

CHAPTER SIX

FINAL REGULATORY FLEXIBILITY ANALYSIS

6.1 INTRODUCTION TO THE FINAL REGULATORY FLEXIBILITY ANALYSIS

This chapter considers the effects of the regulatory options considered by EPA for the Final Action on small entities in the C&D industry. This analysis is conducted in accordance with the Regulatory Flexibility Act (RFA, 5 U.S.C. et seq., Public Law 96-354) as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA). The purpose of the RFA is to establish as a principle of regulation that agencies should tailor regulatory and informational requirements to the size of entities, consistent with the objectives of a particular regulation and applicable statutes. The RFA generally provides for an agency to prepare a final regulatory flexibility analysis (FRFA) of any rule subject to notice-and-comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a “significant impact on a substantial number of small entities” (U.S. EPA, 1999). Small entities include small businesses, small organizations as defined by SBA, and governmental jurisdictions with populations of less than 50,000.

6.2 SMALL BUSINESS ANALYSIS COMPONENTS

To analyze small business impacts, EPA has undertaken the components of an analysis in accordance with the RFA, which provides that a FRFA is to contain:

- State the need for and objectives of the rule.
- Summarize the significant issues raised by public comments on the initial regulatory flexibility analysis (IRFA) and the Agency’s assessment of those issues and describe any changes in the rule resulting from public comment.
- Describe the steps the Agency has used to minimize the significant economic impact on small entities consistent with the stated objectives of the applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in

the final rule and why each one of the other significant regulatory alternatives to the rule was rejected.

- Describe/estimate the number of small entities to which the rule will apply or explain why no such estimate is available.
- Describe the projected reporting, recordkeeping, and other compliance requirements of the rule, including an estimate of the classes of small entities that will be subject to the requirements of the rule.

EPA presents the impacts of the four options considered on small businesses. These impacts are discussed in Section 6.3.

6.2.1 Need for and Objectives of the Rule

EPA maintains the authority to promulgate effluent guidelines and standards under sections 301, 304, 306, 307, 308, and 501 of the Clean Water Act (CWA), and 33 U.S.C. sections 1311, 1314, 1316, 1317, 1318, and 1361. Under these sections, EPA is authorized to set standards for controlling discharge of pollutants for the C&D industry. The decision to regulate or not to regulate is considered pursuant to a Consent Decree in *NRDC et al. v. Reilly* (D.D.C. No. 89-2980, January 31, 1992), and the decision is consistent with EPA's latest Effluent Guidelines Plan under section 304(m) of the Clean Water Act (see FRL-7268-5, 67(166):55012-55014).

The objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." To assist in achieving this objective, EPA issues effluent limitations guidelines, pretreatment standards, and NSPS for industrial dischargers. Sections 301(b) and 306 authorize EPA to issue BAT and NSPS for all pollutants. EPA is also able to consider effluent guidelines and determine that no action is necessary (see, for example, the Final Action Regarding Pretreatment Standards for the Industrial Laundries Point Source Category [62 FR 66182]). The final regulatory option chosen for the C&D industry is discussed in the Federal Register Notice.

6.2.2 Significant Issues Raised by Public Comment

The significant issues raised by public comment that specifically address small business issues are as follows:

- Some commenters were concerned that due to economies of scale, the very smallest firms would be affected more than the typical firms by Options 1 and 2, since their costs per acre would be higher. Others asked EPA to consider only sites where 5 acres or more are disturbed to minimize impacts on small business. The very smallest firms are not likely to be affected by any of the options, since they are highly unlikely to disturb an acre of land in any one project. See also below about concerns for builders with one to four starts annually.
- NAHB believes EPA did not meet the statutory requirements of an IRFA because the SBREFA Panel conclusions and descriptions of small business outreach were not presented in the EA and because NAHB believed that no impact results for small businesses were presented. EPA, however, provides the SBREFA Panel conclusions and all information pertinent to the SBREFA process in the rulemaking record (see U.S. EPA, 2001). EPA disagrees that no impact results were presented and refers to Section 6.4 of the EA for the proposal (U.S. EPA, 2002), which specifically discusses impacts on small business, showing results of a revenue test. A revenue test is recommended by EPA guidance (U.S. EPA, 1999) for determining the magnitude of impact on small business in an IRFA.
- Several commenters were concerned that small businesses were not adequately identified because EPA considered builders that undertake one to four starts annually to be unaffected by Option 1 and builders that undertake five to nine starts annually to be unaffected by Option 2. However, the criteria to trigger a site's compliance with the options considered is disturbed acreage on a single site. The commenters appear to believe the standard is total area of all lots built on in the course of a year. For example in order for a builder who builds one to four homes in a year to trigger the 1-acre threshold, the builder would probably need to build most of its annual units on one site and disturb all of every lot. EPA found this scenario unlikely. The types of builders that commonly build one to four units do so on isolated lots, with work spread out over the course of the year. The same issue arises with the builders constructing five to nine units under a 5-acre threshold. EPA continues to believe these cutoffs in analytical populations are reasonable, and that it is unlikely that EPA has systematically underestimated numbers of small businesses affected or the impact of the options on these small businesses.

6.2.3 Steps Used to Minimize Impacts

EPA took several steps to minimize impacts under each option considered. Option 1 minimizes impacts by limiting the scope of the option to projects disturbing more than 1 acre of land and by requiring only inspection and certification, rather than requiring the industry to meet a technology-based standards. Option 2, while more stringent and requiring that an ELG be met, limits the scope to projects that disturb more than 5 acres. This cutoff for Option 2 is designed in part to strongly limit the numbers of small businesses that might be subject to an ELG. Furthermore, since the ELG is designed to codify the provisions of the CGP, which serves as the model for several states, EPA has determined that a large portion of projects and firms will not be incrementally affected. Option 3, the no-action alternative, is the ultimate impact minimizing option, since it does not impose any incremental requirements on any firm regardless of size. Since proposal, EPA has further contemplated option modifications to minimize impacts and has restructured Option 2 to omit the enhanced inspection and BMP certification requirements, naming this modified Option 2 as Option 4. Option 4, therefore, offers a further reduction in the impacts compared to Option 2. Thus, in assessing all of the options under consideration, EPA has sought to minimize impacts on small businesses.

6.2.4 Estimated Number of Small Business Entities to Which the Final Action Will Apply

6.2.4.1 Definition of Affected Small Entities

The RFA defines a “small entity” as a small not-for-profit organization, small governmental jurisdiction, or small business (which is defined at the firm level, not at the establishment level). EPA expects that the principal impact of the C&D options on small entities will fall on small businesses that undertake C&D activities and small governmental units involved in permitting C&D activities.¹ Section 6.3 addresses impacts on small businesses. Section 6.2.5 discusses impact on small governmental units (also see Chapter Nine for a discussion of impact on small governmental units).

¹ While some governmental and nonprofit entities may engage directly in C&D activities (i.e., undertake C&D work of their own accord), complete information is not available to warrant inclusion of governmental or nonprofit entities in this analysis. For this reason, this analysis focuses only on small businesses.

The RFA provides, with some exceptions, that EPA define small businesses according to the size standards established by SBA. SBA establishes criteria for identifying small businesses based on either the number of employees or annual revenues (13 CFR 121).² These size standards vary by NAICS (North American Industrial Classification System) code, and previously by Standard Industrial Classification (SIC) codes. Qualifying revenue levels differ among NAICS industries, and within the C&D industry there are a range of qualifying revenue levels, from \$5.0 million for NAICS 23311 (land subdivision and development) to \$27.5 million for the majority of industries within NAICS 233 and 234. For businesses in the special trades industries, the small business size threshold is \$11.5 million in revenues. Table 6-1 summarizes the SBA revenue thresholds for small businesses in each of the C&D industries.³

6.2.4.2 Number of In-Scope Small Firms Affected by the Regulatory Options

EPA estimated the number of small firms affected by the options considered through a series of steps, as follows:

- EPA estimated the number of establishments in the C&D industry.
- EPA estimated the number of establishments covered by the various options and excluded those expected not to be affected by option requirements to produce the number of “in-scope,” affected establishments).
- Based on the number of establishments considered in scope and affected, EPA estimated the number of in-scope and affected firms in the C&D industry.

² Employees counted in determining size include all individuals employed on a full-time, part-time, temporary, or other basis. Employment is measured as the average number of employees for each pay period over the previous 12 months. For standards based on revenues, SBA uses the average revenues over the last three completed fiscal years.

³ Under the new 2002 NAICS structure, size standards for construction firms have been updated to \$6.0 million for NAICS 23311 (Land subdivision and development), \$28.5 million for the majority of industries within NAICS 233 and 234, and \$12 million for NAICS 235930 and 235940 (Excavation contractors and Wrecking and demolition contractors) (U.S. SBA, 2002). This change is not reflected in this EA, since SBA data does not classify firms at this level of detail. The closest categories by revenues available (<\$7.5 million, <\$25 million, and <\$100 million) are already being used to approximate the \$5.0 million and \$27.5 million cut-offs. See note to Table 2-12 in Chapter Two.

- EPA estimated the number of these firms considered small.
- EPA estimated the proportion of firms located in states deemed to have stormwater requirements equivalent to the CGP provisions of Options 2 and 4 so that the higher CGP-affected costs per acre could be used with the appropriate number of small firms (see Chapter Four, Section 4.2.2 for more information on the differences between state-level costs per acre in “equivalent” vs. “non-equivalent” states).

Table 6-1. SBA Small Business Definitions for the C&D Industry

NAICS Code	Description	SBA Revenue Size Cutoff (Millions)
233110	Land subdivision and land development	\$5.0
233210	Single-family housing construction	\$27.5
233220	Multifamily housing construction	\$27.5
233310	Manufacturing and industrial building construction	\$27.5
233320	Commercial and institutional building construction	\$27.5
234110	Highway and street construction	\$27.5
234120	Bridge and tunnel construction	\$27.5
234910	Water, sewer, and pipeline construction	\$27.5
234920	Power and communication transmission line construction	\$27.5
234930	Industrial nonbuilding structure construction	\$27.5
234990	All other heavy construction	\$27.5
235930	Excavation contractors	\$11.5
235940	Wrecking and demolition contractors	\$11.5

Source(s): 13 CFR 121 (Small Business Size Regulations; Size Standards and the North American Industry Classification System; Correction); U.S. SBA 1998: Firm Size Data (see <http://www.sba.gov/advo/stats/data.html>).

Number of Establishments in the C&D Industry

The first step in the small entity analysis is to determine the number of establishments in the C&D industry. EPA developed estimates of the number of potentially affected establishments in Chapter Two (see Table 2-14). EPA estimated that as many as roughly 262,000 establishments might be covered under the regulatory options considered.

Number of In-Scope and Affected Establishments

The estimate of 262,000 establishments include a number of establishments EPA believes will not be in-scope or affected by the regulatory options. EPA subtracted 62,400 establishments judged to be primarily engaged in remodeling activities and 50,661 homebuilding establishments that construct fewer than four homes per year and that were judged unlikely to disturb more than 1 acre of land on a regular basis. This approach produced an estimate of 148,553 potentially in-scope businesses under Option 1 (see Table 2-13). This table also reflects the fact that EPA distributed establishments in the land development industry (NAICS 2331) among the four building construction industries (NAICS 23321, 23322, 23331, and 23332) due to data limitations for the land development industry.

These establishments include those that construct a number of houses or units in the single-family and multifamily construction sectors that are not likely to disturb 5 or more acres of land. A total of 12,708 establishments are estimated to build five to nine single-family homes per year and 1,904 establishments are estimated to build two to nine multifamily units per year. These two groups of establishments are expected not to disturb 5 or more acres per year in undertaking this level of construction activity. When these establishments are excluded, EPA estimates that 133,941 establishments might be in scope (See Chapter Two, Table 2-14. Similar adjustments are not made for the nonresidential or nonbuilding construction sectors. See Chapter Four, Section 4.2.2.

EPA also does not include special trades (NAICS 235) in the small entity analysis because EPA does not believe that these businesses (e.g., plumbers, electricians, finish carpenters) are likely to be the firms responsible for meeting option requirements. Furthermore, EPA believes that if required to meet these options, these firms would generally pass costs back up to the general contractor by incorporating these costs into their bids. With special trades removed, 128,782 establishments remain potentially affected under Option 1, and 114,170 remain potentially affected under Options 2 and 4 (see Chapter Two, Table 2-14).

The final distribution of in-scope establishments used in the small entity analysis is shown in Table 6-2. These include both small and large establishments. The number of businesses these establishments represent is discussed below. It is the business entity, not the establishment, that is generally relevant under the RFA.

Table 6-2. Number of In-Scope Establishments by Option in the C&D Industry

NAICS	Industry	Option 1		Options 2 and 4	
		Number	Percent of Total	Number	Percent of Total
23321	Single-family residential building construction	34,070	26.5%	21,362	18.7%
23322	Multifamily residential building construction	4,603	3.6%	2,699	2.4%
23331	Manufacturing and industrial building construction	7,742	6.0%	7,742	6.8%
23332	Commercial and institutional building construction	39,810	30.9%	39,810	34.9%
23411	Heavy construction	42,557	33.0%	42,557	37.3%
Potentially affected establishments		128,782	100.0%	114,170	100.0%

Totals may not add due to rounding.

See also Chapter Two, Table 2-14 and Chapter Four, Table 4-7. The difference between this table and Table 4-7 is that this table includes the entire potentially affected heavy construction sector, not just highway construction.

Source: U.S. Census Bureau (2000a) and EPA estimates.

Number of In-Scope and Affected Firms

To estimate the number of *firms* affected by the options considered, EPA first examined the ratio of businesses to establishments from SBA (1998) data.⁴ Table 6-3 shows these ratios.

The ratio of firms to establishments is almost one-to-one for all establishments with fewer than 100 employees. Based on this analysis, EPA assumes that all small establishments are single-establishment firms and makes no adjustments to numbers of firms. Firms and establishments for the purposes of this analysis are thus considered equivalent.

⁴ For clarification, an *establishment* is defined as “a relatively permanent office or other place of business where the usual business activities related to construction are conducted” (Census 2000). A business (or firm) refers to the aggregation of all establishments owned by one company; therefore one business may consist of several establishments.

Table 6-3. Ratio of Businesses to Establishments by Employment Size Class

Employment Class	23321 Single-Family Housing Construction	23322 Multifamily Housing Construction	23331 Manufacturing and Industrial Building Construction	23332 Commercial and Institutional Building Construction	23411 Heavy Construction
1 to 4	1.000	1.000	1.000	1.000	0.999
5 to 9	1.000	0.999	1.000	1.000	0.999
10 to 19	0.999	1.000	0.999	0.998	0.997
20 to 99	0.993	0.994	0.997	0.991	0.991
100 to 499	0.661	0.884	0.973	0.821	0.860
500+	0.203	0.540	0.558	0.327	0.215

Source: U.S. SBA (1998).

Number of Small Firms Affected

To estimate the number of small businesses, EPA examined the distribution of revenues per establishment by size of establishment (see Table 6-4). This review concluded that average revenues for establishments below 100 employees in size are consistently below the SBA small business size threshold (\$27.5 million per year) while average revenues for establishments with more than 100 employees consistently exceed the SBA threshold.⁵ EPA, thus, concluded that the number of businesses with 100 or fewer employees would be a good proxy for the number of businesses that fall below the SBA revenue size threshold. EPA received no comments on this assumption. EPA used this approach for determining the number of small businesses in the commercial, industrial, and heavy construction sectors. For these sectors, EPA estimates the percentage of small businesses to be 96.9 percent, 98.2 percent, and 94.9 percent in the industrial, commercial, and highway construction sectors, respectively. These percentages were calculated using the total number of establishments with the number of establishments with fewer than 100 employees as shown in Table 6-4. EPA then applied these numbers to the 7,742; 39,810; and 11,270 establishments in the industrial, commercial, and highway construction

⁵ EPA notes that while the SBA threshold applies to businesses not establishments, there are very few multi-establishment businesses in the below 100-employee size classes; therefore, the use of average establishment revenues is appropriate.

Table 6-4. Establishments by Employment Class and Revenues per Establishment

Employment Class	Number of Establishments	Revenues per Establishment (\$1,000s)
Single-Family Housing Construction (NAICS 23321)		
1 to 4	106,985	\$412
5 to 9	21,377	\$1,299
10 to 19	7,234	\$2,991
20 to 99 ¹	3,022	\$12,073
100 to 499 ²	222	\$75,923
500+ ³	10	\$174,764
<i>Subtotal</i>	<i>138,850</i>	<i>\$1,760</i>
Multifamily Housing Construction (NAICS 23322)		
1 to 4	4,725	\$383
5 to 9	1,456	\$1,474
10 to 19	782	\$3,612
20 to 99 ¹	532	\$10,692
100 to 499 ²	46	\$40,855
500+ ³	3	\$122,949
<i>Subtotal</i>	<i>7,544</i>	<i>\$1,070</i>
Manufacturing and Industrial Building Construction (NAICS 23331)		
1 to 4	3,136	\$459
5 to 9	1,666	\$1,529
10 to 19	1,261	\$2,926
20 to 99 ¹	991	\$10,891
100 to 499 ²	195	\$46,414
500+ ³	30	\$217,247
<i>Subtotal</i>	<i>7,279</i>	<i>\$4,682</i>
Commercial and Institutional Building Construction (NAICS 23332)		
1 to 4	17,722	\$467
5 to 9	7,644	\$1,490
10 to 19	5,861	\$3,434
20 to 99 ¹	5,518	\$12,663
100 to 499 ²	637	\$77,162
500+ ³	48	\$342,102
<i>Subtotal</i>	<i>37,430</i>	<i>\$437,317</i>
Heavy Construction (NAICS 23411)		
1 to 4	4,154	\$281
5 to 9	1,987	\$939
10 to 19	1,876	\$1,998
20 to 99 ¹	2,683	\$7,124
100 to 499 ²	544	\$35,823
500+ ³	26	\$118,810
<i>Subtotal</i>	<i>11,270</i>	<i>\$4,301</i>

^a Combined data from Census 20 to 49 and 50 to 99 employment classes.

^b Combined data from Census 100 to 249 and 250 to 499 employment classes.

^c Combined data from all Census employment classes of more than 500 employees.

Source: Census (2000); U.S. SBA (1998).

sectors, respectively (see Table 6-2). This analysis yields 7,502; 39,081; and 10,700 small establishments in these industries.

For the single-family and multifamily construction sector, EPA had housing start data from the 2000 Census that allowed EPA to eliminate large establishments, which EPA determined to be those with more than 499 starts. Table 6-5 shows the number of establishments by start class. EPA also adjusted the number of small businesses by eliminating the number of establishments that made no starts in 1997.⁶ The total number of small businesses is, therefore, 74,787 in the single-family construction sector and 3,173 in the multifamily construction sector. The total number of small businesses in all sectors (housing and nonhousing) sums to 135,243.

The last step of this analysis was to eliminate the one to four housing start classes in the single-family sector that EPA considers unlikely to be affected by Option 1 (50,661 firms) and the five to nine housing start class in the single-family sector and the two to nine units start class in the multifamily sector, similar to the way in which these groups were eliminated as discussed in Chapter Two (see Table 2-14). Table 6-6 shows the results of the designation of small business. The first column uses the in-scope total establishments under the options as shown in Table 2-14 and Table 4-7. Based on the assumption that these firms fall below the SBA-defined revenue threshold and can be considered “small” firms, EPA estimates there are 84,582 potentially affected small firms (representing 86.8 percent of all potentially affected businesses) under Option 1 and 69,970 potentially affected small firms (representing 84.4 percent of all potentially affected firms, respectively). Note that the table includes only the highway construction portion of the heavy construction sector. No analyses were run on the other heavy construction firms, but results are discussed qualitatively in Section 6.3 to the extent that they might apply to the other heavy construction firms.

⁶ The firm analysis in Chapter Five did not specifically remove no-start establishments in the counts of affected firms. They were, however, removed from the denominator at the end of the firm analysis to avoid dilution of impacts when percentage of firm impacts were derived. These establishments would not incur impacts in the year of the analysis.

Table 6-5. Number of Establishments in the Single-Family and Multifamily Construction Industries Sectors by Starts Class

Start Class	Count of Establishments
<i>Single-Family Housing Construction (NAICS 23321)</i>	
0	9,833
1 to 4	50,661
5 to 9	12,708
10 to 24	7,462
25 to 99	3,179
100 to 499	777
Start Class	Count of Establishments
500+	111
Total	84,731
Total Small Business	74,787 ^a
<i>Multifamily Housing Construction (NAICS 23322)</i>	
0	1,390
2 to 9	1,904
10 to 24	616
25 to 99	359
100 to 499	293
500+	41
Total	4,603
Total Small Business	3,173 ^a

^a Excludes those with no starts and 500 or more starts.

Source: Census (2000); EPA estimates.

Number of Small Firms in States Affected by the CGP Provisions of Options 2 and 4

The last adjustment EPA made to the number of firms in the small business analysis was to estimate the number of firms that will incur the costs associated with meeting the provisions in Options 2 and 4 for codifying the CGP. These firms are located in states without stormwater requirements

Table 6-6. Estimated Number of Small Businesses Potentially Affected by the Options Considered

NAICS	Potentially Affected	Potentially Affected Small Firms		Affected Small Firms as a Percent of Total for Individual Industry
		Number	Percent of All Small C&D Firms	
Option 1				
233210: Single-family housing construction	34,070	24,126	28.5%	70.8%
233220: Multifamily housing construction	4,603	3,173	3.8%	68.9%
233310: Manufacturing and industrial building construction	7,742	7,502	8.9%	96.9%
233320: Commercial and institutional building construction	39,810	39,081	46.2%	98.2%
23411 Heavy construction ^a	11,270	10,700	12.7%	94.9%
Total	97,495	84,582	100.0%	86.8%
Options 2 and 4				
233210: Single-family housing construction	21,362	11,418	26.3%	53.4%
233220: Multifamily housing construction	2,699	1,269	3.3%	99.3%
233310: Manufacturing and industrial building construction	7,742	7,502	9.2%	96.9%
233320: Commercial and institutional building construction	39,810	39,081	48.1%	98.2%
23411 Heavy construction ^a	11,270	10,700	13.1%	94.9%
Total	82,883	69,970	100.0%	84.4%

^a Includes only the highway construction sector. See Table 6-2 for the full count of heavy construction establishments. Source: EPA estimates.

considered equivalent to the CGP (the non-equivalent states). Under Option 4, the per-acre costs for meeting Option 4 (the CGP-affected per-acre costs; see Chapter Four, Section 4.2.2) are used to estimate impacts for firms in the non-equivalent states using the numbers of such firms (18,401 firms) as shown in Table 6-7. The calculation of impacts under Option 2 is more complex. The same number of firms is

assigned the per-acre costs associated with meeting the CGP-affected per-acre costs (which include costs associated with both the CGP component and the inspection and certification component). The remaining firms (51,678 firms in equivalent states) are assigned only the inspection and certification costs for calculating impacts. The impacts on both sets of firms are then added. See also Chapter Four, Section 4.2.2.

Table 6-7. Estimate of Numbers of Small Firms in “Equivalent” and “Non-Equivalent” States^a

NAICS	Total Number of Small Firms	Total Number of Small Firms in Equivalent States	Total Number of Small Firms in Non-Equivalent States
233210: Single-family housing construction	11,418	8,632	2,786
233220: Multifamily housing construction	1,268	977	291
233310: Manufacturing and industrial building construction	7,503	5,616	1,887
233320: Commercial and institutional building construction	39,081	28,182	10,899
23411 Heavy construction ^a	10,700	8,009	2,691
Total	69,970	51,416	18,554

^a Based on EPA’s assessment of states with stormwater requirements considered equivalent to the CGP requirements. See Chapter Four, 4.1.2, and U.S. EPA, 2004.
Source: EPA estimates.

6.2.5 Description of Recordkeeping, Reporting, and Other Requirements

Options 1 and 2 contain recordkeeping and reporting requirements for entities in the C&D industry. Option 3 imposes no incremental requirements on any C&D operation. Option 4 also imposes

no incremental recordkeeping and reporting requirements for inspection and certification, but may impose implementation costs for general permit development. In Chapter Five, EPA estimated the costs associated with the additional requirements imposed on C&D establishments as a result of Options 1 and 2. This section focuses specifically on the costs and burden associated with recordkeeping, reporting, and related requirements. These costs and burdens were developed at proposal (see U.S. EPA, 2002) and have not been re-evaluated.

For the purpose of this analysis, “burden” means the total time, effort, or financial resources expended to generate, maintain, retain, disclose, or provide information to or for a federal agency. Total time includes the time needed to:

- Review instructions. Develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information.
- Process and maintain information.
- Disclose and provide information.
- Adjust existing procedures to comply with any previously applicable instructions and requirements.
- Train personnel to be able to respond to a collection of information request.
- Search data sources.
- Complete and review the collection of information.
- Transmit or otherwise disclose the information.

EPA estimated that states will incur some costs related to implementation of Options 1, 2, and 4. Specifically, general permit development and implementation of the inspection and certification provisions (for Options 1 and 2) are estimated to require approximately 200 labor hours per state during the first three years of program implementation. See Chapter Five, Section 5.8 for full details.

EPA analyzed costs to government units under the assumption that the majority of Phase I and Phase II stormwater NPDES permit programs and state requirements are fully implemented. Any new regulatory requirements will be incremental to the costs of these programs. The analysis in Chapter Five concluded that if Phase I and Phase II are fully implemented by communities, Option 1 will not add any

additional, recordkeeping burden reporting or burden to government units. Options 2 and 4 will add 200 labor hours per state to codify the CGP.

A significant new requirement for construction firms contained in both Option 1 and Option 2 will be maintenance of a site log book. The site log will record the date of initial groundbreaking and any inspection or maintenance activities related to erosion and sediment control. The availability of the log must be posted on the site and the log must be made available to government inspectors and the public. This is a recordkeeping requirement only, and no information will be collected. EPA estimates that site log will require 8.7 hours per year for each construction firm respondent. EPA further assumes that all recordkeeping tasks will be performed by an engineering assistant. The fully loaded hourly wage for the engineering assistant labor category in the construction industry, based on data from the U.S. Department of Labor, Bureau of Labor Statistics, is \$38.47 per hour. Thus, the 8.7 hours per year burden implies an average annual cost of \$335 for each firm. Since there are an estimated 95,753 small firms potentially subject to Option 1, the annual cost of the site log requirement is estimated to be \$32.07 million. This is the largest portion of the inspection costs discussed in Chapter Five. Because Option 2 excludes firms disturbing less than 5 acres each year from the site log requirement, the total costs of this requirement to small business will be reduced. Option 4 is not associated with any of these costs.

6.3 EPA'S ANALYSIS OF SMALL BUSINESS IMPACTS

The following sections describe the methodologies and results for the economic impact analysis of the three options considered on small businesses in the C&D industry. As discussed elsewhere, this analysis uses a baseline that assumes full compliance with Phase I and II requirements, as well as applicable state regulations.

6.3.1 Classification of Model Firms for Impact Analysis

For its economic impact analysis, EPA used the same model firms that comprise the C&D/FrMS (see Chapter Four, Section 4.2.2). The data used to construct the model firms is different, however, from

the data used to define small firms. This section describes how EPA applied its analysis of small business-owned firms to the model firms used in the impact analysis.

In the single-family and multifamily housing construction industry sectors (NAICS 233210 and 233220, respectively), EPA used multiple model firms based on the number of housing starts performed by the establishment per year for its economic impact estimates. EPA compared the model facility data by starts class with both the 1997 Census of Construction data by employment class and the SBA size standard for small business status. Table 6-8 presents key model facility data by starts class.

Table 6-8. Key Model Facility Data by Housing Starts Classification Category

Number of Units Started	Average Number of Employees	Average Value of Construction Work (\$1,000)
NAICS 233210 Single-Family Housing Construction		
1 to 4	2.5	\$492
5 to 9	3.3	\$1,089
10 to 24	4.3	\$1,987
25 to 99	8.6	\$4,923
100 to 499	32.1	\$24,031
500+	160.0	\$109,033
NAICS 233220 Multifamily Housing Construction		
2 to 9	3.2	\$645
10 to 24	5.1	\$1,382
25 to 99	8.0	\$3,500
100 to 499	13.5	\$7,410
500+	64.7	\$43,844

Source: EPA estimates based on Rappaport and Cole (2000).

Single-family housing construction establishments with 100 to 499 starts per year employ, on average, 32 workers per establishment and earn \$24 million in revenues. Establishments with fewer starts tend to employ fewer workers and have lower average revenues. Conversely, establishments with more than 500 starts per year employ on average 160 workers and earn revenues in excess of \$109 million per establishment.

Multifamily housing construction establishments with 100 to 499 starts per year employ, on average, 13.5 workers per establishment and earn \$7.4 million in revenues. Establishments with more than 500 starts per year employ on average 65 workers and earn revenues of \$44 million per establishment. Although average employment per establishment in the 500+ start class does not exceed 100 workers, employment per establishment in that class is almost five times larger than the 100 to 499 starts class in the multifamily construction sector.

The natural break points in the employment and revenue per establishment data by housing start class match reasonably well with those from the 1997 Census of Construction data described in Section 6.2.2. Therefore, for the purpose of this analysis, EPA assumes that firms with fewer than 500 housing starts per year in both the 233210 and 233220 NAICS codes are small business-owned establishments, and firms in the 500+ starts class represent large business-owned establishments. Note that based on 1997 Census of Construction figures by employment class, EPA estimated 99.8 percent of establishments in NAICS 233210 and 99.4 percent of establishments in NAICS 233220 overall are small business-owned. Based on the Census Housing Starts Statistics special study, EPA estimated that 99.7 percent of establishments in NAICS 233210 and 98.4 percent of establishments in NAICS 233220 overall are small business-owned.⁷

To estimate the number of small firms potentially affected by the options considered, EPA first projected impacts for each model firm and extrapolated those to the firms represented by the model. If the model firm has fewer than 500 starts per year, then all impacts to firms represented by that model firm are incurred by small firms; impacts to firms represented by the model firm for the 500+ starts class are incurred by large firms.

In the manufacturing and industrial, commercial and institutional, and heavy construction industries, (NAICS codes 233310, 233320, and 23411, respectively), a single model firm was used for the economic impact analysis. Selection of the model firm for each industry was based on median revenue by employment class. Because EPA used a single model firm in each of these industries, it is not appropriate

⁷ Small differences arise in estimating the percentages of total establishments in the industry that are small business-owned because of differences in how the data are arranged. SBA sets its definition of “small” by firm revenues. The census data available to EPA is arranged by employment class, not revenues, however, while data in the Census Special Study used to develop model establishments is arranged by starts class, not revenues or employment. Thus, minor discrepancies in percentages that are insignificant to the analysis will occur.

to designate the model firm as owned by a small or large business. Therefore, EPA calculated the percentage of firms that are small, as estimated from the 1997 Census of Construction, and applied that percentage to all impacts to estimate small business impacts in these sectors. For example, approximately 97 percent of establishments in NAICS 233310 are small businesses. If 100 establishments in that NAICS code are projected to incur compliance costs exceeding 1 percent of revenues, EPA assumes that 97 of those establishments are small firms.

6.3.2 Revenue Test Methodology

EPA assessed the impacts to small businesses by examining the ratio of estimated compliance costs to business revenues. Impacts are determined by the number and percentage of businesses incurring costs that exceed 1 percent and 3 percent of revenues.

EPA's primary tool for projecting revenue test impacts is the C&D/FrMS and its component firm models. For each model firm, it is straightforward to divide estimated business-level compliance costs by model firm revenues. However, this calculation answers only part of the question concerning the impact of the options considered on small business entities. To determine the number and percentage of businesses exceeding the revenue test thresholds, EPA considered not only the model firm, but the businesses represented by that model as well. The model firm actually represents a set of approximately similar businesses (e.g., similar levels of employment within some bounded range) with revenues that form a statistical distribution around the model firm's revenue figure. Some businesses in this statistical distribution will have revenues below those of the model business while others will have revenues above those of the model business. Therefore, simply examining the ratio of compliance costs to revenues for the model business is insufficient. If, for example, the model firm incurs compliance costs that are less than 1 percent of revenues, a conclusion that no businesses are affected by the option is unwarranted. It is highly likely that other businesses represented by the model have lower revenues and therefore may well incur costs exceeding 1 percent of revenues.

To address this issue, EPA developed estimates of the statistical revenue distribution of firms represented by each model firm.⁸ EPA then used those distributions to estimate the number and percentage of small firms in each industry that incur compliance costs exceeding 1 and 3 percent of revenues. EPA used model firm revenues for the mean of each distribution, but had no direct information concerning the dispersion of firm income around each model firm. EPA, therefore, developed the distributions by making reasonable assumptions about the variance and shape of the distribution. To deal with the uncertainty caused by the lack of direct evidence about the shape of the distribution, EPA used two different assumptions about the distribution of revenues to generate a range of impacts.

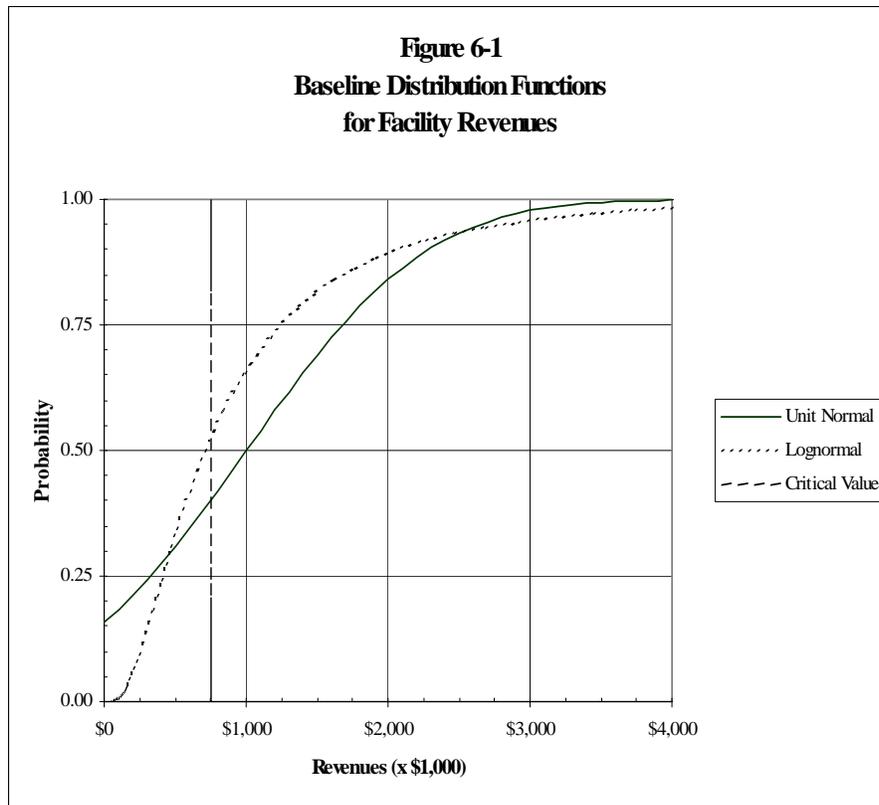
Development of Revenue Distributions

The two curves in Figure 6-1 represent the cumulative distribution functions for two different sets of assumptions concerning the distribution of establishment income around a hypothetical model firm mean of \$1.0 million in annual revenues. The cumulative distribution function is used to determine the probability y that a random variable x is less than or equal to some specified value. It is appropriate to use the cumulative distribution function for this application because EPA is concerned with the probability that an establishment earns less than some specified level of revenues. For example, if estimated establishment compliance costs for this model firm class are equal to \$15,000, then any establishment in this model firm class that earns revenues less than \$1.5 million will incur compliance costs that exceed 1 percent of revenues. Thus, EPA uses the cumulative distribution function to estimate the probability that a firm earns revenues of \$1.5 million or less.

As a starting point for its analysis, EPA examined the implications of assuming that income is normally distributed and has a standard deviation equal to the mean. That is, the coefficient of variation (standard deviation divided by mean) for this distribution is equal to 1. In Figure 6-1, this is represented

⁸ As described in Section 6.2.2, EPA determined that in the construction industry, the small business is essentially identical to the small business-owned establishment.

by the curve labeled “unit normal.” An implication of the unit normal distribution for this analysis is that some firms are projected to earn negative revenues. This can be observed by examining the y axis; the unit normal distribution assumption results in about a 15 percent probability of an establishment earning negative revenues. While negative income (e.g., net income, cash flow) is both possible and plausible for a firm, negative revenue is not.⁹



⁹ EPA examined an alternative assumption that income is normally distributed, but with standard deviation such that there was zero probability of an establishment earning negative revenues. This adjustment results in a coefficient of variation equal to about 0.29. EPA determined that this was probably not a reasonable distribution for use in this analysis because the probability of an establishment earning low revenues is quite small. For example, using the hypothetical mean revenues of \$1 million, the probability of an establishment earning revenues less than \$500,000 is only about 5 percent; the probability of an establishment earning revenues between \$500,000 and \$1.0 million is about 45 percent.

EPA then examined the implications of using a lognormal distribution. EPA estimated the mean and standard deviation for the lognormal distribution through a standard transformation of the mean and standard deviation of the unit normal distribution. Using this transformation, the lognormal distribution can be interpreted as having the same mean and standard deviation as the equivalent unit normal distribution, but a skewed distribution (unlike the normal distribution, which is symmetric). In Figure 6-1, for example, the probability of establishment revenues less than or equal to \$1.0 million is 50 percent under the unit normal distribution assumption, as is the probability of revenues greater than \$1.0 million. Under the lognormal distribution assumption, about 66 percent of establishments have income less than or equal to \$1.0 million, and about 34 percent have income greater than \$1.0 million.

The distribution of firm revenues may be skewed because it is probable—but infrequent—that some firms in any model class will perform extremely well and earn very high revenues relative to other establishments; there is no inherent limit to the revenues such a firm might earn. Conversely, there is a limit to the minimum revenues even the poorest performing firms will earn; poor performers cannot earn less than zero revenues. Such a distribution would tend to be skewed as is the lognormal distribution in Figure 6-1.

Application of Revenue Distributions to Estimating Small Business Impacts

Given the revenue distributions developed in the preceding section, EPA applied the distributions to the problem of estimating revenue test impacts as follows. First, EPA used revenues for each model firm from the five major construction industries (i.e., single-family, multifamily, manufacturing and industrial, commercial and institutional, and heavy construction) as the mean of the distribution for each model class. EPA then set the standard deviation for each model class' distribution equal to its mean. With mean, standard deviation, and two alternative assumptions concerning the shape of the distribution (normal or lognormal), EPA calculated the probability that revenues are less than or equal to any given value for each model class.¹⁰

¹⁰ For calculation purposes, EPA used the @NORMAL and @LOGNORMDIST functions in the Lotus spreadsheet program.

After estimating the compliance costs per firm for each option, EPA calculated the level of revenues at which the estimated compliance costs would exactly equal 1 percent and 3 percent of revenues. EPA then used its two distributions to calculate the probability that firms have revenues less than or equal to these specified levels. These probabilities provide the range for the percentage of firms projected to incur compliance costs exceeding the one percent and three percent thresholds. Multiplying these probabilities by the number of firms in the model class provides the range for the number of firms projected to incur compliance costs exceeding the 1 percent and 3 percent thresholds. Note that EPA chose to truncate the unit normal distribution at zero revenues because, analytically, the region of the distribution showing some probability of negative revenues cannot be appropriately evaluated.

This process is illustrated in Figure 6-1. The hypothetical model firm earns \$1 million, the mean for each distribution. If EPA estimates that annual compliance costs of \$7,500 will be incurred by this firm, then any firm in this model class earning less than \$750,000 will incur compliance costs exceeding 1 percent of revenues, and any firm earning less than \$250,000 will incur compliance costs exceeding 3 percent of revenues. The “critical value” in Figure 6-1 represents the 1 percent threshold (i.e., revenues of \$750,000). Based on the normal distribution, EPA would project that 22 percent of firms incur costs exceeding the 1 percent threshold (i.e., the probability of revenues less than \$750,000 is equal to 0.38, while the probability of revenues less than \$0 is equal to 0.16, thus, the net probability equals 0.22). Based on the lognormal distribution, EPA projects that 54 percent of firms incur costs exceeding the same threshold. These provide the lower and upper bounds for EPA’s impacts estimates.

6.3.3 Small Business Impact Analysis Results

Tables 6-9a and 6-9b present the range of firms projected to incur compliance costs exceeding 1 percent and 3 percent of revenues, respectively, for each option under a zero percent cost passthrough assumption. Tables 6-9c and 6-9d present the same results under an “estimated actual” cost passthrough assumption. In each table, the “low” column denotes the results obtained assuming a normal distribution and the “high” column indicates the results obtained using the lognormal distribution, as discussed in Section 6.4.2.

Table 6-9a. Estimated Number of Small Firms with Compliance Costs Exceeding 1 Percent of Revenues—Zero Percent Cost Passthrough

Option	Single-family				Multifamily				Commercial			
	Number		% of Small Businesses		Number		% of Small Businesses		Number		% of Small Businesses	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	0	49	0.0%	0.0%	0	6	0.0%	0.2%	0	103	0.0%	0.2%
2	401	477	0.5%	0.6%	55	84	1.7%	2.7%	474	756	1.2%	2.0%
3	0	0	0.0%	0.0%	0	0	0.0%	0.0%	0	0	0.0%	0.0%
4	345	352	0.5%	0.5%	48	65	1.5%	2.0%	349	652	0.9%	1.7%
Option	Industrial				Heavy				TOTAL			
	Number		% of Small Businesses		Number		% of Small Businesses		Number		% of Small Businesses	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	0	9	0.0%	0.3%	0	58	0.0%	0.5%	0	225	0.0%	0.2%
2	93	141	1.2%	1.9%	353	426	3.3%	4.0%	1,376	1,884	1.0%	1.4%
3	0	0	0.0%	0.0%	0	0	0.0%	0.0%	0	0	0.0%	0.0%
4	72	124	1.0%	1.7%	174	272	2.2%	3.4%	988	1,465	0.7%	1.1%

Note: “Low” denotes result using normal distribution.
 “High” denotes result using lognormal distribution.
 Source: EPA estimates.

Under the zero cost passthrough scenario, the number of small businesses with costs exceeding 1 percent of revenues ranges from a low of 0 to 225 under Option 1, from a low of 1,376 to a high of 1,811 under Option 2, and from a low of 988 to a high of 1,465 under Option 4 (Table 6-9a). This is, at most, only 1.5 percent of all small businesses. The number of small businesses with costs exceeding 3 percent of revenues ranges from a low of 0 to a high of 78 under Option 1, from a low of 42 to a high of 571 under Option 2, and from a low of 24 to a high of 462 under Option 4 (Table 6-9b). The number of small businesses incurring compliance costs exceeding the 3 percent of revenue threshold is 0.4 percent or less for all options under the zero cost passthrough assumption.

Under the estimated actual cost passthrough scenario shown in Table 6-9c, the number of small businesses with costs exceeding 1 percent of revenues ranges from a low of 0 to 30 under Option 1, from

Table 6-9b. Estimated Number of Small Firms with Compliance Costs Exceeding 3 Percent of Revenues—Zero Percent Cost Pass Through

Option	Single-family				Multifamily				Commercial			
	Number		% of Small Businesses		Number		% of Small Businesses		Number		% of Small Businesses	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	0	16	0.0%	0.0%	0	2	0.0%	0.1%	0	34	0.0%	0.1%
2	16	130	0.0%	0.2%	5	18	0.2%	0.5%	10	242	0.0%	0.6%
3	0	0	0.0%	0.0%	0	0	0.0%	0.0%	0	0	0.0%	0.0%
4	10	111	0.0%	0.1%	3	15	0.1%	0.5%	6	209	0.0%	0.5%
Option	Industrial				Heavy				TOTAL			
	Number		% of Small Businesses		Number		% of Small Businesses		Number		% of Small Businesses	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	0	7	0.0%	0.1%	0	19	0.0%	0.2%	0	78	0.0%	0.1%
2	2	45	0.0%	0.6%	9	136	0.1%	1.3%	42	571	0.0%	0.4%
3	0	0	0.0%	0.0%	0	0	0.0%	0.0%	0	0	0.0%	0.0%
4	1	40	0.0%	0.5%	4	87	0.4%	1.1%	24	462	0.0%	0.3%

Source: EPA estimates.

a low of 0 to a high of 213 under Option 2, and from a low of 0 to a high of 169 under Option 4. This represents 0.2 percent or less of small businesses under any of the options. The number of small businesses with costs exceeding 3 percent of revenues ranges from a low of 0 to a high of 9 under Option 1, from a low of 0 to a high of 71 under Option 2, and from a low of 0 to a high of 56 under Option 4 (Table 6-9d). This represents at most only 0.1 percent of all small businesses under any of the options.

Because EPA’s analysis of the heavy construction sector is limited to the highway construction segment, EPA’s results only reflect this portion of the industry. Given the minimal impacts in the construction industries that EPA was able to analyze (at most, 0.2 percent of small firms in all of the other construction sectors are expected to experience costs exceeding 1 percent of revenues), EPA believes that the options will have minimal impact on small businesses in other portions of the heavy construction sector.

Table 6-9c. Estimated Number of Small Firms with Compliance Costs Exceeding 1 Percent of Revenues—Estimated Actual Cost Passthrough

Option	Single-family				Multifamily				Commercial			
	Number		% of Small Businesses		Number		% of Small Businesses		Number		% of Small Businesses	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	0	7	0.0%	0.0%	0	1	0.0%	0.0%	0	10	0.0%	0.0%
2	0	53	0.0%	0.1%	0	7	0.0%	0.2%	0	68	0.0%	0.2%
3	0	0	0.0%	0.0%	0	0	0.0%	0.0%	0	0	0.0%	0.0%
4	0	45	0.0%	0.1%	0	6	0.0%	0.2%	0	59	0.0%	0.2%
Option	Industrial				Heavy				TOTAL			
	Number		% of Small Businesses		Number		% of Small Businesses		Number		% of Small Businesses	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	0	3	0.0%	0.0%	0	9	0.0%	0.1%	0	30	0.0%	0.0%
2	0	21	0.0%	0.3%	0	64	0.0%	0.6%	0	213	0.0%	0.2%
3	0	0	0.0%	0.0%	0	0	0.0%	0.0%	0	0	0.0%	0.0%
4	0	18	0.0%	0.2%	0	41	0.0%	0.5%	0	169	0.0%	0.1%

Source: EPA estimates.

Table 6-9d. Estimated Number of Small Firms with Compliance Costs Exceeding 3 Percent of Revenues—Estimated Actual Cost Pass Through

Option	Single-family				Multifamily				Commercial			
	Number		% of Small Businesses		Number		% of Small Businesses		Number		% of Small Businesses	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	0	2	0.0%	0.0%	0	0	0.0%	0.0%	0	3	0.0%	0.0%
2	0	18	0.0%	0.0%	0	2	0.0%	0.0%	0	23	0.0%	0.1%
3	0	0	0.0%	0.0%	0	0	0.0%	0.1%	0	0	0.0%	0.0%
	0	15	0.0%	0.0%	0	2	0.0%	0.1%	0	20	0.0%	0.1%
Option	Industrial				Heavy				TOTAL			
	Number		% of Small Businesses		Number		% of Small Businesses		Number		% of Small Businesses	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	0	1	0.0%	0.0%	0	3	0.0%	0.0%	0	9	0.0%	0.0%
2	0	7	0.0%	0.1%	0	21	0.0%	0.2%	0	71	0.0%	0.1%
3	0	0	0.0%	0.0%	0	0	0.0%	0.0%	0	0	0.0%	0.0%
4	0	6	0.0%	0.1%	0	13	0.0%	0.2%	0	56	0.0%	0.0%

Source: EPA estimates.

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