseline against which regulatory changes are measured cannot be reliably determined. Therefore, uncertainty is involved in estimating the changes in compliance costs that could occur under final regulatory actions.

Many of the cost estimates used in the regulatory analysis are based on interviews with a limited number of PEs. The data provided by these PEs represent anecdotal information and are not statistically valid, so they cannot be reliably extrapolated to a larger universe. In addition, the PEs were hesitant to provide “typical” costs when the costs of compliance depend significantly on site-specific factors. Ideally, a regulatory analysis would explicitly account for such variability in costs. However, in this analysis EPA was unable to differentiate compliance costs due to the lack of information on site characteristics of entities affected by the final SPCC rule.

12.2 Qualified Facilities

Estimated Number of Qualified Facilities

As described in Chapter 6, to identify facilities with total storage capacity of 10,000 gallons or less that had reportable discharges in the past three years, EPA used National Response Center (NRC) Incident Data. The main limitation of the NRC database for this analysis is the lack of information on the total amount of oil stored at a facility, whose owner or operator reported an oil discharge. The Agency identified individual facilities whose owner or operator reported oil discharges of 10,000 gallons or less and used that figure as a proxy for the number of facilities with total storage capacity of 10,000 gallons or less. This approach likely results in overestimating the number of facilities with total storage capacity of 10,000 gallons or less that have had reportable discharges in the past three years, given that most facilities are not expected to discharge their total oil storage capacity. That is a portion of the discharges at 10,000 gallons or less could have been from facilities with much larger oil storage capacities. Because it is not feasible to establish a relationship between the amount of oil discharged and total storage capacity at a facility, EPA examined three scenarios: 25 percent, 50 percent, and 75 percent of facilities that reported oil discharges of 10,000 gallons or less have total oil storage capacity of 10,000 gallons or less.

12.3 Facilities with Qualified Oil-Filled Equipment

Estimated Number of Facilities with Qualified Oil-Filled Equipment

The availability of data on facilities with oil-filled operational equipment regulated under the SPCC rule was significantly limited. Facility owners or operators are not required to report the number of oil-filled operational equipment pieces they possess, or the oil storage capacity of their oil-filled operational equipment.

Because self-reported data were not available, EPA relied on available data sources to estimate the number of facilities that have oil-filled operational equipment on site. A list of industries using oil-filled operational equipment was determined, based on a review of the type of equipment covered by the definition of oil-filled operational equipment, and on EPA's expectations regarding the industries that commonly use this equipment. Thus, the industries included in the universe of facilities with oil-filled operational equipment were determined using professional judgment rather than industry data.

The number of SPCC-regulated facilities within each industry was estimated as part of the SPCC universe research described in Chapter 4. Those data represent the estimated number of SPCC-regulated facilities in each industry sector, and not the actual number of facilities that use oil-filled operational equipment. As a result, EPA examined the impact of the final SPCC rule changes for the facilities with oil-filled operational equipment under the three possible scenarios: 25 percent, 50 percent, and 75 percent of facilities in the industries identified as having oil-filled operational equipment will obtain regulatory relief. The number of facilities with oil-filled operational equipment that EPA presents in the RIA may overestimate or underestimate actual figures. This uncertainty causes similar imprecision in the estimates for the total cost savings associated with the final rule changes for owners and operators of facilities with qualified oil-filled operational equipment.

Estimated Cost Savings for Owners and Operators of Facilities with Qualified OFE

In the final SPCC rule, EPA is providing owners and operators of facilities with certain types of oil-filled operational equipment the option of preparing an oil contingency plan and a written commitment of manpower, equipment, and materials in lieu of providing secondary containment. EPA acknowledges that in the absence of the final rule, some fraction of new facilities would, according to the 2002 SPCC rule requirements, provide an impracticability determination with a contingency plan and a written commitment of manpower, equipment, and materials, rather than pursue secondary containment. In these cases, the cost savings resulting from the final rule would be lower, since owners and operators would be avoiding only an impracticability determination rather than secondary containment. EPA does not know the fraction of facilities that falls into this situation, and did not incorporate this scenario in the analysis. As a result of this limitation, the RIA may overestimate the cost savings to owners and operators of facilities with qualified oil-filled operational equipment resulting from the final action. On the other hand, uncertainties associated with the unit cost saving estimates for owners and operators of facilities with oil-filled operational equipment may cause underestimation of the total cost savings.⁵⁶

12.4 Motive Power

Since owners and operators of facilities are not required to report the number of oil storage tanks or storage capacity of their motive power equipment, the availability of data on SPCC-regulated facilities with motive power equipment is limited. To identify industries that are

⁵⁶ See Chapter 7 for derivation of the unit cost saving estimates.

potentially affected by the motive power exemption, EPA used the information from industry comments for the NODA submitted to EPA as well as from research on equipment manufacturers. Commenters from the crop production, forestry/logging, and utilities industries indicated that they had motive power equipment. EPA identified additional industry categories by examining sectors targeted by the major motive power equipment manufacturers such as Caterpillar, Deere & Company, Kubota Corporation, Joy Global Inc., CNH Global NV, and Terex Corporation. EPA used the industries targeted by these manufacturers as the basis for classifying industries likely to have motive power containers.

The number of SPCC-regulated facilities within each industry was estimated as part of the SPCC universe research described in Chapter 4 of this report. Those data represent the estimated number of SPCC-regulated facilities in each industry sector and not the actual number of facilities with motive power containers. Since EPA had no empirical data on the fraction of facilities with motive power containers with oil storage capacity of 55 gallons or greater, it estimated the number of affected facilities by examining three scenarios: 10 percent, 25 percent, and 50 percent of the facilities in sectors with motive power containers will be affected by the final regulatory action. Therefore, the universe of facilities with motive power containers presented in the RIA may overestimate or underestimate the actual numbers. This uncertainty causes similar imprecision in the estimated cost savings resulting from the final rule changes.

12.5 Mobile Refuelers

Aside from the aviation industry, EPA had limited data regarding industries with mobile refuelers on site that fall under EPA's jurisdiction. To identify potentially affected industries, EPA used the following data sources: (1) NODA comments submitted to EPA; (2) publicly available information on manufacturers of mobile refueling equipment; and (3) state fire marshall offices that require permits for mobile refueling activities. The Agency used the estimated number of SPCC-regulated facilities within each industry, as described in Chapter 4.

However, no data were available on the number of facilities within these industry sectors that actually have mobile refuelers. As an alternative, EPA examined three potential scenarios: owners and operators of 25 percent, 50 percent, and 75 percent of facilities in the affected industries would take advantage of the regulatory action. The three scenarios are designed to yield a reasonable range of estimates and help EPA evaluate the range of cost savings that could occur as a result of the final rule changes. Each of these scenarios could result in an under- or overestimate of the affected number of facilities with mobile refuelers.

An additional uncertainty comes from the possibility that owners and operators of facilities in many industries have adjusted their processes in order to avoid falling under EPA's jurisdiction (O'Neil, 2006).⁵⁷ For example, a construction company may have changed its practices so that multiple job sites are serviced by one or more mobile refuelers rather than having an individual refueler at each job site. For this company, all but one site, where the

⁵⁷ The contacted individual is Deputy Fire Marshall JT O'Neil at Henderson, NV Fire Marshall's Office.

refuelers are parked, will be covered under the Department of Transportation's jurisdiction, with only the single site being covered under the SPCC rule.

12.6 Impact of Technological Innovations

OMB's guidance to federal agencies on the development of regulatory analysis recommends that estimates of costs should be based on credible changes in technology over time.⁵⁸ The estimates presented in this report are based on currently available technologies. The figures do not capture possible cost savings from implementing new future technologies or the reduction in costs due to greater market penetration of existing technologies. Because the final SPCC rule allows owners and operators of facilities to choose alternative requirements that primarily involve paperwork-related activities over capital-intensive compliance measures (e.g., providing secondary containment), the nature of evolving technology could affect the estimated cost savings. For example, if new technologies were to lower the cost of capital-intensive compliance measures, the cost savings attributed to the final rule would decrease.

As a performance-based regulation, the SPCC rule provides facility owners and operators significant flexibility in the methods, equipment, and procedures they implement to comply with the rule requirements. Most rule requirements are written in terms of their ultimate goal of preventing oil discharges from reaching navigable waters, giving facility owners and operators considerable leeway in the selection and specific design of spill prevention measures implemented at the facility.

The rule provides further flexibility by allowing the use of alternative measures that provide equivalent environmental protection for most provisions, with the exception of secondary containment requirements. Finally, rather than incorporating specific industry standards or procedures, the rule relies on the application of good engineering judgment in determining appropriate, and cost effective, methods for preventing oil discharges. Industry standards and good engineering practice evolve over time to incorporate new technologies, which can lower the cost of preventing discharges.

For example, the cost of integrity testing for bulk storage containers, as required under §112.8(c)(6), may decrease as new non-destructive evaluation technologies are developed. The development of robotic inspection technologies may enable tank owners or operators to assess the tank floor's condition without taking the tank out of service and cleaning it for safe confined space entry. These technologies not only reduce the health and safety hazards and the amount of waste generated by the cleanup operations (and therefore the cost), but also avoid the two to six weeks of downtime that are sometimes required to complete cleanup and inspection.⁵⁹ A recent study performed for the New York State Energy Research and Development Authority (NYSERDA) favorably compared the results of conventional tank floor inspections with robotic inspections, and concluded that the use of robotic inspections could

⁵⁸ Circular A-4, OMB, September 2004.

⁵⁹ <http://www.intank.com/PDF/NYFinalReport.pdf>

achieve significant cost savings.⁶⁰ Companies that currently use such techniques report savings of \$500,000 to over \$3 million, depending on the number, size, and contents of the tanks.⁶¹ Robotic inspection technologies are currently being used on a limited basis and may in time become more widely available – and cheaper.

12.7 Key Assumptions

EPA made three key assumptions in the analysis. First, the Agency assumed cost minimization behavior applied to owners or operators of all facilities that qualify for reduced regulatory requirements, whereby all those affected would seek burden relief. Second, EPA assumed that owners or operators of existing SPCC-regulated facilities would forgo alternative compliance activities that required capital investments because they would have already incurred a one-time cost. For example, a facility owner or operator, who had secondary containment for qualified oil-filled operational equipment in place, would not take advantage of the provided alternative to prepare a contingency plan instead. Third, EPA assumed compliance was nationally consistent despite variability in state regulations, political climate, and the distribution of affected facilities.

⁶⁰ <http://www.intank.com/PDF/NYFinalReport.pdf>

⁶¹ Cost savings reported by InTank, a provider of robotic inspection services.

13 Conclusions

Under Executive Order 12866 (58 FR 51735, October 4, 1993), EPA must determine whether a regulatory action is “significant” and therefore subject to Office of Management and Budget (OMB) review and the requirements of the Executive Order. The order defines “significant regulatory action” as one that is likely to result in a rule that may:

- (5) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities;
- (6) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- (7) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- (8) Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in the Executive Order.

The final rule is expected to have an annual effect on the economy of \$100 million or more and, therefore, is considered economically significant. For such rules, the Executive Order requires an “assessment of the potential costs and benefits of the regulatory action, including an explanation of the manner in which the regulatory action is consistent with a statutory mandate and, to the extent permitted by law, promotes the President’s priorities and avoids undue interference with state, local, and tribal governments in the exercise of their governmental functions.”

EPA performed a regulatory impact analysis in accordance with Executive Order 12866 (and OMB Circular A-4) requirements to the fullest extent possible; however, the study is not a comprehensive analysis of the social benefits and costs. Many of the assumptions presented throughout this regulatory analysis are inherently uncertain, as are many of the estimates of unit cost savings and the number of affected facilities. EPA made the best use of the available data to make informed decisions regarding assumptions used. To address major uncertainties involved in estimating the total cost savings from the final SPCC rule, the Agency examined up to three scenarios for various components of the final rule to provide a sensitivity approach to estimating the range of cost savings.

Data limitations prevented the analysis from complying with the “good practices” outlined in OMB Circular A-4 guidance for regulatory analyses of social benefits and costs. However, EPA believes the analytical technique and results generated are useful, informative, and based on the best available information given time and resource constraints associated with the final rulemaking schedule.

Overall, the analysis concluded that the SPCC amendments will result in significant compliance cost savings to industry as compared to the 2002 rule, by reducing regulatory

requirements for owners and operators of qualified facilities, qualified oil-filled operational equipment, motive power storage, and mobile refuelers.⁶² Exhibit 13-1 summarizes the estimated annualized compliance cost savings resulting from the SPCC amendments, using 3 and 7 percent discount rates. The amendments are expected to yield annualized cost savings of roughly \$38 million for owners and operators of qualified facilities, \$39 to \$67 million for owners and operators of qualified oil-filled equipment, \$1 to \$5 million for owners and operators of facilities with motive power containers, and \$17 to \$52 million for owners and operators of facilities with mobile refuelers. These estimates are not necessarily additive, given that they do not account for interactions among the various components of the amendments. EPA improved the estimation methodology and refined main assumptions used in the analysis for the proposed rule. The comparison of the estimated cost savings between the proposed and the final rule are presented in Appendix E.

Exhibit 13-1
Summary of Estimated Cost Savings Associated with the 2006 Final Rule Amendments
(\$2005 Millions)

Rule Component/Scenario¹	Annualized Cost Savings (3%)	Annualized Cost Savings (7%)
Qualified Facilities	\$37.9	\$37.7
Qualified OFE		
25%	\$39.0	\$38.7
50%	\$53.1	\$52.8
75%	\$67.2	\$66.8
Motive Power		
10%	\$1.07	\$1.07
25%	\$2.69	\$2.68
50%	\$5.37	\$5.35
Mobile Refuelers		
25%	\$17.2	\$17.1
50%	\$34.4	\$34.2
75%	\$51.6	\$51.3

¹ Estimated savings are presented for final rule components and scenarios as discussed in this report.

EPA is aware of industry concerns regarding potential non-compliance among certain facility sizes or sectors, although no reliable empirical data exist to assess the scope and magnitude of such non-compliance. Even if facilities that should have been in compliance with SPCC requirements – dating back to 1973, if applicable – EPA acknowledged that they have already effectively incurred the costs of meeting SPCC requirements given the active status of the rule for these facilities. In other words, facilities that are currently non-compliant are merely postponing the actual expenditures of compliance. Therefore, facilities that are currently non-compliant will incur expenditures associated with coming into compliance, but these costs, to

⁶² The specific regulatory requirements for each of these rule components are discussed in Chapters 6 through 9 of this report.

the extent that they are attributable to the 2002 SPCC rule, are not attributable to the current rulemaking.

The main benefit of the final rule is lower compliance costs for owners and operators of certain types of facilities and equipment, which EPA expects will yield net social benefits. However, as discussed in Chapter 10 of this report, these benefits may be partially offset by potential increases in oil discharge risk pursuant to the less stringent requirements of the current rulemaking as compared to those of the existing 2002 SPCC rule. At the same time, by reducing the costs of complying with SPCC requirements, the current rulemaking may induce owners and operators of previously non-compliant facilities to conform to SPCC requirements, thereby lowering oil discharge risk. While quantifying net social benefits precisely is not possible due to these unknown future impacts of the rule, EPA believes that cost reductions resulting from the amendments will not be offset by any significant losses in environmental protection.

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APPENDIX A

DATA SOURCES USED TO ESTIMATE THE UNIVERSE OF SPCC-REGULATED FACILITIES

State Databases

Florida

Florida Department of Environmental Protection, Storage Tank Facility Information—All Locations and Tank Information

The Florida Department of Environmental Protection's Storage Tank Program regulates underground storage tanks (USTs) larger than 110 gallons and aboveground storage tanks (ASTs) with capacities greater than 550 gallons storing petroleum products and hazardous substances. The regulations apply only to owners and operators of non-residential facilities. USTs and ASTs with a capacity of less than 30,000 gallons that store heating oil for use on the premises where they are stored are exempt from regulation. Tanks storing asphalt or asphalt products, tanks directly related to oil production and gathering, pipeline facilities, loading racks, oil-filled operational and electrical equipment, and flow-through process tanks are not regulated. Mobile tanks and tanks constructed prior to 1998 located within a vault or building are also exempt. The data include information on tank capacity, the material stored, and the facility name and address. Facilities are classified into 17 types.

Kansas

Kansas Department of Health and the Environment (KDH&E), Permitted Tanks Database

KDH&E requires owners of petroleum storage tanks to apply for permits. For ASTs and USTs in farm and residential use, tanks larger than 1,100 gallons are regulated. For other tanks, the minimum size for which a permit is required is 660 gallons for ASTs and 110 gallons for USTs. The database contains records of 6,445 USTs at 2,375 facilities and 9,576 ASTs at 3,362 facilities. It includes facility names and addresses, and tank status, capacity, and contents.

Maryland

Maryland Department of the Environment (MDE), AST Oil Operations Database

The MDE Oil Control Program regulates petroleum storage tanks. Registration is required for ASTs at facilities with at least 10,000 gallons of storage capacity or at least 1,000 gallons of storage capacity for used oil. The state provides data that include facility name and address, tank capacity, substance stored, and the facility's four-digit U.S. Standard Industrial Classification (SIC) code. Only tanks currently in use or temporarily closed are included in the

database used in the analysis. The Maryland AST database contains records of 6,330 active tanks at 691 facilities.

Maryland Department of the Environment (MDE), UST Oil Operations Database

Owners of USTs that store petroleum products are required to register their tanks. Farm and residential USTs smaller than 1,100 gallons are exempt. Facility name and address, tank capacity, and substance stored are listed for each tank. The database includes only tanks that are currently in use or temporarily closed. The facilities are grouped into 23 categories, with 29 percent designated as “other” or “not listed.” The database includes 13,015 USTs at 5,656 facilities.

This database was used in EPA's 1991 facilities study. The advantage of using Maryland's databases is that they record information on SIC codes or industry groups. The main disadvantage of this database is that it does not contain information on facilities that store 10,000 gallons or less of oil.

Minnesota

Minnesota Pollution Control Agency (MnPCA), Tanks Database

The MnPCA's Tanks Database covers both ASTs and USTs. Registration is required for ASTs larger than 500 gallons and USTs covered by the EPA UST program.⁶³ The requirements exempt farm and residential ASTs and USTs smaller than 1,100 gallons storing motor fuel for noncommercial purposes and those smaller than 1,100 gallons storing heating oil for consumptive use. For each tank, the database provides the facility name and address, tank capacity, and tank contents. Facilities are also designated as one of 35 facility categories. Only active and temporarily closed tanks are included for the 12,799 facilities in the database. Of these, 6,014 facilities have ASTs and 7,569 have USTs. The database shows 13,706 active USTs and 22,857 active ASTs at these facilities.

As with the other state databases, the main disadvantage of this database is that it covers only petroleum and related oils. It does not include SIC or North American Industry Classification System (NAICS) codes, but there are 35 broad industry sectors assigned to the facilities.

⁶³ The EPA UST program applies to USTs larger than 110 gallons that store petroleum or hazardous products identified by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Certain tanks are exempt from UST program regulation. These exemptions include farm and residential tanks smaller than 1,100 gallons storing motor fuel used for noncommercial purposes, tanks storing heating oil used on the premises where it is stored, tanks on or above the floor of underground areas such as basements or tunnels, flow-through process tanks, and emergency spill and overfill tanks. Partially buried tanks with at least 10 percent of their volume below ground level are defined as USTs under this program.

New York

New York State Department of Environmental Conservation (DEC), Petroleum Bulk Storage Database

The Petroleum Bulk Storage Program regulates petroleum storage at facilities with at least 1,100 gallons of storage capacity. Information on regulated tanks is contained in the Petroleum Bulk Storage Database. The database contains information on facility name and address and tank status, capacity, and contents. The database includes information on 65,534 tanks at 55,757 facilities.

New York State DEC, Major Oil Storage Facilities Database

The Major Oil Storage Facilities Program regulates petroleum terminals and transport vessels operating in New York waters with a total storage capacity of 400,000 gallons or more. The database contains information on 9,181 tanks at major oil storage facilities. Information includes facility name and address, tank capacity, tank contents, and tank status.

Oklahoma

Oklahoma Corporation Commission (OCC), Petroleum Storage Tank Database

The Petroleum Storage Tank Database contains registration information on USTs and ASTs. For residential and noncommercial agricultural use, USTs over 1,100 gallons must register. For all other uses, owners of tanks greater than 110 gallons must register their tanks. The only ASTs that require registration are those at airports, marinas, retail facilities, water and sewage treatment plants, emergency generators at hospitals, commercial facilities, and bulk plants. Tanks larger than 110 gallons must be registered, except at bulk plants and commercial facilities (where tanks of any size must be registered). The OCC database divides tanks into eight categories of public facilities and eight categories of private facilities.

The coverage of the Oklahoma AST database is limited. This database could be useful, but EPA is not able to examine the number of facilities or types of information included. For security reasons, this database is not normally available to the public and requires a formal request to obtain it.

Virginia

Virginia Department of Environmental Quality (DEQ), Registered Tanks Database

The Virginia DEQ maintains a database of ASTs and USTs storing petroleum products. ASTs over 660 gallons or facilities with a total capacity over 1,320 gallons are required to register. For USTs, the database covers tanks subject to regulation under the EPA UST program. Facility name and address, tank status, tank capacity, and tank contents are included.

Partially buried tanks with at least 10 percent of their volume below ground level are defined as USTs. Facilities are designated as one of 21 industry categories. The database covers 25,769 facilities, of which 12,804 have tanks that are currently in use or temporarily closed. Approximately 3,000 facilities have ASTs, and 10,490 have USTs.

Wisconsin

Wisconsin Department of Commerce, Storage Tank Database

Wisconsin's Storage Tank Database contains information on registered ASTs and USTs in the state. Registration is required for tanks storing petroleum products and CERCLA hazardous substances. All USTs larger than 60 gallons must register. The size threshold is 1,100 gallons for farm and residential ASTs, and 110 gallons for other USTs. The database includes facility name and address, and tank status, capacity, and content. The database includes 70,549 tanks that are currently in use.

Other Databases

2002, 1997, and 1992 Economic Census, United States

The Economic Censuses cover nearly all of the U.S. economy in its basic collection of establishment statistics. The Economic Census measures activity during each calendar year, 1992, 1997, and 2002.

Economic Census statistics are collected and published primarily by "establishment." An establishment is a business or industrial unit at a single physical location that produces or distributes goods or performs services, for example, a single store or factory. Many companies own or control more than one establishment, and those establishments may be located in different geographic areas and may be engaged in different kinds of business.

The number of establishments for various industry sectors was used in this analysis. The Economic Census does not generally include governmental organizations, even when their primary activity would be classified in industries covered by the census. Exceptions have been made to include certain governmental activities in the Economic Census, such as hospitals, government-owned liquor stores, university publishers, and Federal Reserve Banks.

2002, 1997 and 1982 Census of Agriculture and USDA Agricultural Statistics Service

EPA used Census of Agriculture data on production expenses related to petroleum-related purchases from 2002 and 1997, and on diesel storage data from 1982 to estimate the number of farms. EPA also used Census of Agriculture data on the number of farms reported from 1996 to 2005.

The National Agricultural Statistical Service (NASS) collects census data from a list of all known potential agriculture operators. This list is assembled from previous census records,

state and federal agencies, trade associations and similar organizations that could be identified as associated with agriculture. However, the list is not complete. Producers go in and out of business every day and many small operations are never identified. The coverage adjustments are generated, and therefore most accurate, at the state level.

Commercial Building Energy Consumption Survey (CBECS), 1995 and 2003

The CBECS is a national sample survey that collects data on energy-related building characteristics, and energy consumption and expenditures, including information on fuel oil used and stored (this activity was discontinued after 1995) for commercial buildings in the United States. The CBECS was first conducted in 1979; the eighth, and most recent survey, was conducted in 2003. CBECS is currently conducted every four years.

Form EIA-906 Monthly Utility Power Plant Database, 2000

EPA used summary statistics on oil capacity at electric utilities from the Energy Information Administration (EIA). The data are compiled by EIA based on the stocks information reported on Form EIA-906, "Power Plant Report" and EIA-920, "Combined Heat and Power Plant Report." These forms collect data from electric power generators with at least one megawatt (MW) of total plant nameplate capacity. Reporting plants are either operating or in a standby mode from which they can be quickly returned to service. Stocks are estimated by EIA for non-respondents based on the historical stocks information for those plants.

The main limitation of these data is that the EIA does not collect data on power plants with less than one MW of nameplate capacity. The data used are for 2003, the most recent year for which EIA has final data.

EIA, U.S. Department of Energy

The Energy Information Administration (EIA) of the U.S. Department of Energy provides official energy statistics from the U.S. government. The EIA reports estimates for the number of oil wells in the country. EIA databases contain historical data on oil and gas wells, including marginal wells for 1919 through 2004. EIA compiled the database using government and commercial data sources. In its Annual Energy Outlook, EIA reports forecasts for total oil production data through 2030.

APPENDIX B

DETERMINING INDUSTRY CATEGORIES FOR SPCC-REGULATED FACILITIES BASED ON THE DUN&BRADSTREET DATABASE

In order to obtain industry information for facilities in the eight state databases used in the SPCC universe study, EPA matched facility names and addresses contained within the state databases with the Dun & Bradstreet (D&B) Market Spectrum database.⁶⁴ The matching process involved an automated process developed by Abt Associates Inc. For records identified by the automated process as possible matches, the records were visually inspected to confirm or reject the associations.

The eight state databases used in the analysis include records on 140,438 facilities. The automated process could not match most records, as shown in Exhibit B-1, which presents the percentage of records for each state that could be matched. Due to resource constraints, manual matching for each record was not possible, as manual matching takes approximately one minute per record. The following sections describe the fuzzy matching methodology in detail.

⁶⁴ D&B Market Spectrum is a suite of related products and services that allows companies to combine their customer data and third-party data with D&B's global database, resulting in the most targeted, accurate, and complete database of businesses in the United States.

Exhibit B-1
Percentage of Matched Facilities Achieved by Automated and Manual Matching

State	Total Number of Records	Percentage Matched	Scale Factor ¹
Florida	24,613	35%	2.9
Kansas	3,062	81%	1.2
Maryland	6,432	53%	1.9
Minnesota	6,932	43%	2.4
New York	38,735	28%	3.6
Oklahoma	1,193	45%	2.3
Virginia	11,935	36%	2.8
Wisconsin	47,536	21%	4.8

¹ The scale factor is calculated as one divided by the percentage of matched facilities, and reflects the proportion of facilities that matched relative to the total number of SPCC-regulated facilities from the state databases. The number of matched facilities is multiplied by the scale factor to estimate the total number of SPCC-regulated facilities for each industry within each state database. By using the scale factor, EPA assumed that the distribution of facilities across industries is identical for matched and unmatched facilities. To the extent that this assumption is incorrect, the estimate of total facilities per industry in each state may be an over- or underestimate.

Fuzzy Matching

EPA matched facilities from the state databases to industries reported in the D&B Market Spectrum data using the fuzzy matching methodology. The term “fuzzy” refers to logical systems that do not require exact equality of two values in order to classify the two values as equal. The matching procedure assigns D&B records to a facility in a state database even if some identifying fields do not match exactly. This approach accommodates misspelled words and inconsistencies in how a facility owner or operator reports its identifying information to different sources, and how the information reported by the facility owner or operator is stored in different databases. For example, “Tosco Santa Maria Refinery” and “Tosco Refining Co. Santa Maria Facility” refer to the same facility despite the differences in presentation. The fuzzy matching algorithm identifies a possible match based on similarities in two datasets, rather than exact equality in the field.

Standardization Procedure as Part of Record Linking

Prior to performing fuzzy matching, Abt Associates Inc. standardized the variables (names, addresses, and ZIP codes) used by the matching program to link records from the two datasets in order to maximize successful matches. To compensate for common typographical errors and abbreviations, Abt developed a function to normalize (or standardize) the data. With appropriate standardization, comparison of corresponding components of information becomes more effective. The standardization procedure also corrects common spelling errors made in alphanumeric strings as well as inconsistencies in data. For instance, “Ahsland” is replaced with “Ashland”, etc.

In addition to the functions described above, Abt Associates undertook several other steps to normalize variables. For example, Abt Associates converted all characters to uppercase and replaced special characters (/ \ , . _ - + =, etc) with blanks. Abt Associates also removed spaces by shifting characters to the left. The cleaned datasets were used as input files to the fuzzy matching program.

Matching Procedure

The first step of the fuzzy matching process is to read one record from one dataset and hold it open while reading through another dataset to look for potential matches. Every combination of records from two datasets receives a matching score. The overall score represents the weighted average of name, address, and ZIP code scores. A score of zero means that no characters in common occur within the required distance from each other in the compared records from two datasets. A score of 1.00 means that all characters of a string in one dataset are in exactly the same order as a string from another dataset. As a last step, the program selects the best match for a given facility and reports matches with a score greater than a threshold value of 0.75.

The decision rule for identifying matched facilities is as follows:

- Records with a score greater than 0.9 are automatically defined as perfect matches, as confirmed through visual inspection.
- Records with a score between 0.75 and 0.9 are designated as a possible match. Possible matches are pairs of facilities for which identifying information is not sufficient to determine whether a pair is a match or a non-match. These pairs of facilities are subject to the manual matching process in which Abt Associates identified matches using additional information on the facility. If discrepancies occurred in the company's name, Abt Associates completed a search on the firm's acquisitions, merges, and name changes. When address information contained coordinates in one of the matched records, Abt Associates obtained the facility's physical address based on the information provided using mapping techniques.
- Records with the score below 0.75 are automatically defined as non-matches. Visual inspection of facilities matched with a score below 0.75 showed an insignificant percentage of records that could be matched to the D&B data.

Abt Associates ran the comparing procedure in both directions (i.e., left to right and right to left). This method allowed Abt to disregard irrelevant (for matching purposes) information that often appears in the beginning or end of a string. Left-to-right comparison of some records may not yield a high score due to the large distance between common characters in the two strings. Under the backwards comparison on such records, all the common characters might be found in precisely the same positions and the string combination would receive a high matching score.

Abt Associates performed the string comparison for each of the three variables used in the matching procedure: name, address, and ZIP code. If all three fields participated in the matching process, Abt Associates calculated an overall score as $1/3 \times \text{Name Score} + 1/3 \times \text{Street Address Score} + 1/3 \times \text{Zip Code Score}$. The primary reason for assigning equal weights was the lack of justification for giving a higher significance to strings in one of the datasets over another. Where ZIP code information was missing, Abt Associates matched records on the basis of name and address, assigning equal weights to each.

APPENDIX C

SPCC UNIVERSE ESTIMATION USING INDUSTRY-SPECIFIC DATA SOURCES

EPA used industry-specific data and methodologies to estimate the number of SPCC-regulated facilities in the following industry sectors:

- Farms;
- Petroleum bulk station and terminals; fuel oil dealers; pipelines; and petroleum refinery and related industries;
- Oil production;
- Electric utilities;
- Military installations;
- The animal fats and vegetable oils (AFVO) industry; and
- Education facilities; government establishments; information, finance and insurance; and religious organizations.

Farms

To accurately estimate the number of farms regulated under the SPCC rule, data showing the size and location of oil storage tanks on all farms in the United States would be required; however, these data do not exist. As an alternative approach, EPA relied on U.S. Census of Agriculture data on farm fuel expenses and supplementary data, and reasonable assumptions regarding the quantity of fuel represented by farm expenditures and the quantity of purchased fuel that is stored. This information was used to estimate probable storage quantities on farms to identify the SPCC-regulated universe of farms. The methodological steps and associated data sources are summarized in Exhibit C-1.

Exhibit C-1
Methodological Steps Used to Estimate the Universe of SPCC-Regulated Farms

Step Number	Step Description	Data Sources Used
1	Identify the number of farms and fuel production expense ranges for gasoline and diesel	2002 Census of Agriculture, Farm Production Expenses, 2002 and 1997, Gasoline, fuels, and oils. 1997 Census of Agriculture, Petroleum Products Expenses, 1997, 1992, and 1987, Gasoline, diesel, natural gas, and LP gas, fuel oil, kerosene, motor oil, grease, etc., Table 49: Summary by Size of Farm.
2	Convert production expense ranges to quantity ranges using fuel price data	United States Energy Information Administration, Gasoline and Diesel Fuel Update, 2002.
3	Estimate the quantity of purchased fuel that is stored on farms	1982 U.S. Census of Agriculture, Volume 1, County Table 6.
4	Estimate the percentage of farms in each quantity range that are regulated	Professional judgment.
5	Project estimated number of farms from 2002 to 2005	10-year average growth rate calculated from USDA National Agricultural Statistics Service, Number of Farms, 1996 to 2005.
6	Distribute regulated farms across oil storage capacity categories	U.S. EPA, "Analysis of the Number of Facilities Regulated by EPA's SPCC Program" July 1996.

The first step started with the 2002 Census of Agriculture, which includes data on the number of farms by the range of production expenses on fuel. However, the 2002 data are available only in aggregate form for all fuel types. In order to disaggregate farm expenditures on all fuels in 2002 to expenditures on diesel and gasoline separately, EPA relied on the 1997 Census of Agriculture, which provided data on expenditures for a variety of fuel types, including diesel and gasoline.⁶⁵ Using the 1997 data, EPA calculated the ratios of diesel and gasoline expenditures to total expenditures for all farms, and then multiplies the total expenditure on fuels in 2002 by these ratios to arrive at estimated expenditures on diesel and gasoline in 2002. The derivation of these ratios is summarized in Exhibit C-2.

⁶⁵ Other oil-based fuel types are reported in aggregate in the 1997 Census of Agriculture.

Exhibit C-2
Derivation of Farm Production Expenditures on Diesel and Gasoline, 1997

Fuel Type	Number of Farms	Total Expenditures (\$1,000)
Petroleum products farms	1,760,642	6,371,515
Gasoline and gasohol farms	1,366,915	1,886,600
Diesel fuel farms	1,315,397	2,845,951
Natural gas farms	71,069	432,893
LP gas, fuel oil, kerosene, motor oil, grease, etc. farms	1,276,331	1,206,070
Percentage of total expended on diesel		44.7%
Percentage of total expended on gasoline		29.6%

Source: 1997 US Census of Agriculture, Table 49, Summary by Size of Farm.

There are two primary caveats to this methodological step. First, EPA assumed that the percentage of diesel and gasoline expenditures to total fuel expenditures by farms was identical in 1997 and 2002. To the extent that actual expenditures on diesel and gasoline in 2002 varied from 1997, the estimates presented may be over- or underestimates. Second, EPA excluded consumption of other fuels from the estimates because price estimates that would allow conversion from expenditures to quantities of fuel are not available for the aggregate bundle of fuels. This exclusion may yield actual quantity ranges of fuel use on farms that are higher than the estimates presented in the analysis.

For the second step, EPA converted total estimated expenditures on diesel and gasoline in 2002 into quantities of diesel and gasoline purchased. EPA divided the expenditure ranges by the average price of a gallon of gasoline/diesel as summarized in Exhibit C-3. As Exhibit C-3 shows, EPA estimated that in 2002, a gallon of gasoline cost \$1.39 on average while a gallon of diesel cost \$1.32 on average.

Exhibit C-3
Derivation of Average Gasoline and Diesel Price (\$2002)

Region	Retail Price (\$ per gallon)	
	Gasoline ¹	Diesel Fuel ²
Central Atlantic	1.41	1.40
Gulf Coast	1.32	1.28
Lower Atlantic	1.33	1.28
MidWest	1.36	1.31
New England	1.42	1.40
Rocky Mountain	1.40	1.34
West Coast	1.51	1.41
Regional Average³	1.39	1.35
US Average⁴	1.39	1.32

Notes:

¹ Gasoline prices represent the average of retail prices recorded weekly by the EIA in 2002 for all grades and formulations of gasoline.

² Diesel prices represent the average of on-highway retail diesel prices of No. 2 diesel fuel with a sulfur level no higher than 0.05 percent by weight recorded weekly by the EIA in 2002.

³ The regional average is calculated as the average of all regional averages.

⁴ The US average is calculated as the average of overall US gasoline/diesel prices in 2002. For this reason, the regional and U.S. average prices for diesel fuel differ; however, the regional and US average prices for gasoline do not differ. EPA uses the US average price in estimating the quantity of gas and diesel purchased by farms.

Source: United States Energy Information Administration, Gasoline and Diesel Fuel Update, <http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp>, accessed on June 8, 2006.

For the third step of the analysis, EPA adjusted the quantities of gasoline and diesel purchased to represent the proportion of purchased gasoline and diesel that is stored on farms.⁶⁶ The best federal source of on-farm fuel storage data is the 1982 U.S. Census of Agriculture, which contains specific data on fuel storage and expenditures on farms.⁶⁷ As shown in Exhibit C-4, EPA estimated that, on average, approximately one-fourth of the annual quantity of diesel and gasoline purchased is stored on farms. Because data on the type of storage – aboveground or underground – is not available, EPA assumed that all gasoline and diesel storage on farms is aboveground.

⁶⁶ To check the reasonableness of calculations of storage of oil on farms, extension services in a few states were consulted. A conversation with Tim Hewitt, a farm management specialist at the University of Florida, was notable. He categorically stated that the majority of the farmers in Florida, Georgia, and Alabama store oil in 500-gallon containers and, at most, 1,000-gallon tanks. Dennis Kauppila, a farm management specialist at the University of Vermont, also estimated that most farms store oil in 1,000-gallon tanks.

⁶⁷ USDA's National Agricultural Statistics Service, County Table 6, 1982 U.S. Census of Agriculture, Volume 1.

Exhibit C-4

Derivation of Ratio of Gasoline and Diesel Stored to Purchased Using 1982 On-Farm Fuel Storage Census Data

State	Gasoline			Diesel			Total Gallons (1,000)	Gasoline		Diesel	
	Number of Farms	Gallons Stored (1,000)	Expenditure on Gas (\$1,000)	Number of Farms	Gallons Stored (1,000)	Expenditure on Diesel (\$1,000)		Gallons Purchased ¹	% Stored	Gallons Purchased ²	% Stored
Alabama	11,075	5,295	35,338	15,422	8,790	38,495	14,085	28,079	19%	33,423	26%
Alaska	308	173	517	175	130	275	303	Data Not Available			
Arizona	2,645	2,782	20,422	2,099	4,262	24,272	7,044	16,227	17%	21,074	20%
Arkansas	13,155	7,575	55,077	16,527	20,729	91,981	28,304	43,763	17%	79,862	26%
California	36,277	26,582	166,455	27,012	32,402	184,669	58,984	132,262	20%	160,338	20%
Colorado	16,301	10,370	53,911	11,725	9,937	49,614	20,307	42,837	24%	43,077	23%
Connecticut	1,438	960	5,391	909	558	2,599	1,518	4,284	22%	2,257	25%
Delaware	1,821	1,048	5,192	1,255	949	5,019	1,997	4,125	25%	4,358	22%
Florida	7,361	6,189	51,850	10,867	11,256	62,456	17,445	41,199	15%	54,227	21%
Georgia	14,779	8,214	52,877	20,224	14,479	68,994	22,693	42,015	20%	59,904	24%
Hawaii	682	621	7,778	643	733	9,465	1,354	Data Not Available			
Idaho	14,930	10,194	56,310	11,675	10,324	50,244	20,518	44,743	23%	43,624	24%
Illinois	72,184	40,919	178,238	55,038	41,969	206,365	82,888	141,625	29%	179,175	23%
Indiana	50,537	23,007	99,356	34,722	21,914	108,389	44,921	78,947	29%	94,108	23%
Iowa	84,877	41,709	186,833	67,518	41,968	203,866	83,677	148,454	28%	177,005	24%
Kansas	47,457	24,864	127,211	37,183	27,258	155,737	52,122	101,080	25%	135,218	20%
Kentucky	30,292	11,857	64,995	29,592	12,152	50,739	24,009	51,644	23%	44,054	28%
Louisiana	9,101	5,004	34,836	12,273	13,903	67,906	18,907	27,680	18%	58,959	24%
Maine	2,488	1,541	9,200	1,956	1,048	5,401	2,589	7,310	21%	4,689	22%
Maryland	8,726	4,183	18,858	6,038	3,455	16,316	7,638	14,984	28%	14,166	24%
Massachusetts	1,672	970	6,750	1,180	511	2,465	1,481	5,363	18%	2,140	24%
Michigan	38,825	19,897	70,711	25,874	16,856	70,978	36,753	56,186	35%	61,626	27%
Minnesota	70,149	34,163	154,989	53,362	34,409	158,621	68,572	123,152	28%	137,722	25%
Mississippi	10,326	5,357	40,063	15,797	17,057	73,659	22,414	31,833	17%	63,954	27%
Missouri	61,850	26,786	118,723	36,730	21,438	101,735	48,224	94,335	28%	88,331	24%
Montana	16,324	12,278	65,881	12,444	12,101	54,491	24,379	52,348	23%	47,311	26%
Nebraska	42,953	24,415	130,353	36,342	33,328	165,835	57,743	103,576	24%	143,985	23%
Nevada	1,565	1,479	7,728	1,144	1,256	5,194	2,735	6,141	24%	4,510	28%

Exhibit C-4

Derivation of Ratio of Gasoline and Diesel Stored to Purchased Using 1982 On-Farm Fuel Storage Census Data

State	Gasoline			Diesel			Total Gallons (1,000)	Gasoline		Diesel	
	Number of Farms	Gallons Stored (1,000)	Expenditure on Gas (\$1,000)	Number of Farms	Gallons Stored (1,000)	Expenditure on Diesel (\$1,000)		Gallons Purchased ¹	% Stored	Gallons Purchased ²	% Stored
New Hampshire	939	478	2,542	669	358	1,434	836	2,020	24%	1,245	29%
New Jersey	4,255	2,414	12,762	2,143	1,414	7,028	3,828	10,140	24%	6,102	23%
New Mexico	4,452	2,933	20,045	2,851	2,247	13,515	5,180	15,927	18%	11,734	19%
New York	24,965	11,508	62,319	18,340	9,187	48,902	20,695	49,518	23%	42,459	22%
North Carolina	27,645	14,102	74,441	27,645	14,755	68,889	28,857	59,150	24%	59,812	25%
North Dakota	29,817	20,441	100,713	26,483	25,933	120,501	46,374	80,025	26%	104,624	25%
Ohio	52,253	21,290	87,968	39,488	19,792	92,042	41,082	69,898	30%	79,915	25%
Oklahoma	21,423	10,003	65,442	24,882	15,989	76,415	25,992	51,999	19%	66,347	24%
Oregon	17,894	11,226	44,142	11,892	8,816	33,086	20,042	35,074	32%	28,727	31%
Pennsylvania	32,577	14,380	61,662	22,558	10,426	41,563	24,806	48,996	29%	36,087	29%
Rhode Island	208	148	782	155	81	501	229	621	24%	435	19%
South Carolina	8,603	4,532	25,745	9,086	6,010	30,081	10,542	20,457	22%	26,118	23%
South Dakota	28,166	15,732	91,513	22,227	15,462	89,470	31,194	72,715	22%	77,682	20%
Tennessee	23,750	9,234	46,827	26,526	11,951	46,748	21,185	37,208	25%	40,589	29%
Texas	55,381	28,076	185,907	55,924	44,259	233,269	72,335	147,718	19%	202,534	22%
Utah	4,924	2,975	17,809	4,512	2,596	12,449	5,571	14,151	21%	10,809	24%
Vermont	2,787	1,317	7,358	2,681	1,129	6,131	2,446	5,847	23%	5,323	21%
Virginia	20,196	9,158	42,320	17,192	7,272	31,091	16,430	33,627	27%	26,995	27%
Washington	18,898	12,788	56,718	13,586	12,637	54,159	25,425	45,067	28%	47,023	27%
West Virginia	5,237	2,092	8,278	4,167	1,239	4,170	3,331	6,578	32%	3,621	34%
Wisconsin	62,904	25,946	121,860	41,808	18,777	89,513	44,723	96,828	27%	77,719	24%
Wyoming	6,091	4,649	24,139	4,322	3,104	13,356	7,753	19,180	24%	11,596	27%
U.S. Average									24%		24%

¹ Gallons of gasoline purchased in 1982 are estimated by dividing expenditures on gasoline by farms in this year by the average gasoline price in the U.S. (\$1.26 per gallon) in 1982, as reported in monthly unleaded regular gas price data compiled by the EIA.

² Gallons of diesel purchased in 1982 are estimated by dividing expenditures on diesel by farms in this year by the average diesel price in the U.S. (\$1.15 per gallon) in 1982, as reported in monthly diesel fuel price data compiled by the EIA.

In the fourth step of the analysis, professional judgment was used to assign the percentage of farms regulated within the each gasoline and diesel storage quantity range under low-end, medium-end, and high-end assumptions. These assumptions are presented in Exhibit C-5 for each gasoline and diesel storage quantity.

In the fifth step, EPA projected the number of SPCC-regulated farms estimated from 2002 to 2005 using an estimated annual rate of growth of -0.44 percent, calculated from the change in the number of farms from 1996 to 2005 as recorded in the U.S. Census of Agriculture for these years.

Exhibit C-5 presents the results of the analysis of SPCC-regulated farms. As shown, the analysis suggests that the SPCC rule regulates approximately 151,000 farms (the medium estimate). The low- and high-end assumptions yielded approximately 148,000 and 154,000 SPCC-regulated farms, respectively.

Because the derived capacity ranges estimated for each farm-fuel-expenditure range are not the same as the four capacity categories used in the analysis, in the sixth step EPA distributed the SPCC-regulated farms across the capacity categories using the same distribution as that used in EPA's 1995 survey. Exhibit C-6 contains the results of the analysis distributed across oil storage capacity categories.

Exhibit C-5
Derivation of the Number of SPCC-Regulated Farms in 2005¹

Production Expenditure Ranges (all oils and LP gas)	Equivalent diesel and gasoline quantity purchased ² (gallons)	Equivalent diesel and gasoline storage capacity (gallons) ³	Total number of Farms ⁴	SPCC-Regulated Farms Estimates					
				High		Medium		Low	
				Fraction	Number	Fraction	Number	Fraction	Number
\$1 to \$1,000	< 600	< 100	1,180,194	0%	0	0%	0	0%	0
\$1,000 to \$5,000	600 to 2,800	100 to 700	535,635	0%	0	0%	0	0%	0
\$5,000 to \$10,000	2,800 to 5,500	700 to 1,300	137,802	7%	9,646	5%	6,890	3%	4,134
\$10,000 to \$25,000	5,500 to 13,900	1,300 to 3,300	101,046	100%	101,046	100%	101,046	100%	101,046
\$25,000 to \$50,000	13,900 to 27,600	3,300 to 6,700	28,667	100%	28,667	100%	28,667	100%	28,667
> \$50,000	> 27,600	> 6,700	14,193	100%	14,193	100%	14,193	100%	14,193
Total			1,997,538	8%	153,553	8%	150,797	7%	148,041

Notes:

- ¹ The estimate assumes that all oil storage on farms is in aboveground storage tanks. Calculated values are rounded to three significant figures. Numbers may not add to totals because of rounding.
- ² In 2002, expenditures on gasoline, diesel, and other fuels were not separately available. To calculate the diesel (gasoline) expenditure in 2002, EPA multiplied the total expenditure on fuel oils in 2002 by the ratio of diesel (gasoline) expenditure with respect to the total expenditure on fuel oils from the 1997 Census data. To arrive at the quantity of diesel (gasoline) purchased, EPA divided the expenditure on diesel (gasoline) by the average diesel (gasoline) price in 2002 available from the Gasoline and Fuel Update, Energy Information Administration (www.eia.doe.gov).
- ³ To estimate the storage capacity, EPA multiplied the diesel (gasoline) expenditure in 2002 by the ratio of expenditure on diesel (gasoline) with respect to storage from the 1982 Census of Agriculture, which collected information on fuel storage. Information on fuel storage was not collected after 1982.
- ⁴ These numbers reflect the total number of farms for which expense data were reported in the 2002 Census of Agriculture. The total number of farms in 2002 was 2,128,982, of which production data were available for 2,024,139.

Exhibit C-6
SPCC Universe Estimates for Farms (Medium Estimate)

Industry Sector	NAICS Code	Category I	Category II	Category III	Category IV	Total
Farms	111112	143,152	6,970	562	113	150,797

Petroleum Bulk Station and Terminals, Fuel Oil Dealers, Pipelines, and Petroleum Refinery and Related Industries

Similar to EPA's approach in its 1991 and 1995 studies, the estimates for petroleum bulk station and terminals, fuel oil dealers, pipelines, and petroleum refinery and related industries are based on the assumption that *all* such facilities are regulated by the SPCC rule. EPA used data on the total number of facilities for petroleum bulk station and terminals, pipelines, and petroleum refinery and related industries from the 2002 U.S. Economic Census, and projected these data to 2005 using industry-specific growth rates.⁶⁸ As a result, EPA estimated that approximately 6,600 petroleum bulk stations and terminals, 4,600 fuel oil dealers, 700 pipelines, and 2,000 petroleum refining and related industries are regulated by the SPCC rule in the United States.

Because these data do not include information on the oil-storage capacity at each facility, EPA used the distribution of these facilities from EPA's 1995 to allocate facilities across the four capacity categories. Further, EPA assumed that the size distribution would be constant over the ten-year period of analysis, which may or may not adequately represent actual trends during this period. Exhibit C-7 contains the results of the analysis distributed across oil storage capacity categories.

Exhibit C-7
SPCC Universe Estimates for Petroleum Refinery and Related Industries, Pipelines, Petroleum Bulk Stations and Terminals, and Fuel Oil Dealers

Industry Sector	NAICS Code	Category I	Category II	Category III	Category IV	Total
Petroleum Refinery and Related Industries	324	85	212	1,270	424	1,990
Pipelines	4861, 48691	704	0	0	0	704
Petroleum Bulk Stations and Terminals	4247	564	846	4,370	799	6,580
Fuel Oil Dealers	45431	318	1,700	2,340	212	4,560
Total		1,671	2,758	7,980	1,435	13,834

⁶⁸ Appendix C provides detailed information on the derivation of industry-specific growth rates used in the analysis.

Oil and Gas Production

EPA assumed all oil production facilities are regulated under the SPCC rule. Certain gas production facilities may also be regulated, given that some gas wells have tanks for storing condensate oil generated during the gas-production process. EPA used EIA data to estimate the total number of oil-production wells as well as gas wells that produce condensate oil. All active wells that were producing in 2004 are considered in the analysis. The EIA database contains historical data on oil and gas wells, including marginal wells, compiled from government and commercial sources.⁶⁹ Key data fields included in the database are state, production year, number of wells, and annual oil and/or gas production. EIA provides data on oil and oil-condensate produced at oil and gas production wells according to various production-rate classes. Gas wells that do not produce oil condensate are not included.

To convert the number of wells that produce oil and oil condensate to the total number of SPCC-regulated production facilities, EPA assumed four wells per facility based on personal communication with industry experts.⁷⁰ Under this assumption, EPA estimated that approximately 166,000 oil production facilities are SPCC-regulated.

To determine the distribution of oil production facilities across the four capacity categories, EPA used the distribution of these facilities derived in EPA's 1995 study. By taking this approach, EPA assumed that the distribution of oil production facilities across the four oil storage capacity categories has not changed over the last 10 years. Therefore, the distribution of estimated SPCC-regulated oil production facilities across capacity categories presented in this analysis may over- or underestimate the actual distribution. Exhibit C-8 contains the estimated number of oil production facilities distributed across oil storage capacity categories.

Exhibit C-8
SPCC Universe Estimates for Oil Production

Industry Sector	NAICS Code	Category I	Category II	Category III	Category IV	Total
Oil Production	211111	21,200	114,000	30,100	295	166,000

Electric Utilities

EPA calculated the number of SPCC-regulated electric utility facilities as the total number of power plants and substations in the United States using data collected by the EIA.

To estimate the number of SPCC-regulated power plants, EPA used information from Form EIA-906, which reports the oil stock at each power plant that has a generation capacity greater than 1 megawatt (MW), and that is connected to a local or regional electric power grid

⁶⁹ U.S. Energy Information Administration, Distribution and Production of Oil and Gas Wells by State, data available at http://www.eia.doe.gov/pub/oil_gas/petrosystem/petrosysog.html.

⁷⁰ Personal communication with a Federal On-Scene Coordinator for EPA Region 6 and Mark England, Texas Railroad Commission, 2005.

and can draw power from the grid or deliver power to the grid.⁷¹ Because data at the plant level is confidential, EPA provided summary statistics on the total number of plants in each capacity category, using information on oil stocks at each plant. EPA assumed that the information on oil stock held is a reasonable proxy for plant-specific capacity. While this estimate does not include plants that generate less than 1 MW of electricity, EPA assumed that the majority of plants with less than 1 MW of generation capacity store oil in volumes that are below the SPCC threshold.⁷²

EPA estimated the number of substations using data reported to the Federal Energy Regulatory Commission (FERC) on Form No. 1.⁷³ One-hundred-and-seventy-six major regulated utilities must file FERC Form No. 1 and are required to provide information on their substations and electrical equipment.⁷⁴ EPA estimated the number of substations owned by major utilities as the number of substations with unique names listed by each major utility on their FERC Form No. 1. A national estimate for the number of substations was obtained by extrapolating from these data using the ratio of the megawatt hours sold by owners and operators of major regulated facilities that filed Form No. 1 to the estimated total retail megawatt hours of electricity sold nationwide according to the EIA's March 2005 Electric Power Monthly.

EPA distributed substations across the four capacity categories based on information contained within an EPA study on the applicability of the SPCC rule to the electric utility industry (EPA, 1996b). This analysis estimated the percentage of substations storing oil in each size group and included information from EPA Pollution Prevention Program. Using this approach, EPA estimated that approximately 52,100 electric utility facilities (1,700 power plants and 50,400 substations) are SPCC-regulated. Exhibit C-9 presents the estimated number of electric utility plants and substations by oil storage capacity category.

⁷¹ Facilities report the amount of oil stored regardless of the type of oil they use. This definition of a facility differs from the definition of an "establishment" developed by the U.S. Census Bureau, which was used for other industry sectors in the analysis. The U.S. Census Bureau definition is: "An establishment is a single physical location at which business is conducted or where services or industrial operations are performed." Therefore, EPA assumed that the information on oil stock held is a reasonable proxy for plant-specific capacity.

⁷² EPA's 1991 study assumed that all electric utility plants store oil in excess of SPCC capacity thresholds. The 1995 survey, however, found that 40 to 60 percent of facilities did not meet the SPCC capacity criterion. Because the current estimates are based on the capacity at each plant and cover the majority of utility plants, the current estimates should be fairly accurate in representing the universe of SPCC-regulated electric power plants.

⁷³ Major regulated utilities must file FERC Form No. 1, on which utilities report information on their substations and electrical equipment. "Major" is defined as having (1) 1,000,000 megawatt hours or more; (2) 100 megawatt hours of annual sales for resale; (3) 500 megawatt hours of annual power exchange delivered; or (4) 500 megawatt hours of annual wheeling for others (deliveries plus losses).

⁷⁴ A "major" substation is defined as having (1) one million Megawatt hours or more; (2) 100 megawatt hours of annual sales for resale; (3) 500 megawatt hours of annual power exchange delivered; or (4) 500 megawatt hours of annual wheeling for others (deliveries plus losses). Information from the Federal Energy Regulatory Commission, available at <http://www.ferc.gov/doc-filing/efoms.asp>.

Exhibit C-9
Estimated Number of Electric Utility Plants and Substations

Facility Type	Category I	Category II	Category III	Category IV	Total
Power Plants	243	368	777	309	1,700
Substations	19,200	19,200	12,100	0	50,400
Total	19,400	19,500	12,900	309	52,100

Military Installations

Military installations include Army, Navy, Air Force, National Guard, Marine Corps, and Coast Guard bases, stations, schools, and commands, and associated infrastructure such as medical centers. Accurately estimating the number of SPCC-regulated military installations is difficult, because data on oil storage within these facilities are not readily available or do not allow for division of facilities into oil-storage-capacity tiers. For this reason, EPA used available data on current military installations in the United States and employed simplifying assumptions to identify potentially regulated military facilities.

A recent report published by the Department of Defense on base closure and realignment contains a list of current military installations by economic region in the United States (DOD, 2005). According to the report, there are 711 currently active military installations in the United States. As in EPA's 1991 study, the Agency assumed that all of these military installations store enough oil to reach the SPCC threshold. Then, in the absence of oil storage capacity information for each facility, EPA used the distribution from EPA's 1995 study to allocate military facilities across the four capacity tiers. Using this distribution yielded estimates of military installations by capacity tier as summarized in Exhibit C-10. EPA estimated 148 regulated military facilities in Category I; 148 regulated military facilities in Category II; 296 regulated military facilities in Category III; and 118 regulated military facilities in Category IV.

Exhibit C-10
Derivation of Number of Regulated Military Facilities

Oil Storage Capacity Category	1995 Survey Estimates	Percentage of Total Facilities (1995)	Number of Military Installations (2005) ¹
I	239	21%	148
II	239	21%	148
III	477	42%	296
IV	190	17%	118
Total	1145	100%	711

¹ The number of military facilities in 2005 was estimated by multiplying total military facilities in 1995 by the percentage of total facilities in each capacity tier as represented by the 1995 survey.

Animal Fats and Vegetable Oil

Previous EPA estimates focused on petroleum and petroleum-related oil, even though facilities handling or storing non-petroleum oil are also subject to SPCC rule regulations. Non-petroleum oil includes, but is not limited to, animal fats, oils, and greases; fish and marine mammal oils; and oils of vegetable origin, including oils from seeds, nuts, fruits, and kernels. These types of substances are referred to collectively as “animal fats and vegetable oils” (AFVO) within SPCC regulations. Animal fats and vegetable oils are used both as primary edible products and as inputs to production in the manufacture of other edible and inedible products. Examples of inedible use include soap, paint and varnish, animal feed, resins and plastics, fuel, drilling fluids, lubricants, and fatty acids.

Animal fats and vegetable oils are processed to varying degrees depending on the end use of the product, and chemical composition changes at each step in processing. Chemical composition can also be changed by storage, heating, or reactions in the environment. Processing steps in vegetable oil facilities are generally independent operations that are not connected by continuous flow. Between each processing step there may be one or more storage tanks. Many crude vegetable oil storage tanks, which are usually constructed of welded carbon steel, have a capacity of 1 million pounds (approximately 140,000 gallons); these tanks may be located in the open or enclosed in a structure. Storage tanks for finished fats and oils are generally made of iron, stainless steel, or aluminum, and typically hold between 75 and 200 tons (about 21,000 to 56,000 gallons) of product.⁷⁵

While animal fats and vegetable oils are consumed widely in the United States for edible and inedible uses, developing estimates of the quantity stored or handled by industry is difficult due to the wide range of industries that use AFVO as inputs to production, the multiple processing steps for these oils, and the lack of a centralized database with information on AFVO storage for each industry. In addition, the state databases identified for this analysis contain information only on petroleum and petroleum-related oils. For this reason, EPA used available data on likely AFVO-related industries, and plausible assumptions, to estimate the number of AFVO facilities that are SPCC-regulated.

Specifically, EPA started with data on the number of manufacturing establishments from the 2005 U.S. Census of Manufacturing. Four possible types of AFVO facilities were considered: (1) industries that produce AFVO; (2) industries that use AFVO as a primary input; (3) industries that use AFVO in moderate amounts; and (4) industries that use AFVO as a minor component of their input. EPA assumed that all facilities that produce AFVO (group 1) are SPCC-regulated. Then, low, medium, and high estimates were developed using professional judgment for industries in the remaining three groups regarding the percentage of each industry group assumed to be regulated by the SPCC rule. EPA also identified a category of “other” facility types that may produce or use AFVO. For these facilities, specific information on the

⁷⁵ Data presented in this paragraph are from U.S. Environmental Protection Agency, “Denial of petition requesting amendment of the Facility Response Plan rule,” 62 *FR* 54510, October 20, 1997.

number of regulated facilities was available and was used instead of the assumed percentages. These assumptions are summarized in Exhibit C-11.

**Exhibit C-11
Derivation of Potentially Regulated AFVO Facilities**

Facility Type	Description of Facility Type	Assumed Percentage of Total Facilities Regulated ¹		
		Low	Medium	High
AFVO producer	Comprises facilities that are engaged primarily in the production and/or processing of AFVO.	100%		
User of AFVO as major input	AFVO is a major input in production of other goods; however, not all facilities may use AFVO.	50%	70%	90%
User of AFVO as moderate input	Several facilities likely use large quantities of AFVO; however, many may not, depending on the specific products the facility manufactures.	20%	50%	80%
User of AFVO as minor input	AFVO use by facilities is limited to alternative or unconventional products. For example, industries such as pesticide, paint and coating, printing ink, and soap and other detergent manufacturing use vegetable oil as an alternative to their conventional inputs, and are included in this category. Also included in this category are facilities that may have minor AFVO storage capacity, or industries that use significant quantities of petroleum oils but may also use AFVO.	1%	5%	10%
Other ²	Specific information on the number of regulated facilities is available for the industry sector and is used instead of the assumed percentages.	N/A	N/A	N/A

¹ In the absence of publicly available data that would allow an accurate estimate of storage capacity at facilities that produce or use AFVO, EPA developed a range of percentages for each facility type identified above to reasonably bound the universe of potentially regulated facilities under the SPCC rule. Given that these percentages are based on assumptions regarding the relative production or use of AFVO within each facility type, they are subject to a considerable degree of uncertainty.

² EPA identified a category of "other" facility types that may produce or use AFVO. For these facilities, specific information on the number of regulated facilities was available and was used instead of the assumed percentages.

Exhibit C-12 presents the results of applying these assumed percentages to the total number of relevant manufacturing establishments based on U.S. Census of Manufacturing data. As shown, EPA estimated that between 3,000 and 12,000 manufacturing facilities that produce, use, or store AFVO might be SPCC-regulated, or on average approximately 7,600 manufacturing facilities.

Exhibit C-12
Analysis of Potentially Regulated AFVO Facilities under the SPCC Rule

NAICS Code	Industry Title	Total Number of Facilities ¹	Production/Level of Use of AFVO ²	Assumed Percentage of Total Facilities Regulated ³			SPCC Universe Estimate		
				Low	Medium	High	Low	Medium	High
311111	Dog and Cat Food Manufacturing	188	Moderate	20%	50%	80%	38	94	150
311119	Other Animal Food Manufacturing	1,514	Moderate	20%	50%	80%	303	757	1,211
311221	Wet Corn Milling ⁴	58	Other	Other	Other	Other	25	25	25
311222	Soybean Processing ⁵	93	Other	Other	Other	Other	9	9	9
311223	Other Oilseed Processing	54	Producer	100%	100%	100%	54	54	54
311225	Fats and Oils Refining and Blending	132	Producer	100%	100%	100%	132	132	132
31123	Breakfast Cereal Manufacturing	71	Moderate	20%	50%	80%	14	36	57
31132	Chocolate and Confectionery Manufacturing from Cacao Beans	164	Moderate	20%	50%	80%	33	82	131
31133	Confectionery Manufacturing from Purchased Chocolate	861	Moderate	20%	50%	80%	172	431	689
31134	Nonchocolate Confectionery Manufacturing	625	Moderate	20%	50%	80%	125	313	500
311412	Frozen Specialty Food Manufacturing	412	Moderate	20%	50%	80%	82	206	330
311423	Dried and Dehydrated Food Manufacturing	156	Moderate	20%	50%	80%	31	78	125
311512	Creamery Butter Manufacturing	34	Producer	100%	100%	100%	34	34	34
311513	Cheese Manufacturing	525	Not Used	0%	0%	0%	0	0	0
311514	Dry, Condensed, and Evaporated Dairy Product Manufacturing	215	Not Used	0%	0%	0%	0	0	0
31152	Ice Cream and Frozen Dessert Manufacturing	451	Moderate	20%	50%	80%	90	226	361
311611	Animal (except Poultry) Slaughtering	1,393	Not Used	0%	0%	0%	0	0	0
311612	Meat Processed from Carcasses	1,297	Moderate	20%	50%	80%	259	649	1,038
311613	Rendering and Meat Byproduct Processing	240	Producer	100%	100%	100%	240	240	240
311615	Poultry Processing	472	Moderate	20%	50%	80%	94	236	378
311711	Seafood Canning	166	Moderate	20%	50%	80%	33	83	133
311712	Fresh and Frozen Seafood Processing	678	Not Used	0%	0%	0%	0	0	0
311812	Commercial Bakeries	2,766	Moderate	20%	50%	80%	553	1,383	2,213
311813	Frozen Cakes, Pies, and Other Pastries Manufacturing	238	Moderate	20%	50%	80%	48	119	190
311821	Cookie and Cracker Manufacturing	380	Moderate	20%	50%	80%	76	190	304
311823	Dry Pasta Manufacturing	266	Moderate	20%	50%	80%	53	133	213
31183	Tortilla Manufacturing	235	Moderate	20%	50%	80%	47	118	188
31191	Snack Food Manufacturing	565	Moderate	20%	50%	80%	113	283	452
311911	Roasted Nuts and Peanut Butter Manufacturing	146	Moderate	20%	50%	80%	29	73	117

Exhibit C-12
Analysis of Potentially Regulated AFVO Facilities under the SPCC Rule

NAICS Code	Industry Title	Total Number of Facilities ¹	Production/Level of Use of AFVO ²	Assumed Percentage of Total Facilities Regulated ³			SPCC Universe Estimate		
				Low	Medium	High	Low	Medium	High
311919	Other Snack Food Manufacturing	419	Moderate	20%	50%	80%	84	210	335
311941	Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing	328	Major	50%	70%	90%	164	230	295
311991	Perishable Prepared Food Manufacturing	445	Moderate	20%	50%	80%	89	223	356
311999	All Other Miscellaneous Food Manufacturing	856	Moderate	20%	50%	80%	171	428	685
32532	Pesticide and Other Agricultural Chemical Manufacturing	260	Minor	1%	5%	10%	3	13	26
32551	Paint and Coating Manufacturing	1,497	Minor	1%	5%	10%	15	75	150
325611	Soap and Other Detergent Manufacturing	807	Minor	1%	5%	10%	8	40	81
32591	Printing Ink Manufacturing ⁶	567	Other	Other	Other	Other	50	100	150
49311	General Warehousing and Storage	3,921	Minor	1%	5%	10%	39	196	392
49312	Refrigerated Warehousing and Storage	877	Minor	1%	5%	10%	9	44	88
49313	Farm Product Warehousing and Storage	486	Minor	1%	5%	10%	5	24	49
49319	Other Warehousing and Storage	1,213	Minor	1%	5%	10%	12	61	121
4931901	Household goods warehousing & storage	317	Not Used	0%	0%	0%	0	0	0
4931902	Specialized goods warehousing & storage	896	Not Used	0%	0%	0%	0	0	0
Total		27,284					3,337	7,623	12,000

¹ Data on the number of facilities by NAICS code are from the 2002 Economic Census of the United States.

² The selected NAICS codes include facilities that may produce AFVO or use AFVO as a major, moderate, or minor input to production of other goods. The assigned type of facility indicates whether the facilities associated with a particular NAICS code may produce AFVO as their primary good or, for facilities that may use AFVO as an input to production, indicates the assumed relative use of AFVO as an input in these facilities. EPA also identified a category of "other" facility types that may produce or use AFVO. For these facilities, specific information on the number of regulated facilities is available and is used instead of the assumed percentages.

³ For an explanation of the assumed percentage of facilities that are regulated for each NAICS code under the low, medium, and high estimates, see Exhibit C-11.

⁴ The Corn Refiners Association provided specific information on this NAICS code, identifying 25 corn-refining plants that are owned by its members. According to the Association, these 25 plants represent the majority of the industry.

⁵ The 2002 Economic Census of the United States data for NAICS code 311221 identifies nine soybean oil facilities. While this number provides a specific estimate of soybean oil facilities, EPA notes it may be an underestimate if some soybean processing facilities are included under other NAICS codes but also produce soybean oil.

⁶ According to www.soyink.com, there are approximately 100 U.S. ink manufacturers that produce at least one soy ink product. In addition, 77 U.S. companies manufacture SoySeal Certified ink.

This methodology yielded estimates of the number of facilities that may be regulated based only on their anticipated storage of AFVO. Some of these facilities may be regulated because they also store petroleum oils. Therefore, some double counting of the facilities may be present. In the absence of more specific data on this industry, this source of error cannot be measured or addressed.

Given the lack of information on the oil storage capacity at each facility, the distribution of facilities across different size categories was assumed the same as that for Food Manufacturing Facilities (NAICS 311) based on their petroleum and related oil capacity.⁷⁶ Exhibit C-13 presents the estimates of AFVO facilities (medium estimate) distributed across oil storage capacity categories.

Exhibit C-13
Estimated Number of Animal Fats and Vegetable Oil Facilities

Manufacturing facilities using and storing AFVO	Category I	Category II	Category III	Category IV	Total
	2,610	3,430	1,580	0	7,620

Education, Religious Organizations, and Government Establishments

The 1997 U.S. Economic Census data used to extrapolate the number of facilities from state databases to the entire universe of SPCC-regulated facilities do not include religious organizations, educational facilities, or government-owned establishments. Therefore, extrapolation using state databases was not possible for these facilities. For this reason, EPA estimated the number of storage tanks in commercial buildings using the 1995 and the 2003 Commercial Buildings Energy Consumption Survey (CBECS).⁷⁷ The CBECS is a national sample survey that collects energy-related building characteristics data as well as energy consumption and expenditures data for commercial buildings in the United States. It includes information on the principal business activity of the given building and information on the ownership of the building by government or private institutions. Until 1995, the CBECS also collected information on the oil storage capacity of tanks at these buildings.

Because data on storage tank capacity have not been collected since the 1995 survey, EPA estimated the total tank capacity at each building from the 1995 survey data and projected it to 2003 using the growth in the square footage of buildings during this time period as a proxy for the growth in the total storage capacity. Using this approach, EPA estimated a 1.03 percent annual growth rate in total storage capacity at educational buildings, a 1.04 percent annual growth rate in total storage capacity at religious buildings, and a 1.02 percent annual growth rate at government facility buildings from 1995 through 2003. These annual growth rates

⁷⁶ EPA assumed that most AFVO facilities are in the food manufacturing industry, and that facilities that store larger quantities of petroleum and related oils (and are therefore large facilities) may store similar quantities of AFVO. Such facilities may have different storage of AFVO as compared to petroleum oil. In particular, small facilities that produce AFVO may store much larger quantities of AFVO as compared to petroleum and related oils that are used for energy.

⁷⁷ EPA uses these two years because 1995 is the most recent year for which data on oil storage capacity of tanks at commercial buildings were collected, and 2003 is the most recent year in which the survey was conducted.

correspond to overall adjustment factors of 28 percent for educational buildings, 34 percent for religious buildings, and 16 and 72 percent for government buildings over the entire period.⁷⁸ To arrive at the estimate for 2005, EPA extrapolated the number of buildings assuming this same rate of growth for each sector. Exhibit C-14 summarizes the derivation of the adjustment factor for each industry considered in this section.

Exhibit C-14
Derivation of Adjustment Factor for Education, Religious, and Government Establishments

Industry	1995 Data			2003 Data			Estimated Adjustment Factor ¹
	Number of Buildings	Total Square Footage	Average Square Feet	Number of Buildings	Total Square Footage	Average Square Feet	
Education	308,980	7,740,293,721	25,051	386,000	9,874,000,000	25,600	28%
Religion	269,380	2,792,077,403	10,365	370,000	3,754,000,000	10,100	34%
Government	704,931	10,478,076,064	14,864	824,000	12,208,000,000	14,800	16%
Other ²	67,332	1,003,620,004	14,906	79,000	1,738,000,000	21,900	72%

¹ Oil storage capacity data were collected for buildings in these industries in 1995 but not in 2003. For this reason, the adjustment factor is calculated as the percentage increase in total square footage for buildings in each industry category from 1995 to 2003, and is used to adjust the 1995 oil storage capacity data to 2003 by assuming the factor is a proxy for growth in total oil storage capacity within these buildings.

² Federal and state government buildings that are contained within the "other" category in the 1995 and 2003 CBECS.

Sources:

1995 data are from the U.S. Energy Information Administration CBECS, available at http://www.eia.doe.gov/emeu/cbecs/detailed_tables_1995.html.

2003 data are from the 2003 CBECS, available at http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/detailed_tables_2003.html.

Finally, given that the CBECS does not distinguish between aboveground and underground storage, EPA assumed that buildings in metropolitan areas have underground storage due to scarcity of aboveground storage, and that buildings in non-metropolitan areas have aboveground storage. EPA assumed that all the underground storage tanks comply with UST requirements and are exempt from SPCC requirements. Exhibit C-15 summarizes the results of the analysis. As shown, EPA estimated that approximately 6,900 educational facilities, 1,400 religious organization, and 550 government facilities are SPCC-regulated.

Exhibit C-16 summarizes results across the oil-storage-capacity categories used in the analysis. The presence of tank capacity data in the 1995 CBECS allows for direct distribution of facilities into the capacity categories. However, to the extent that estimated 2005 tank capacities deviate from the actual capacities, the estimated distribution may over- or underestimate the actual distribution of facilities across the capacity categories.

⁷⁸ Two adjustment factors are estimated for government buildings because the 1995 and 2003 surveys include government buildings in two categories: "office" and "other".

Exhibit C-15
Estimation of the Number of Regulated Educational, Religious, and Government Facilities in 2005¹

Industry	1995 Data		Adjustment Factor ²	2003 Estimate		Industry Growth Rate (%) ³	2005 Estimate		Total Regulated Facilities (2005)
	Category I	Category II		Category I	Category II		Category I	Category II	
Education	1,380	3,719	28%	1,761	4,748	1.03	1,872	5,047	6,900
Religion	978	0	34%	1,309	0	1.04	1,407	0	1,400
Government ³	171	0	16%	199	0	1.02	552	0	550
Other (Labs) ⁴	193	0	72%	333	0				
Total	2,721	3,719		3,602	4,748		3,832	5,047	8,880

¹ These industries do not contain facilities with oil storage capacity greater than 42,000 gallons; for this reason, these capacity tiers are not included in this table.

² The adjustment factor was calculated as the annual increase in total square footage of buildings in each industry. EPA used these factors as the industry growth rate to forecast 2003 results to 2005.

³ EPA uses the calculated adjustment factor as the industry growth rate. The industry growth rate for government is calculated using office building data only.

⁴ Facilities owned by federal and state governments are contained within the "office" and "laboratory" categories in the 1995 survey.

⁵ The 1995 survey includes government laboratories as a separate data category; the 2003 survey does not. For this reason, the analysis subsumes government-owned laboratories into the "other" category in 2003.

Source: 1995 data are from the U.S. Energy Information Administration CBECS, available at http://www.eia.doe.gov/emeu/cbecs/detailed_tables_1995.html.

Exhibit C-16
Estimated Number of Education, Religious Organizations, and Government Establishments

Industry	Category I	Category II	Category III	Category IV	Total
Education	1,872	5,047	0	0	6,920
Religious Organizations	1,407	0	0	0	1,407
Government	552	0	0	0	552
Total	3,381	5,047	0	0	8,878

APPENDIX D

PROJECTING SPCC UNIVERSE ESTIMATES USING DERIVED INDUSTRY GROWTH RATES

Growth Rates for Existing Facilities in All Industry Categories Excluding Farms and Oil Production

To estimate industry-specific growth rates for all SPCC-related industry categories except farms and oil production, EPA used 1992, 1997, and 2002 U.S. Economic Census data on the number of establishments in each industry. One issue with this approach is the transition in the Census data, around 1997, from the U.S. Standard Industrial Classification (SIC) system to the North American Industry Classification System (NAICS) to provide a more accurate representation of the changing economy. This transition resulted in a reshaping of certain industry sectors. As a result of the transformation of the industry classification system, the Census reports the data on the number of establishments as follows:

- Year 1992 - SIC;
- Year 1997 - SIC and NAICS; and
- Year 2002 - NAICS.

Because the data for 1992 and 2002 are reported in different classification systems, EPA identified corresponding NAICS sectors for SIC industry sectors in 1992 using a concordance developed by the U.S. Census Bureau that links sectors in the two classification systems. The major drawback of sector mapping is that some NAICS sectors comprise one or more SIC sectors, and some SIC sectors partially correspond to NAICS sectors. While not all sectors align fully between NAICS and SIC, some of the key SPCC industry categories (e.g., oil production and petroleum refining) correspond precisely. To reconcile differences introduced by two industry classification systems, EPA developed a methodology to allow use of the data on the number of establishments reported in SIC for 1992 and NAICS for 2002:

- (1) NAICS and SIC sectors are linked to the corresponding SPCC-regulated industry categories used in the analysis.
- (2) Data are obtained on the number of establishments for SPCC industry categories for three years (1992, 1997 and 2002).
- (3) For 1997, a ratio is estimated of the number of establishments reported in the NAICS and SIC classification systems. For each SPCC industry category, a ratio is then calculated of the number of establishments reported in NAICS to the number of establishments reported in SIC.
- (4) The ratio estimated in the previous step is used to translate the number of establishments reported for 1992 from SIC to NAICS.

- (5) Industry-specific growth rates are estimated based on the change in the number of establishments reported in NAICS from 1992 to 2002.

The use of an extended time period to estimate industry-specific growth rates attempted to account for diverse economic conditions under which SPCC-regulated industries operate. Economic indicators, including gross domestic product (GDP), suggest a noticeable decline in industrial productivity beginning in 1998 that contributed to a recession period in the early 2000s. Therefore, the use of 1997 and 2002 Economic Census data to forecast the annual change in the total number of SPCC facilities beyond 2002 would not always be appropriate. The purpose of integrating Economic Census data for 1992 was to capture changes in industry growth under the more favorable economic conditions that existed between the early 1990s and 1997.

Growth Rates for Existing Agricultural Facilities

To estimate annual growth rates for agricultural establishments, EPA used data reported by the USDA National Agricultural Statistics Service on the number of farms in the United States over the past 10 years (1996 through 2005).⁷⁹ The data for the past 10 years were expected to be more representative of the latest developments in the agricultural business than data for years prior to 1996.

Growth Rates for New Facilities in All Industry Categories except Oil Production

In this analysis, SPCC-regulated facilities were divided into existing and new facilities to reflect the differences in compliance activities between the two groups. Therefore, EPA estimated the number of both new and existing facilities for each year of the analysis. While the number of existing facilities subject to the SPCC rule was estimated using industry-specific growth rates as described above, these growth rates are likely to underestimate growth in the number of new facilities because they also incorporated the rate at which facilities go out of business. The cost differential between new facilities coming under compliance with SPCC requirements versus facilities that close annually may not be zero. As a result, EPA disaggregated the industry-specific growth rates to separate trends in the number of new facilities from trends in the total number of facilities.

EPA estimated the growth rates for new facilities only using commercially available data obtained on the number of businesses (by NAICS code) in 2005 from the D&B Market Spectrum database. These data allowed for an estimation of the fraction of businesses that became operational in 2005 relative to the total number of businesses in that year. When comparing the growth rates for existing facilities to those for new facilities, the following adjustment was made: when the industry growth rate for new facilities was less than that for existing facilities, the growth rate for new facilities was set equal to the rate for existing facilities. This discrepancy

⁷⁹ USDA National Agricultural Statistics Service data, available at http://www.nass.usda.gov:8080/QuickStats/Create_Federal_All.jsp.

occurred because growth rates were calculated using data for different years (1992 to 2002 for existing facilities and 2005 for new facilities); the adjustment was needed because data for the ten-year period was expected to be more representative of future growth than one year's worth of data.

This analysis assumed that industry growth rates would be constant over the ten-year analytical period for all industries except oil production⁸⁰, which may or may not adequately represent the trends for individual sectors. A list of estimated growth rates for existing and new facilities for all industry groups included in the analysis is presented in Exhibit 4-9. Growth rates for new and existing oil production facilities are discussed in the following section.

Growth Rates for New Oil Production Facilities

Because oil production facilities account for the largest fraction of SPCC-regulated facilities across all industry categories and represent a dynamic industry, an alternative approach was used for estimating future oil production industry growth rates. EPA relied on industry-specific forecasting information, which was expected to reflect growth rates better than an approach based on historical trends. Using a constant growth rate for the entire analytic period is unlikely to adequately reflect future growth dynamics in the oil production industry.

EPA derived the number of oil production facilities from the number of oil wells as discussed in Appendix C. Complete data on the projected number of oil wells beyond 2004 were not available. However, a study conducted for the U.S. Department of Energy (DOE) includes a forecast of marginal natural gas and oil well counts through 2025.⁸¹ The approach used in the DOE analysis relied on two main data sources: the Annual Energy Outlook (AEO) published annually by the EIA, and the Marginal Oil and Gas annual publication of the Interstate Oil and Gas Compact Commission (IOGCC).

Due to the lack of readily available data on oil well forecasts, EPA projected the number of oil production facilities over the period of analysis (through 2018), following the methodology developed in the DOE study on marginal wells:

- (1) Acquired historical total U.S. oil production data for the years 1995 through 2004. EIA reports the annual values of crude oil production in barrels per day for 1919 through 2004.⁸²
- (2) Obtained forecasted total oil production data through 2018 from EIA. EPA used the data on domestic crude oil production for 1990 through 2030 from the Annual Energy Outlook 2006, with Projections to 2030.⁸³

⁸⁰ See the next section for description of derivation of growth rates for oil production.

⁸¹ For detail, see Don J. Remson, "A Forecast of Marginal Natural Gas and Oil Well Data", June 2005. U.S. Department of Energy, National Energy Technology Laboratory, available at http://www.netl.doe.gov/technologies/oil-gas/publications/AP/MarginalWellData_Topical.pdf.

⁸² U.S. Energy Information Administration, data available at http://www.eia.doe.gov/pub/oil_gas/petrosystem/petrosysog.html.

⁸³ U.S. Energy Information Administration, data available at http://www.eia.doe.gov/oiaf/aeo/graphic_data.html.

- (3) Projected the average oil well rate into the future. EPA first estimated the daily production rate per well (barrels of oil produced per well per day) by dividing annual oil production by the number of wells and the number of days in a year. Then, EPA regressed the year versus historical daily well rate data to derive a linear function for forecasting future average production rates.
- (4) For each year of the forecast, 2005 through 2018, EPA estimated the number of wells by dividing the predicted oil production by forecasted average production rate.
- (5) Estimated the number of oil production facilities based on the total number of oil wells using four wells per facility.
- (6) Calculated annual growth rates for the oil production facilities for 2005 through 2018.

Exhibit D-1 presents the projected number of oil production facilities in the U.S. and the annual growth rates estimated using this methodology.

**Exhibit D-1
Projected Number of Oil Production Facilities and Estimated
Growth Rates**

Year	Number of Facilities	Annual Growth Rate
2005	166,046	-2.31%
2006	176,770	6.46%
2007	183,645	3.89%
2008	193,211	5.21%
2009	206,646	6.95%
2010	215,063	4.07%
2011	221,352	2.92%
2012	230,405	4.09%
2013	239,801	4.08%
2014	249,568	4.07%
2015	258,518	3.59%
2016	270,736	4.73%
2017	278,686	2.94%
2018	287,809	3.27%

A sharp increase is expected in the number of oil production facilities, as demonstrated in Exhibit D-1, due to a continuously decreasing production rate at oil wells and relatively stable total oil production in the United States. EIA states in its 2006 Annual Energy Outlook that a large proportion of the total U.S. resource base of onshore conventional oil has been produced, and new oil reservoir discoveries are likely to be smaller, more remote, and increasingly costly to exploit.⁸⁴

⁸⁴ U.S. Energy Information Administration, Annual Energy Outlook 2006.

APPENDIX E

COMPARISON OF THE TOTAL COST SAVINGS RESULTING FROM THE 2006 FINAL RULE WITH THOSE PROJECTED FOR THE 2005 PROPOSED RULE

For all rule components except for the qualified facilities, the final rule yields an increase in compliance cost savings over the 2005 proposed rule. The changes in the cost saving estimates for the individual rule components between the proposed and final rule are primarily attributed to the following four factors:

- Modified regulatory requirements such as additional paperwork-related requirements for qualified facilities, inclusion of additional industry sectors covered by the exemption for mobile refuelers previously offered only for airports;
- Adjustments to the input variables such as updated labor wages and O&M and capital cost estimates;
- A new analysis period from 2008 through 2017; and
- Changes in the estimation methodology such as revised industry sector growth rates and SPCC-regulated facility universe estimates.

For qualified facilities, the difference in the estimates is explained by the revised growth rates for industries that contain qualified facilities and other updated inputs in the estimation process.

For the oil-filled operational equipment components of the rule, the difference in the cost savings between the proposed and final rule is mainly due to the two following reasons: (1) inclusion of additional industry sectors in the analysis of facilities using oil-filled operational equipment as opposed to just the electric utilities sector considered for the proposed rule and (2) revised growth rates for the analyzed industries including electric utilities, for which the growth rate has been revised downward. One of the main reasons that do not allow a side-by-side comparison of the cost savings between the proposed and final rule is that EPA considered three scenarios in this analysis to consider a range in the potential number of facilities from the industries other than electric utilities identified as having oil-filled equipment whose owners and operators would take advantage of the offered flexibility.

The increase in estimated compliance cost savings for owners and operators of facilities with motive power containers from the proposed to the final rule is due solely to the analytical adjustments outlined above. No changes were made to the regulatory requirements for this component of the SPCC rule.

It is important to note that cost savings for owners and operators of facilities with mobile refuelers under the amendments to the SPCC rule represent a considerably higher level of overall savings as compared to the proposed rule for two primary reasons (1) the inclusion of similar mobile refuelers in other industry sectors including mining sites, chemical complexes,

construction sites, seaport terminals, and tank truck home base operations and (2) the adjustments made to the estimation methodology, revised growth rates, etc.

Exhibit E-1 compares the total cost savings resulting from the 2006 final rule with those projected for the 2005 proposed rule, given a baseline of the 2002 SPCC rule requirements.

Exhibit E-1
Estimated Cost Savings Associated with the 2006 Final Rule Amendments Compared to the 2005 Proposed Rule Amendments (\$2005 Millions)

Rule Component/Scenario ¹	2005 Proposed Rule		2006 Final Rule	
	Annualized Cost Savings (3%)	Annualized Cost Savings (7%)	Annualized Cost Savings (3%)	Annualized Cost Savings (7%)
Qualified Facilities	\$36.33	\$36.23	\$37.89	\$37.74
Qualified OFE				
25%	\$60.90	\$60.10	\$39.00	\$38.70
50%			\$53.10	\$52.80
75%			\$67.20	\$66.80
Motive Power				
10%	\$0.99	\$0.98	1.07	\$1.07
25%	\$2.47	\$2.45	\$2.69	\$2.68
50%	\$4.93	\$4.91	\$5.37	\$5.35
Mobile Refuelers				
25%	\$6.92	\$6.86	\$17.20	\$17.10
50%			\$34.40	\$34.20
75%			\$51.60	\$51.30

¹ Estimated savings are presented for final rule components and scenarios as discussed in this report.

APPENDIX F

ALTERNATIVE ECONOMIC IMPACT ANALYSIS

Rationale for Conducting Alternative Analysis

The main body of the regulatory impact analysis (RIA) accounts for cost savings resulting from the 2006 SPCC final rule amendments compared to a baseline, which is compliance with the SPCC rule requirements under 40 CFR part 112, as amended in 2002 (67 FR 47042). The cost savings may in fact be greater or lower for reasons and limitations of the analysis explained in Section 12 of the RIA. EPA is treating costs to comply with the current SPCC rule as liabilities that owners and operators of the regulated entities currently have – whether or not they have actually made the capital expenditures to comply. In this analytical construct, owners and operators of these firms are assumed to simply delay the expenditures for the costs they already carry.

EPA is aware of industry concerns regarding potential non-compliance among owners and operators of facilities of certain sizes or industry sectors, although no reliable empirical evidence exists to assess the extent or magnitude of such non-compliance. Therefore, there might be some level of non-compliance during the period of analysis, ten years after the established compliance date of October 31, 2007. Owners and operators of facilities that are complying with the baseline SPCC requirements would save money when some of those requirements are relaxed under the final rule amendments. Owners and operators of facilities that are not currently in compliance with 2002 SPCC rule requirements, however, have not incurred expenditures in the baseline, and thus would not incur any savings as a result of this rule, unless they come into compliance during the analysis period.

The purpose of this alternative economic impact analysis is to better understand the changes in cost savings associated with different rates of compliance with the 2002 SPCC rule. The following section, *Estimated Change in Cost Savings for the Alternative Baseline*, describes the estimated changes in cost savings resulting from the 2006 SPCC final rule assuming partial (50 percent) compliance during the analysis period. For this alternative analysis, EPA assumed 50 percent compliance with both the 2002 and 2006 rules. The Agency anticipates the compliance rate under the 2006 final rule to be at the same level as it would have been under the 2002 rule or higher. The section, *Per-Facility Cost Savings for Affected SPCC Requirements*, presents cost saving estimates for owners and operators of facilities that could come into compliance during the analysis period and take advantage of the reduced requirements.

Estimated Change in Cost Savings for the Alternative Baseline

Under the partial (50 percent) compliance scenario, anticipated cost savings would be less than the total cost savings presented in the regulatory impact analysis. The reason for less cost savings in this scenario is that the fraction of SPCC-regulated facilities whose owners and

operators are assumed to be in non-compliance would not be affected by the rule changes, and therefore, would not be able to lower their costs. Therefore, under a 50 percent compliance scenario, owners and operators of half of all facilities (all non-compliant facilities) will have no cost savings. This is equivalent to cost savings equal to 50 percent of the total cost savings calculated under the full compliance scenario. The estimated cost savings under the full and partial compliance scenarios are presented in Exhibit F-1.

Exhibit F-1
Estimated Cost Savings Associated with Final Changes to the SPCC Rule under Full and Partial Compliance Scenarios

Rule Component	Cost Savings (\$ million/year)					
	Full (100 percent) Compliance			Partial (50 percent) Compliance		
	Not Discounted	3% Discounted	7% Discounted	Not Discounted	3% Discounted	7% Discounted
Qualified Facilities	\$38.0	\$37.9	\$37.7	\$19.0	\$18.9	\$18.9
Qualified OFE¹						
25%	\$39.2	\$39.0	\$38.7	\$19.6	\$19.5	\$19.4
50%	\$53.4	\$53.1	\$52.8	\$26.7	\$26.5	\$26.4
75%	\$67.5	\$67.2	\$66.8	\$33.7	\$33.6	\$33.4
Motive Power¹						
10%	\$1.08	\$1.07	\$1.07	\$0.54	\$0.54	\$0.54
25%	\$2.69	\$2.69	\$2.68	\$1.35	\$1.34	\$1.34
50%	\$5.39	\$5.37	\$5.35	\$2.69	\$2.69	\$2.68
Mobile Refuelers¹						
25%	\$17.3	\$17.2	\$17.1	\$8.6	\$8.6	\$8.6
50%	\$34.5	\$34.4	\$34.2	\$17.3	\$17.2	\$17.1
75%	\$51.8	\$51.6	\$51.3	\$25.9	\$25.8	\$25.7

¹ To estimate the number of facilities affected by the final rule changes within each industry sector, EPA developed three scenarios: 25, 50, and 75 percent for qualified facilities and mobile refuelers and 10, 25, and 50 percent for facilities with motive power. See Chapters 6 through 9 of the RIA for more details.

Per-Facility Cost Savings for Affected SPCC Requirements

The reduced requirements offer regulatory relief to owners and operators of certain facilities with regard to several rule components presented in Exhibit F-2. Owners and operators of SPCC-regulated facilities that are not currently in compliance with existing rule requirements but would like to take advantage of the offered flexibility would compare the cost of compliance before and after the final rule changes. Owners and operators of facilities that come into compliance after the final rule goes into effect would realize reduced expenditures associated with SPCC requirements. Exhibit F-2 summarizes the SPCC requirements affected by the final rule, presents per facility unit cost estimates associated with the existing and new requirements, and cost savings resulting from the reduced requirements. If owners and

operators of some facilities come into compliance after the 2006 final rule goes into effect, the estimated cost savings reported in the RIA would represent an underestimate because owners and operators of those facilities would incur additional cost savings as presented in Exhibit F-2.

Exhibit F-2
Per-Facility Unit Cost Estimates and Savings for Affected SPCC Requirements (\$/Year)

Existing 2002 Requirement	Cost Estimate	Final 2006 Requirement	Cost Estimate	Cost Savings
Qualified Facilities: PE certification of SPCC Plan for qualified facilities	\$1,880	Self-certification of SPCC Plan in lieu of PE certification	\$0	\$1,880
Qualified OFE: Secondary containment for oil-filled equipment	<i>Small: \$11,000 Medium: \$27,500 Large: \$60,000</i>	Contingency plan in lieu of secondary containment	\$3,470	<i>Small: \$7,530 Medium: 24,030 Large: \$56,530</i>
Motive Power: Motive power containers are subject to the rule	\$563	Exempted motive power containers	\$0	\$563
Mobile Refuelers: Sized secondary containment for mobile refuelers	\$13,000	Removed requirement for sized secondary containment	\$0	\$13,000
AFVO: Inapplicable provisions related to AFVO are not removed/reserved	-	Removed and reserved certain SPCC requirements for AFVO	-	-
Farms: Farms are subject to the rule	-	Issued an extension of the compliance dates for owners and operators of farms	-	-

Major underlying assumptions and considerations for the estimates in Exhibit F-2 are as follows:

- **General:** Only substantive per-facility unit costs associated with requirements affected by the 2006 SPCC final rule are estimated. EPA did not analyze cost savings associated with non-substantive changes to requirements for facilities that handle, store, or transport animal fats and vegetable oils or the extension of the compliance dates for owners and operators of farms. For data sources used to obtain unit cost estimates for individual rule requirements, see Chapter 5 of the RIA.
- **Qualified Facilities:** Qualified facilities whose owners and operators would come into compliance after the final rule goes into effect are expected to avoid a PE cost of Plan certification when preparing a new SPCC Plan. The rest of components associated with SPCC Plan requirements would not be affected by the final rule.
- **Qualified OFE:** Owners and operators of facilities with OFE are expected to choose a less expensive option offered by the final rule and prepare a contingency plan instead of secondary containment. EPA recognizes that owners and operators of some facilities would need to make an impracticability determination. In those cases, the cost savings would be lower, since owners and operators would be avoiding only an impracticability determination rather than secondary containment.
- **Motive Power:** Savings for owners and operators of facilities with motive power containers reflect reduced expenditures associated with smaller regulated storage capacities.
- **Mobile Refuelers:** The estimated annual cost savings for owners and operators of facilities with mobile refuelers consist of the avoided potential expenditures of providing sized secondary containment.

Implications of the Alternative Compliance Baseline

Facilities whose owners and operators are not complying with existing SPCC requirements are not providing the concomitant levels of environmental protection assumed by the rule. Under the partial compliance baseline, therefore, any increased risks associated with reduced levels of regulation under the final rule also diminish, since there is no reduction in environmental protection for those facilities.⁸⁵ Owners and operators of these facilities do experience the benefits of avoided compliance costs accrued during the period of non-compliance. These cost savings would further offset the current overall costs of compliance.

Limitations of the Analysis Used to Estimate Cost Savings

It is important to note that the cost savings presented in the main body of the RIA may overestimate or underestimate actual figures because of the limitations of the analysis. Major limitations and assumptions used in the RIA are described below.

Since the rule does not include a notification requirement, EPA is limited to data already collected by state or federal agencies or by proprietary sources to estimate how many SPCC-regulated facilities of different sizes with different types of equipment and oil storage and utilization techniques exist.

Another major limitation concerns many of the cost estimates used in the analysis, which are based on interviews with a limited number of PEs. The data provided by these PEs represent anecdotal information and are not statistically valid, so they cannot be reliably extrapolated to a larger universe.

In order to account for similar requirements imposed by state regulations regarding the storage, handling, and containment of oil, EPA developed a nation-wide estimate for the degree of overlap for each facility size category. The Agency used the developed overlap measure in estimating total burden associated with each compliance activity. The nationwide estimate for the overlap does not reflect differences in state regulations and the degree of compliance that is likely to vary across states. Additionally, the developed estimates do not account for overlaps with other state and federal regulations that are not focused on oil pollution prevention.

One of the major assumptions EPA made in the regulatory impact analysis is to assume that owners or operators of existing SPCC-regulated facilities would forgo compliance activities offered as alternatives to activities that required capital investments because they would have already incurred a one-time cost. For example, a facility owner or operator, who had secondary containment for qualified oil-filled operational equipment in place, would not take advantage of the provided alternative to prepare a contingency plan instead. However, if there were a certain number of existing facilities currently in non-compliance, the final rule changes would result in

⁸⁵ For a discussion on associated risks, see Section 3.1 of the RIA.

additional cost savings for owners and operators of facilities that come into compliance during the analysis period, as presented in Exhibit F-2.