

CHAPTER EIGHT

COSTS AND BENEFITS OF THE REGULATORY OPTIONS

8.1 INTRODUCTION

This chapter addresses the net social costs of the regulatory options considered. It brings together the cost results described in Chapters Five and the benefits results presented in Chapter Seven to directly compare the estimated costs and benefits of the options in accordance with Executive Order 12866 and other administrative regulations.

All costs and benefits in this chapter are on an annual basis. The economic analysis describes a typical year's impacts after implementation of any one of the options considered. When flows of costs and benefits vary through time, it is common practice to calculate the net present value of each series of flows and then compare the annual payments that would be necessary to amortize that value. For example, when new regulation requires investment in capital equipment, there may be a large initial cost to retrofit plants, and smaller maintenance costs in later years. Benefits, on the other hand, do not begin to accrue for several years after implementation. To compare the costs and benefits, their net present values are placed on an annual basis (i.e. annualized). However, when flows are constant and the same discount rate is used to calculate the net present value as the amortization, the annualized value is the same as the annual value. The costs and benefits described in this report, therefore, represent typical annual values for costs and benefits and so are constant throughout the evaluation period. Thus, all years are considered the same and annualization is unnecessary.

Section 8.2 describes the direct social costs of the various options, while Section 8.3 describes the indirect effects of these options. Section 8.4 compares these costs with the benefits shown in Chapter Seven.

8.2 SOCIAL COSTS OF THE REGULATORY OPTIONS

8.2.1 Direct Social Costs

Direct social costs are the real resource opportunity costs to the private sector and governments of implementing a regulation. The largest component of social cost is the cost to firms to comply with the CGP provisions under Options 2 and 4. Installation of improved ESC management is a direct cost to construction firms. Firms also bear increased design and operation and maintenance (O&M) costs of improved ESCs. Governments at the federal, state, and municipal level would have roles in implementing these options. These public resources spent by government entities might have been used for other purposes and so represent a direct social cost. Under Options 1 and 2, firms would bear the costs of inspection and self-certification. Each of these direct cost categories was quantified in Chapter Five and is briefly discussed below.

8.2.1.1 Compliance Costs

Implementation of any of the incremental regulatory options requires firms to devote real resources, which might have been used for other purposes, to compliance. EPA estimated design, installation, certification, and inspection costs per acre for the baseline and each regulatory option in Chapter Five. All figures are adjusted to constant 2000 dollars using the Engineering News-Record Construction Cost Index (ENR CCI) to represent the real private opportunity cost. These costs were shown in Chapter Five, Table 5-4.

The ESCs in the incremental regulatory options do not depart significantly from current practices, so several possible sources of social dislocation do not apply to this action. The basic operations of construction would change little from existing practices. Potential changes in the inputs or production processes are minimal. No radically new technology is considered that would require a substantial learning period to operate or essentially change the production process, nor would the options generate new waste products that might raise issues for disposal, sale, or reuse.

8.2.1.2 Government Regulatory Costs

Codification of the CGP (Options 2 and 4) is estimated to require only a few hours of activity at the federal, state, and local levels of government. Administration, in most instances, is likely to be conducted at the state or local levels, though some oversight is likely to remain with EPA. These activities impose opportunity costs as they draw resources from other government functions. EPA estimates that each state requires approximately 200 labor hours to codify the CGP. To a large extent, the options utilize administrative and enforcement institutions established by prior zoning, building code, and stormwater regulation. EPA estimates that this one-time activity costs \$0.24 million per year for five years as states revise their permitting language and programs.

In addition, government entities conduct many projects that would be subject to the options considered. Approximately 24.7 percent of the value of construction put in place would be incurred by government entities. Federal projects account for 10.1 percent, state projects for 8.5 percent, and local projects for 6.1 percent. Much of this expenditure is for maintenance of existing structures and so does not entail new ground disturbance.

8.2.2 Social Welfare Losses

Social welfare losses occur when compliance costs result in higher prices for the goods in question. Individuals gain utility from products when the market price is lower than the value they derive from the product. This difference between value and price is termed “consumer surplus.” Producers also gain a surplus, or profit, when they can sell a product for more than the cost of production. The incremental regulatory options are likely to affect new construction prices and so shift the market supply function. Market models for each sector estimate the transfer of surplus from consumers to producers as buyers pay more to builders for the added stormwater facilities. In addition, the higher price would discourage some buyers, so the number of homes or buildings that might be sold will fall slightly. Such reductions in sales result in losses of both consumer and producer surplus without any offsetting gain to the economy, and so are termed “deadweight loss.” The C&D/PEqMMS estimates these surplus changes based on linear supply and demand curves with elasticities taken from the literature.

Consumer and producer surplus losses were reported in Chapter Five, Table 5-19, as the gross loss attributable to each option considered and include the deadweight loss. Although lost as profits, much of the producer surplus figure is spent within the industry to comply with the new regulations. Similarly, most of the consumer surplus loss is spent in the construction industry as consumers absorb the “passed on” costs of compliance with the regulations. The loss in consumers’ utility becomes spending for improved stormwater management, but the overall welfare within the economy is unchanged. Only the deadweight loss, estimated at \$44,000 for Option 1, \$965,000 for Option 2, and \$647,000 for Option 4, is completely lost to society.

8.2.3 Transitional Effects

The local impacts of firm closures and unemployment called by new regulations are generally not considered a social impact issue, since, in general, the effects are transitory. The employees shift to other jobs, and the capital invested in the plant shifts to other uses. There is a small social loss in job search costs and unemployment time; however, when workers are specialized or unable to adapt to new labor market conditions, they might be permanently unemployed, which would result in a loss of social welfare.

Construction is a highly flexible industry. It is normal practice for employees and firms to move from job to job applying their individual skills to the task at hand. Job search costs and shifting investments are standard elements of the industry.

8.3 INDIRECT EFFECTS

Beyond shifting the market supply for the regulated commodity, the incremental regulatory options could affect the structure of the industry, change labor or capital productivity or discourage innovation. These effects would have wider impacts on society as they ripple through related markets and industries. EPA determined that none of the options have much possibility of causing indirect social welfare effects through these mechanisms.

No substantial changes in market structure are anticipated from any of EPA's options. While some forms of regulation might result in advantages to large firms or encourage vertical integration, these options build on existing practices of design and subcontracting of expertise already common in the industry.

The incremental regulatory options are expected to have little effect on labor or capital productivity. The options may require firms to employ more workers without increasing output (e.g., to maintain silt fencing), but this opportunity cost is captured in the installation, operating, and maintenance cost. No major changes in productivity are expected. Nor are these options expected to have major effects on research, innovation, or investment toward future technological development of the industry. EPA expects that other costs to society not specifically addressed by the analyses presented in this report would be modest.

8.4 COMPARISON OF ESTIMATED COSTS AND BENEFITS

Chapter Seven described the results of the environmental assessment and benefit monetization. All of the benefits estimated represent incremental social benefits from the baseline case. Table 8-1 compares the sum of social costs discussed above with the benefits shown in Chapter Seven. Anticipated social costs are greater than the monetized benefits. Chapter Seven discusses several other classes of benefits that could not be quantified yet provide real social benefits. These included increased utility from water amenities, reduced costs of infrastructure and water conveyance maintenance, and preservation of wetlands.

Table 8-1. Social Costs and Benefits (Millions of dollars per year [year 2000 dollars])

Option	Installation, Design, and Permitting	Operation and Maintenance	Government Costs	Deadweight Loss	Total Social Costs	Total Social Benefits ^a
1	\$264.1	\$0.0	\$0.0	\$0.0	\$264.1	—
2	\$508.4	\$47.3	\$0.3	\$1.0	\$556.9	\$14.5
3	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
4	\$312.6	\$47.3	\$0.3	\$0.6	\$360.8	\$14.5

^a Benefits were only monetized for Option 4 using NWPCAM. As Option 4 is a subset of Option 2, benefits from Option 2 must equal or exceed the benefits from Option 4.

Source: EPA estimates based on the methodologies presented in Chapter Four and Chapter Seven.