BASELINE CONCEPTS FOR REGULATORY IMPACT ANALYSIS

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EXECUTIVE SUMMARY

Regulatory impact analysis seeks to determine the effects of a proposed regulation or regulatory change. The first step is to develop a projection of the world as it would be in the absence of the proposed regulation. This "baseline" is then compared to a projection of the world as it would be under the proposed regulation. Since the new regulation is not the only change in the economic or regulatory system, it is not always easy to isolate its effects. In fact, specifying the baseline accurately is a complex, future-oriented task that often requires a significant amount of analytical effort during the preparation of a Regulatory Impact Analysis.

Executive Order 12291, issued in February 1981, establishes agency requirements for the issuance of new regulations, including the explicit comparison of regulatory alternatives regarding their net social benefits. Implicit in the requirements to calculate costs and benefits is the assumption that some baseline exists. However, neither the Executive Order nor the OMB implementing guidance address the issue of proper baseline specification, thus creating the need for guidance in this area. The need for guidance is important because in some cases, particularly when the current practices of the regulated community deviate significantly from full compliance with current standards, baseline choice can affect the outcome of the analysis.

The purpose of this report, therefore, is to help provide such guidance to practitioners of regulatory impact analyses in determining the appropriate baseline, or representation of the world in the absence of the regulation. This Executive Summary reviews the concepts and issues presented in the report.

BASELINE CONCEPTS AND ISSUES

The baseline is difficult to specify because, although simplifying assumptions can be made, expected future behavior in the absence of the regulation cannot be projected with certainty. Furthermore, there are additional complications regarding such issues as determining the point or set of points to' which effects should be measured, whether certain actions should be included in the "baseline" or counted as an "effect," or whether there are joint effects with other regulatory (or even non-regulatory) phenomena. Finally the starting point, i.e., current behavior, is often not known with great certainty.

In order to analyze these issues, this report first addresses several issues. In so doing, the following concepts are useful:

- Current Practice -- the actual current behavior of the regulated community or degree of compliance;
- Current Standard -- the behavior required by current regulations;
- Future Standard -- the behavior required by the proposed regulation;
- Future Practice -- predicted behavior of the regulated community or degree of 'compliance with the proposed regulation; and

- Degree of Compliance -- relation between practice and standard.

The issues analyzed are: (1) current practices vs. current standards, or whether the world in the absence of the regulation is best represented by full compliance with a current regulatory standard or by current behavior, even if such behavior does not meet current standards; (2) the baseline as a dynamic concept, relating to how behavior of regulated parties might vary over time even in the absence of the proposed regulation; (3) induced behavior and joint effects, relating to the causes of changes in behavior and the extent to which these can be attributed to a particular regulation; and (4) future practices vs. future standards, which parallels the current standards/current practices distinction made above.

APPLICATION OF BASELINE CONCEPTS

To illustrate the issues involved in selecting a baseline for any particular regulatory situation, the report develops a taxonomy consisting of three relevant scenarios. These are:

- Scenario 1: The regulatory agency imposes a regulatory standard on an unregulated situation.
- Scenario 2: The regulatory agency imposes a more stringent regulatory standard on the situation which is already regulated.
- Scenario 3: The regulatory agency relaxes an existing regulatory standard.

For all three scenarios, current practices of the regulated community could be at any of several different positions relative to current standards or future standards. Within each scenario, appropriate baseline assumptions

are provided for each important relative position of current practices. Sometimes the appropriate baseline assumptions will depend on the objective of the analysis.

The report also includes an empirical illustration of the implications for estimates of the savings and costs resulting from a pending change in an existing EPA regulation.

FINDINGS

A central finding of this study is that the choice of an appropriate baseline depends upon both the position of current practices relative to current and future standards and the objective of the analysis. There are generally two possible objectives for the analysis:

- estimate theoretical incremental effects of regulatory change; or
- estimate real resource effects of regulatory change.

When current practices deviate from full compliance with current standards, these objectives may not be identical. Furthermore, when they are not identical, regulatory agencies should be concerned with both. However, analyses conducted to support the requirement for regulatory impact analysis under E.O. 12291 should probably be more concerned with the first objective, given the focus of the Order on measuring the effects of the proposed regulation.

For the most part, analyses will be conducted because of the requirement for regulatory impact analyses under Executive Order 12291. Regulatory impact analyses are supposed to develop the best information possible about the incremental effects (i.e., costs and benefits) of changing a regulation. Such regulatory changes can be in either direction -- more stringent or less stringent. Because the focus of the regulatory impact analysis should be on incremental effects associated with a regulatory change, the natural baseline would be full compliance with current standards. However, the reality that current practices may in fact either exceed or fall short of current standards needs to be considered before slavishly adhering to a current standards baseline interpretation. Regardless of which of the three regulatory scenarios is being considered, there are two principles for incorporating current practices when they deviate from full compliance with current standards, as specified below.

BASELINE SPECIFICATION PRINCIPLES FOR CONSIDERING CURRENT PRACTICES WHICH DEVIATE FROM CURRENT STANDARDS

1. When current practices exceed current standards, all actions beyond those just required to meet the current standard are voluntary. Costs and benefits associated with these voluntary actions should not be attributed to the proposed regulatory change.

2. When current practices fall short of current standards, full compliance with current standards is required in the absence of

the proposed regulatory change. Therefore full compliance with the current standards should be assumed as the baseline for regulatory impact analysis.

These two principles can be used to derive baseline specification rules for regulatory impact analysis for each of the three regulatory scenarios, as shown below.

BASELINE SPECIFICATION RULES FOR
REGULATORY IMPACT ANALYSIS

Scenario 1: New Regulation -- The effects of the new regulation should be measured from current practices (see Section 2.2.1).

Scenario 2: More Stringent Regulation -- If current practices meet or fall short of current standards, effects of the new regulation should be measured from full compliance with current standards. If current practices exceed current standards, the effects of regulation should be measured from current practices (see Section 2.2.2).

Scenario 3: Less Stringent Regulation -- The effects of new (less stringent) regulation should be measured from full compliance with current standards (see Section 2.2.3).

When measuring real resource effects, the rules for baseline specification are much simpler. Real resource effects of regulatory change should always be measured from current practices, regardless of the regulatory scenario being

considered. Thus, theoretical incremental effects and real resource effects will always be identical under Scenario 1. However, differences between theoretical incremental effects and real resource effects may exist under Scenarios 2 and 3 when current practices deviate from full compliance with current standards.

Whichever baseline concept is used, it should be used for both benefits and costs.

For. simplicity, these baseline rules have all been specified in a static framework. However, as specified in Section 2.1.3, the baseline is a dynamic concept, potentially changing over time. If the expected behavior of the regulated community in the absence of the future standard is expected to change over time, this dynamic baseline concept should be incorporated into the analysis, to the extent it can be projected.

The empirical analysis contained in Chapter 3 indicates that baseline choice can be of considerable significance in reckoning the size of regulatory effects. In the example analyzed here, the switch from a current standards baseline to a current practices baseline was associated with a large percentage change in the net effect of a proposed regulation.

It is important to note that the analysis of alternative baselines' presented here does not indicate that a particular baseline is somehow wrong or inappropriate. Rather, the point of this analysis is that agency

decisionmakers should recognize that the apparent results of a given regulatory impact analysis are often quite sensitive to the choice of a baseline for the analysis.

CHAPTER 1

INTRODUCTION

Regulatory impact analysis seeks to determine the incremental effects, usually in terms of costs and benefits, of a proposed regulation or regulatory change. This is done by first developing a projection of the world as it would be in the absence of the regulation. This "baseline" is then compared to a projection of the world as it would be under the regulation. Since the new regulation is not the only change in the economic or regulatory system, it is not always easy to isolate its effects. In fact, specifying the baseline accurately is a complex, future-oriented task that often requires a significant amount of analytical effort during the preparation of a Regulatory Impact Analysis.

1.1 PURPOSE

The purpose of this report is to provide guidance to practitioners of regulatory impact analysis in determining the appropriate baseline, or representation of the world in the absence of the regulation. Although simplifying assumptions can be made, expected future behavior in the absence of the regulation cannot be projected with certainty. Often there is no one simple correct representation of the baseline. Furthermore, there are additional complications regarding such issues as determining the point (or set of points) to which effects should be measured, whether certain actions should be included in the "baseline" or counted as an "effect," or whether there are joint effects with other regulatory (or even non-regulatory)

phenomena. Finally, the starting point, i.e., current behavior, is often not known with great certainty.

The task of setting a baseline is important because the baseline plays a key analytic role in studies required by Executive Order 12291, issued in February 1981. This Executive Order establishes agency requirements for the issuance of new regulations, the review of existing regulations, and the development of legislative regulatory proposals. The major requirement of the Order is that the potential benefits to society must outweigh the potential costs to society for any regulatory proposal. being considered. Furthermore, an agency must choose regulatory objectives that maximize the net benefits to society. Implicit in the requirement to calculate costs and benefits is the assumption that some baseline exists. However, neither the Executive Order nor the OMB Implementing Guidance address the issue of proper baseline specification, thus creating the need for guidance in this area.

For example, in conducting a Regulatory Impact Analysis (RIA), the Agency must specify alternative approaches, known as regulatory alternatives. The baseline is relevant here in two ways. First, it comprises the “no change” regulatory alternative. Second, in the case of the other regulatory alternatives, it is the standard against which the effects of the regulatory change are measured. Thus, baseline specification plays a key role in the development of an RIA.

1.2 APPROACH AND ORGANIZATION

In order to analyze the major issues involved in selecting a baseline, Chapter 2 provides a taxonomy of the different regulatory situations that may exist:

- Scenario 1: the Environmental Protection Agency (EPA) imposes a regulatory standard on an unregulated situation;
- Scenario 2: EPA imposes a more stringent regulatory standard on a situation which is already regulated; and
- Scenario 3: EPA relaxes an existing regulatory standard.

The discussion in Chapter 2 illustrates the various scenarios with examples based on actual EPA rulemakings.

The material in Chapter 2 is intended to provide a complete list of possible baseline choice situations, together with guidance on the implications of various choices. It is also useful to illustrate the implications of different baseline choices in the context of an actual rulemaking. This is done in Chapter 3. Recently, ICF Incorporated completed a draft RIA of possible changes in reportable quantities of released hazardous substances. [1] That analysis, of course, required the selection of a

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[1] ICF INCORPORATED, "Regulatory Impact Analysis of Reportable Quantity Adjustments Under Sections 102 and 103 of the Comprehensive Environmental Response, Compensation, and Liability Act," A Draft Report to EPA, February 13 1982.

baseline. In Chapter 3, that analysis is briefly reviewed. Then, the changes in estimated savings and costs to both private parties and the government of alternative baseline choices are illustrated. The results of some experiments with techniques to represent actual industry behavior in the presence of a new regulation are presented. The material in Chapter 3 shows the effects of alternative assumptions with regard to regulated behavior, implicit in the choice of a baseline, on the costs and benefits of regulatory alternatives.

Overall, the report provides an in-depth review of the problems involved in calculating baselines, and suggests several different methodologies that should reduce errors in baseline calculations. It is hoped that the report will be useful to those who write RIAs, those who review them, and those who make decisions based on them.

CHAPTER 2

GENERIC BASELINE SPECIFICATION

This chapter analyzes the problem of specifying baselines for various regulatory scenarios. It is organized into two parts. Section 2.1, Background and Introduction, addresses the following concepts and issues: (1) baseline definition; (2) current practices versus current standards, (i.e., baseline specification for regulatory impact analysis when the current behavior of the regulated community deviates in either direction from full compliance with current standards); (3) the baseline as a dynamic concept, relating to how behavior of regulated parties might vary over time; (4) induced behavior and joint effects, relating to the causes of behavior changes. and the extent to which these can be attributed to a particular regulation; and (5) future practices versus future standards, which parallels the current standards/ current practices distinction made above. Section 2.2, Taxonomy of Relevant Situations, establishes three scenarios of interest (imposition of regulatory standards on an unregulated situation, imposition of a more stringent regulatory standard on a regulated situation, and imposition of a less stringent regulatory standard on a regulated situation), describes appropriate baseline assumptions for each scenario, and briefly illustrates each scenario with an existing or proposed EPA regulatory action.

2.1 BACKGROUND AND INTRODUCTION

2.1.1 The Baseline Defined

E.O. 12291 requires that the benefits and costs of regulatory proposals be carefully weighed. OMB has developed implementing guidance for E.O. 12291 which clarifies many aspects of performing such trade-offs, including establishing necessary distinctions between costs and benefits, specifying the appropriate discount rate for analysis, and describing how to address non-quantifiable effects.[1] In addition, EPA has developed its own internal guidance which addresses these issues in more detail.[2] However, neither set of guidance materials clearly addresses the baseline issue -- i.e., from what point (or set of points) should costs and benefits be measured?

In general, the appropriate baseline from which to measure incremental effects (e.g., costs and benefits) of a proposed regulatory action is what would have happened in the absence of such an action. That is, the baseline is actually a dynamic concept changing over time. Because defining such a moving baseline throws open the analysis to additional uncertainties associated with prediction, simplifying assumptions are usually made.

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[1] "Interim Regulatory Impact Analysis Guidance," Office of Management and Budget, June 5, 1981.

[2] "Guidelines for Reforming Regulatory Impact Analyses," EPA Regulatory Impact Analysis Work Group, November, 1981.

2.1.2 Current Practices vs. Current Standards

One such simplification is to treat the baseline as constant over time. That is, the baseline is sometimes represented by a snapshot of the activities of the regulated industries[3] at one point in time -- usually the time just before the proposed regulatory action would go into effect. This snapshot of relevant activities is then assumed to remain fixed over time. Generally, such simplifying assumptions take one of two forms:

- Current Standards - Under this assumption, the baseline is represented by full compliance with existing regulatory standards or requirements. All industries affected by the proposed change are assumed to be in full compliance (and remain in full compliance) with all relevant existing regulatory requirements. For example, if EPA is considering replacing existing Interim Status Standards (ISS) for hazardous waste sites under the Resource Conservation and Recovery Act (RCRA) with more stringent General Status Standards for permitted facilities (GSS), the current standards baseline would be represented by full compliance with ISS (presently and in the future) for all hazardous waste sites affected by the proposed regulatory change.

- Current Practices - Under this assumption, the baseline is represented by the current practices of the regulated industry, regardless of whether these practices fully comply with existing requirements. In the most simplified case, current practices are assumed to remain fixed over time. (However, this need not always be the case, as will be discussed subsequently.) In the above hazardous waste example, a simplified current practices baseline for estimating the incremental costs of going from ISS to GSS would be the current hazardous waste management practices for the sites affected.

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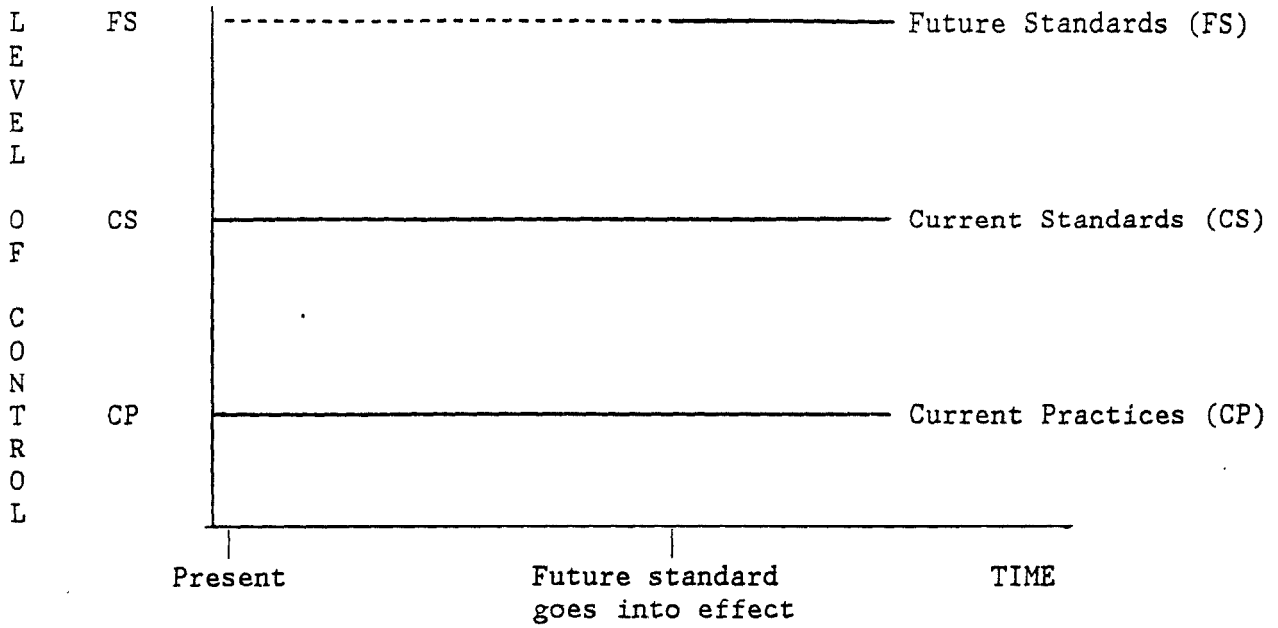
[3] The term "industries" is used throughout this report to represent the parties affected by regulation. The authors recognize, however, that Federal, state, and local governments and non-profit institutions are also affected by regulation. Except where noted, the term "industries" means all of them.

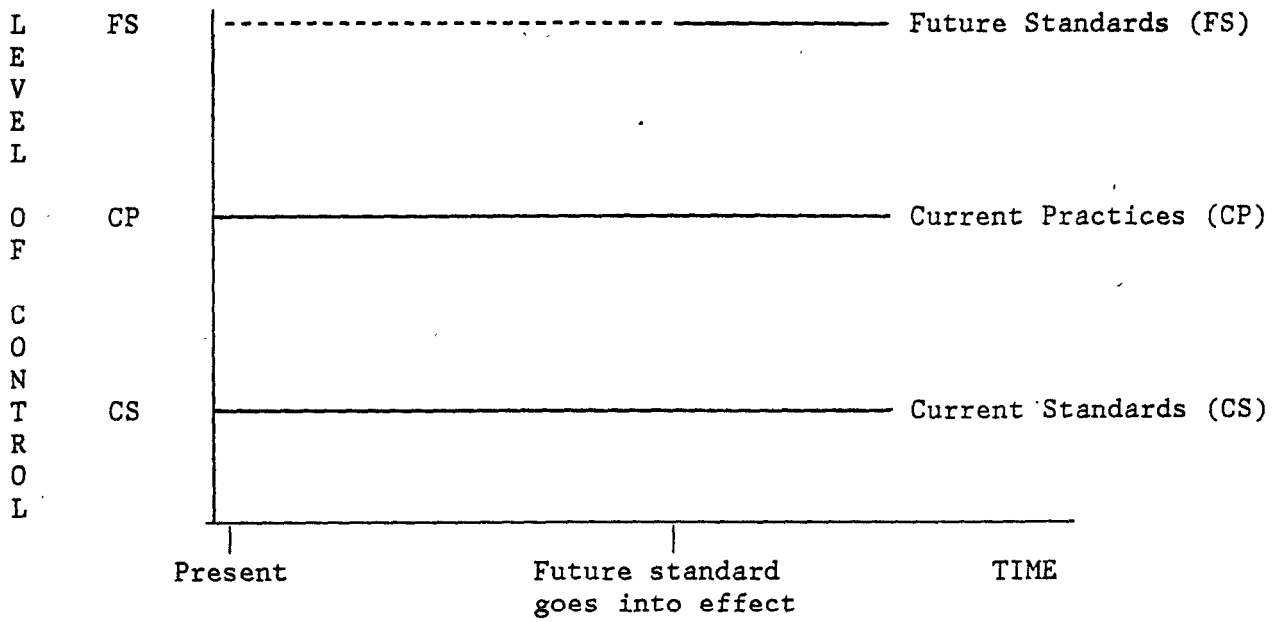
To the extent that there are significant gaps between these two assumptions, baseline selection will affect the outcome of the analysis. Such gaps may exist because full compliance with a regulatory standard is not achieved due to such factors as misunderstandings, lack of information, slow adjustment, or less than full enforcement. Exhibit 2-1 illustrates such gaps for two possible cases: the case where current standards exceed current practices and the reverse case where current practices exceed current standards. The horizontal axis of Exhibit 2-1 represents time, reflecting the fact that the baseline is actually a dynamic concept. (The time axis is not essential to the points to be made in this particular subsection but has been included to demonstrate that the baseline is a dynamic concept.) The vertical axis represents "level of control." This might be best thought of as the dimension along which EPA would promulgate a proposed regulatory change. Possible examples include level of cleanup of inactive sites mandated by the National Contingency Plan under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), drinking water standards under the Safe Drinking Water Act (SDWA), or performance standards for leachate control under RCRA Subtitle C. Thus the vertical axis represents the level of current standards, current practices, or future standards. However, in performing regulatory impact analysis, the primary concern is the estimation of incremental costs and benefits associated with regulation or deregulation. Also, there are usually secondary concerns (such as the estimation of secondary economic effects resulting from incremental costs or benefits) which should be addressed. Because the principles of baseline specification are the same, regardless of whether costs, benefits, or secondary effects are being

EXHIBIT 2-1

CURRENT PRACTICES vs. CURRENT STANDARDS



(a) Current Standards Exceed Current Practices
(Example: Moving from ISS to SPF under RCRA Subtitle C)



(b) Current Practices Exceed Current Standards
(Example: Promulgation of a New Rule to Control Chemical X Under TSCA)

measured, the vertical axis is specified in terms of level of control. This helps to simplify the presentation of this chapter as well as to reinforce the notion that baseline specification should be consistent, regardless of whether costs, benefits, or secondary effects are being measured.

In Exhibit 2-1(a), current standards (CS) exceed current practices (CP), Therefore, a current standards baseline would result in incremental effects associated with future standards (FS) being measured as the costs (or benefits) of going from CS to FS. At issue is whether any costs (or benefits) of moving from CP to CS should be attributable to the future standard. The resolution of this issue is not clear because real resources are consumed (and presumably real benefits are gained) in moving from CP to CS, yet these same effects could (at least theoretically) be realized in the absence of the future standard. Because regulatory impact analysis is concerned with the effects of proposed regulation, only the effects of moving from CS to FS should be counted in such analyses. That is, in this case, the baseline for regulatory impact analysis should be full compliance with current standards. However, real resources consumed in moving from CP to FS should also be of interest to the Agency. In fact, when current practices fall short of current standards, the Agency may want to consider improved methods for fostering compliance with current standards before promulgating more stringent revised standards. Proposing a more stringent standard may be one way (although, to

be sure, hardly a recommended way) to draw more attention to the existing standard and therefore foster compliance. [1]

In Exhibit 2-1(b), current practices (CP) exceed current standards (CS), A current practices baseline would result in incremental effects associated. with future standards (FS) being measured as the costs (or benefits) of moving from CP to FS. A current standards baseline would result in all costs and benefits associated with moving from CS to FS being included as incremental effects, even though the current industry practices exceed current standards. The incremental costs and benefits associated with moving from current standards to current practices are already being incurred, even in the absence of the future standards, so clearly these effects should not be included as incremental effects associated with future standards. Society consumes no real resources in the hypothetical movement from CS to CP. Thus, current practices clearly appear to be the preferable baseline alternative for regulatory impact analysis under these circumstances. The promulgation of a standard in a previously unregulated area is a good example of this situation because current standards are effectively zero; current practices may include

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[1] An interesting corollary issue is whether full compliance with existing standards can be achieved but for the imposition of additional requirements. In most cases, other mechanisms (i.e. , modified enforcement, improved information dissemination, allowable offsets, rewards for compliance) will exist to foster such compliance, thus strengthening the case for thinking through such innovative approaches as part of the process for justifying the new rule. Just as importantly, the existence of such mechanisms strengthens the case for using full compliance with current standards as the baseline for regulatory impact analysis in this case.

some control efforts and, therefore, the level of control would be greater than zero. The promulgation of a new rule to control a specific chemical under the Toxic Substances Control Act exemplifies this situation.

It is important to realize that whenever EPA considers making an existing regulatory requirement more stringent, the following situations are likely to exist:

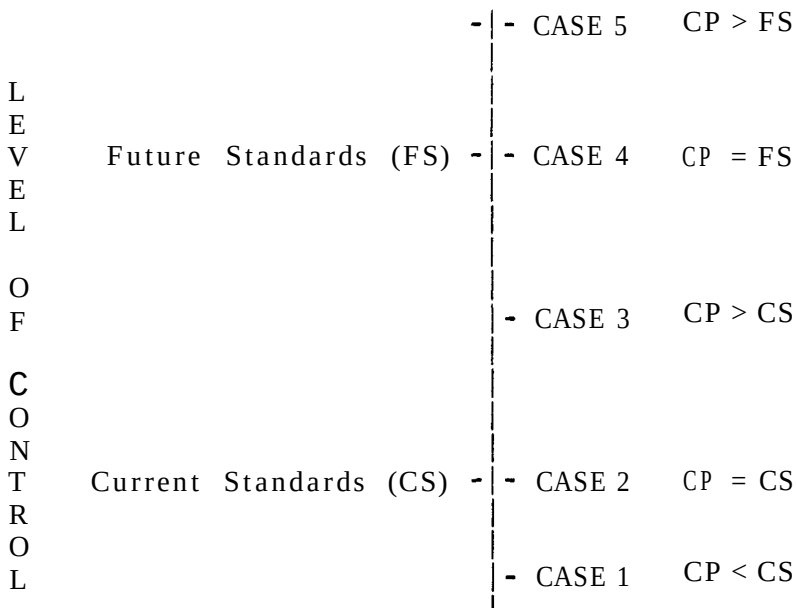
- Some firms may be at less than full compliance with current standards;
- Some firms may be at full compliance with current standards;
- Some firms may be exceeding current standards, but not yet meeting future standards; and
- Some firms may already be meeting the future standards.
  Some firms may already be exceeding the future standard.

Exhibit 2-2(a) illustrates each of these five situations and specifies the appropriate baseline assumption for regulatory impact analysis when considering a more stringent regulation. For simplicity, the Exhibit is presented in a static framework -- that is, there is no time dimension. Sections 2.2.1 and 2.2.2 provide a more complete discussion of these issues.

Similarly, whenever EPA considers relaxing an existing regulatory requirement, parallel situations are likely to exist as follows:

EXHIBIT 2-2(a)

CURRENT PRACTICES VS. CURRENT STANDARDS:
BASELINE ASSUMPTIONS FOR FIVE POSSIBLE CASES
WHEN CONSIDERING A MORE STRINGENT REGULATION



CASE		REGULATORY IMPACT ANALYSIS BASELINE ASSUMPTION
1.	CP < CS	CS*
2.	CP = CS	CS
3.	CP > CS	CP
4.	CP = FS	CP
5.	CP > FS	FS

* Ideally, the analyst should also estimate the incremental effects associated with moving from CP to CS, although these effects should not get allocated to the future standard.

- Some firms may be exceeding the current standard;
- Some firms may be at full compliance with current standards;
- Some firms may be below full compliance with current standards but above future standards;
- Some firms may be meeting the future standard; and
- Some firms may not be meeting even the future standard.

Exhibit 2-2(b) illustrates each of these situations for the deregulatory scenario, using the static framework.

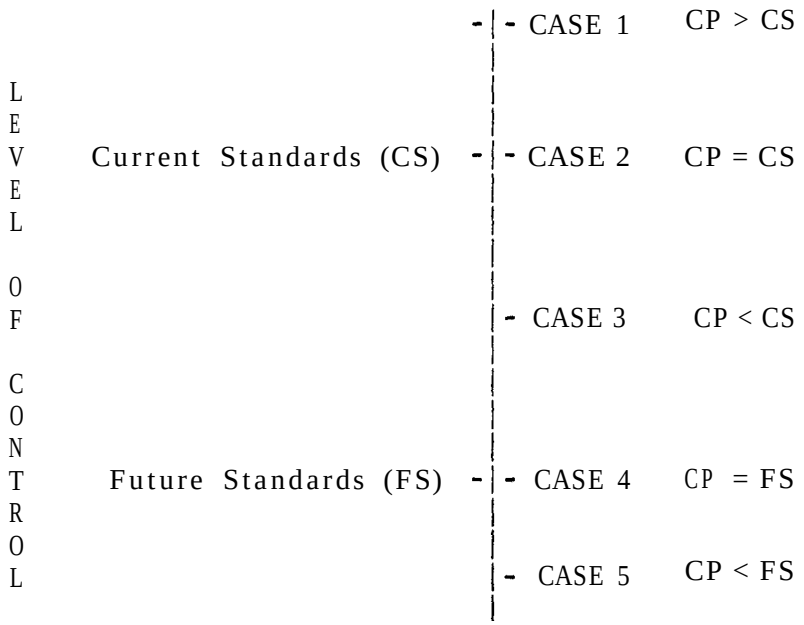
As demonstrated in Exhibits 2-2(a) and (b), baseline specification is not always identical when current practices deviate from full compliance with current standards. However, two principles do exist for addressing the, problem of current practices which deviate from full compliance with current standards:

1. When current practices exceed current standards, all actions beyond those just required to meet the current standard are voluntary and costs and benefits associated with these voluntary actions should not be attributed to the proposed regulatory change.
2. When current practices fall short of current standards, full compliance with current standards is required in the absence of the proposed regulatory change and therefore full compliance with the current standards should be assumed as the baseline for regulatory impact analysis".

These two principles can be used to derive baseline specification rules for regulatory impact analysis for each of the three regulatory scenarios. These

EXHIBIT 2-2(b)

CURRENT PRACTICES vs. CURRENT STANDARDS:
BASELINE ASSUMPTIONS FOR FIVE POSSIBLE CASES
WHEN CONSIDERING A LESS STRINGENT REGULATION



CASE	REGULATORY IMPACT ANALYSIS BASELINE ASSUMPTION
1. CP > CS	CS
2. CP = CS	CS
3. CP < CS	CS
4. CP = FS	CS
5. CP < FS	CS

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* Ideally, the analyst should also estimate the real incremental effects of moving from current practices in each of these five cases.

are provided below and developed in more detail in Section 2.2 from the perspective of a dynamic framework.

BASELINE SPECIFICATION RULES FOR
REGULATORY IMPACT ANALYSIS

Scenario 1: New Regulation -- The effects of the new regulation should be measured from current practices (see Section 2.2.1).

Scenario 2: More Stringent Regulation -- If current practices meet or fall short of current standards, effects of the new regulation should be measured from full compliance with current standards. If current practices exceed current standards, the effects of regulation should be measured from current practices (see Section 2.2.2).

Scenario 3: Less Stringent Regulation -- The effects of new (less stringent) regulation should be measured from full compliance with. current standards (see Section 2.2.3),

However, in most cases, EPA will also be interested in real resources required to meet the standard (as well as real benefits resulting from its being met). When measuring real resource effects, the rules for baseline specification are much simpler, Real resource effects should always be measured from current practices, regardless of the regulatory scenario being considered.

2.1.3 The Baseline as a Dynamic Concept

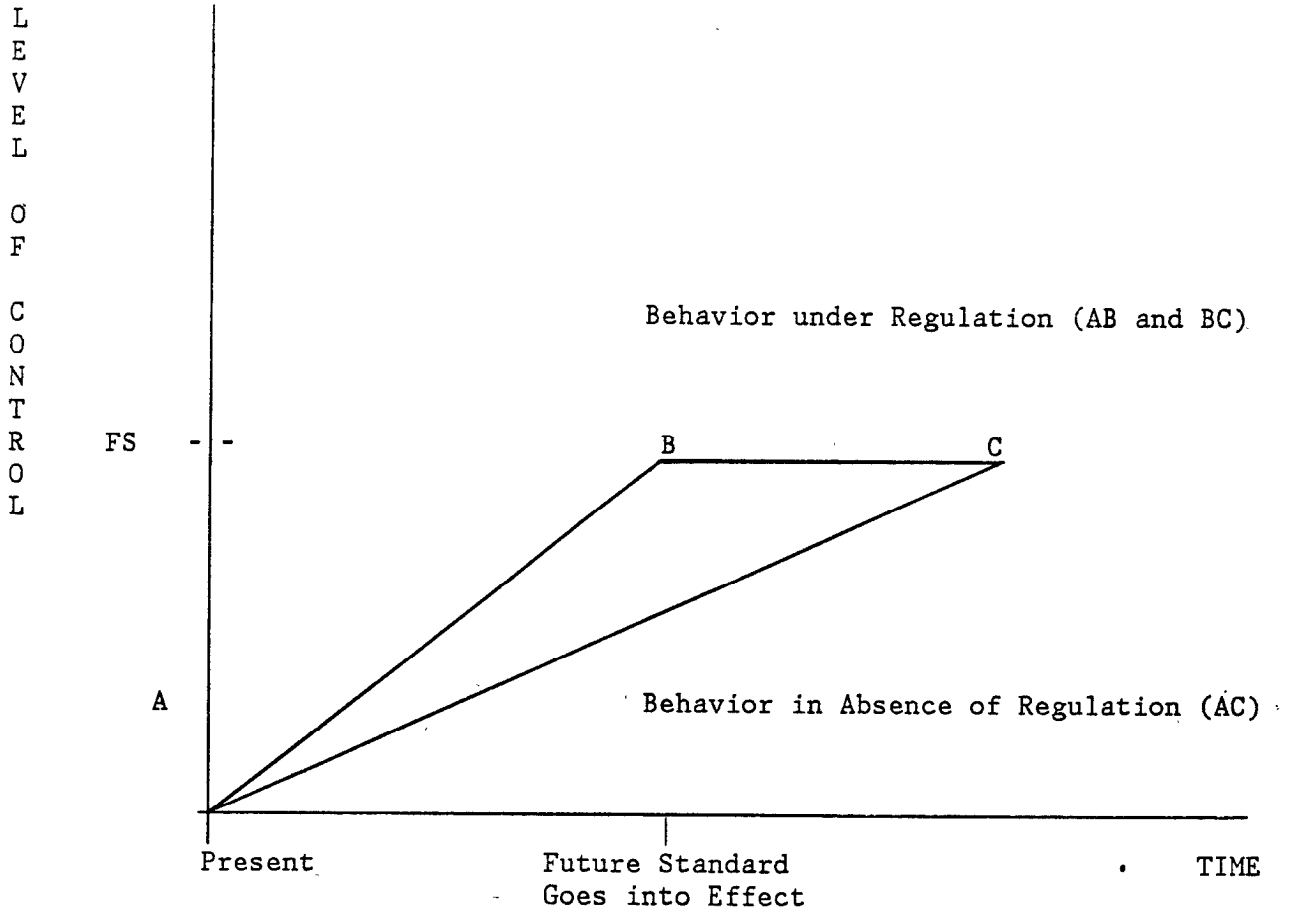
Thus far, this report has assumed that the baseline does not change over time. Yet, it has been previously stated that the theoretically correct baseline from which to measure incremental effects of a proposed regulatory action is what would have happened in the absence of such an action. Because practices do not stay constant over time, regardless of whether or not a regulatory action is being proposed, there is clearly a dynamic aspect to baseline specification. For example, hazardous waste management practices are continually being improved, even in the absence of specific regulatory proposals. The problem is that the analyst must be able to represent the behavior of the regulated industry over time, under several different scenarios.

One scenario would be the absence of regulatory action -- the baseline scenario. Other scenarios would correspond to the various regulatory alternatives under consideration. These regulatory alternatives may themselves have a dynamic component. For example, a regulatory alternative might specify a performance standard that gets racheted up every 5 or 10 years.

Exhibit 2-3 displays graphically the concept of a dynamic baseline. In this case, the effect of the regulation would be to accelerate the time at which the level of control mandated by the proposed standard is reached. That is, any mandated level of control will be achieved sooner under the proposed regulatory action than under the baseline. The effects of the proposed regulation can then be estimated as the present value of the area between the

EXHIBIT 2-3

THE BASELINE AS A DYNAMIC CONCEPT



Effect of regulation is the present value of the difference between the two curves -- in this case, the triangle ABC. (This holds for both costs and benefits.)

two curves of Exhibit 2-3.[5] This holds regardless of whether Exhibit 2-3 is measuring costs, benefits, or secondary effects,

2.1.4 Induced Behavior and Joint Effects

Being able to represent future behavior under various scenarios (as in Exhibit 2-3) requires that there be some justifiable approach for isolating behavior attributable to a specific regulatory proposal. However, in the real world, behavior is induced by a variety of factors -- some economic, some regulatory, some environmental, some human. A decision to meet a proposed EPA requirement by building a new plant might be based on several factors including projected growth; the level of depreciation of "existing facilities; other expected federal, state, and local regulatory requirements; and the expected EPA requirement for the issue under consideration. As another example, a decision to improve leach ate control by an owner or operator of a hazardous waste landfill might be based on some combination of increased awareness of the hazards associated with toxics, the passage of RCRA, CERCLA or a state statute, the possibility of a specific regulation being promulgated under any relevant law, or the threat of an enforcement action under any relevant law. In both of these examples, no laboratory experiment can be designed to isolate the incremental change in behavior attributable purely to the proposed EPA requirement. No analytical technique using actual or

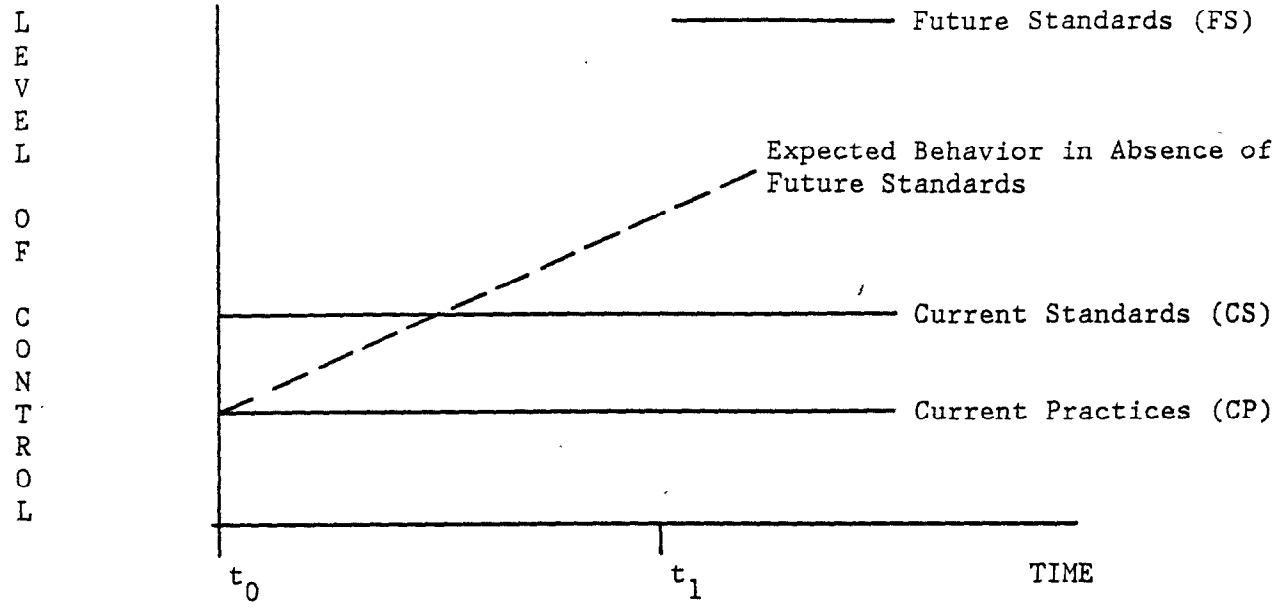
[5] That is, if costs were being measured, the present value of costs under the "AC scenario" could be subtracted from those under the "AB and BC scenario" to measure the costs of the regulation.

projected data can be developed to isolate precisely the proper incremental effects of interest. Yet, the need to balance carefully costs and benefits clearly requires that defensible baseline assumptions be made, even though the correct baseline usually cannot be specified with precision.

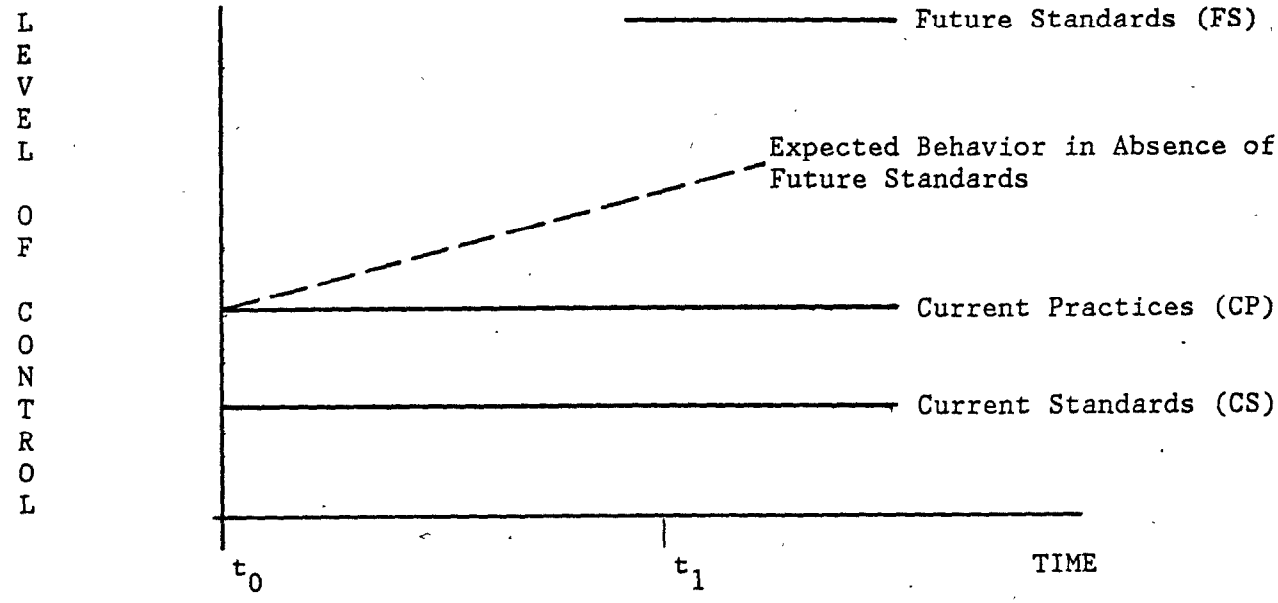
Thus, baseline assumptions have historically been simplifications of the real world. Thinking of the baseline as a constant, equivalent to either current practices or current standards is one way of making such simplifications. Intuitively, this corresponds to thinking of the baseline as a horizontal line on a graph of the type presented earlier in Exhibit 2-1. Exhibit 2-4 presents the earlier constant baseline concepts shown in Exhibit 2-1 compared to the dynamic baseline more representative of actual behavior in the absence of the standard. The case where current standards exceed current practices is presented in Exhibit 2-4(a), while the case where current practices exceed current standards is shown in Exhibit 2-4(b). Time t_1 represents the time of the introduction of the future standard. Regardless of whether the correct baseline choice is current practices or current standards, a line with zero slope is usually a very conservative baseline assumption because it will tend to overstate incremental effects. In a general atmosphere of increased regulation, the expected behavior of the regulated industry in the absence of the proposed regulation will usually have a positive slope, as shown in Exhibit 2-4. Such a positive slope may be due to increased sensitivity to environmental issues, new information about specific hazards, or increased regulation in other areas. (These same concepts within a general atmosphere of deregulation will be addressed within the taxonomy of Section 2-2.)

EXHIBIT 2-4

ZERO-SLOPED vs. POSITIVE-SLOPED BASELINES



(a) Current Standards Exceed Current Practices



(b) Current Practices Exceed Current Standards

Although it is difficult to project the behavior of the regulated industry in the absence of the proposed regulation, it does not necessarily follow that the alternative is to assume no change in industry behavior over time (i.e., a baseline with a zero slope in Exhibit 2-4). One approach is to examine the behavior of the industry for several prior years and develop a trend line based on measured past behavior. In some cases, it may be necessary to adjust this historical trend line for known phenomena such as the emergence of new control technology or the need for retooling within the industry. It is, therefore, possible to make defensible assumptions leading to a baseline with a positive slope, and this should be done whenever existing data allow. There is no need to assume the ultra-conservative zero-sloped baseline when there exists better information about the expected behavior in the absence of the proposed standard.

2.1.5 Future Standards versus Future Practices

It was noted earlier that there is some controversy about whether regulatory effects should be measured from current standards or current practices. However, equally controversial is the point to which regulatory effects should be measured: full compliance with the proposed regulation or expected future industry practices, even if such expected practices fall short of full compliance with the proposed standards. The baseline/future standard combination used depends on the objective of the analysis. A conservative (i.e., not underestimated) estimate of real resources consumed can be made by measuring incremental effects from current practices to full compliance with the future standard. A less conservative estimate of real resources consumed

can be made by measuring incremental effects from current practices (or expected behavior in the absence of the future standard) to expected behavior under the future standard. Finally, an estimate of theoretical resources consumed can be made by measuring incremental effects from full compliance with current standards to full compliance with future standards. Whichever framework is chosen, it should be used for measuring both costs and benefits -- that is, both costs and benefits should be measured from the same baseline to the same level of control.

Estimating actual expected behavior under the proposed standard will likely raise some problems. Regulatory agencies are generally reluctant to consider this phenomenon because it is clearly awkward for any regulatory agency to admit that full compliance with a proposed standard may not be achieved. Yet, it would seem equally awkward for regulatory agencies to assume less than full compliance with existing standards, although this is done quite routinely. Furthermore, OMB'S Interim Regulatory Impact Analysis Guidance of June 5, 1981, notes that "imperfectly functioning markets should not be compared with idealized, perfectly functioning regulatory programs."[6] This would suggest that some consideration be given to the level of compliance ultimately expected to be achieved.

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[6] Op. cit., p. 2.

2.2 TAXONOMY OF RELEVANT SITUATIONS

In determining the appropriate baseline for any particular regulatory situation, it is useful to develop a taxonomy consisting of three relevant scenarios. This proposed taxonomy is presented in Exhibit 2-5.

EXHIBIT 2-5

PROPOSED TAXONOMY OF REGULATORY SCENARIOS

Scenario 1: EPA imposes a regulatory standard on an unregulated situation.

Scenario 2: EPA imposes a more stringent regulatory standard on a situation which is already regulated.

Scenario 3: EPA relaxes an existing regulatory standard.

In each of the three scenarios presented, baseline concepts are addressed in full consideration of the issues presented in Section 2.1. In the following three sections, the three regulatory scenarios will be presented.and the appropriate baseline treatment will be addressed for each case.

2.2.1 Scenario 1: Unregulated State of the World, EPA Imposes Regulatory Standards

This scenario corresponds to the case where EPA imposes a new standard in a previously unregulated area. In this case, current standards are effectively zero and current practices are clearly the appropriate baseline. (In essence, Scenario 1 is simply a special case of Scenario 2 with current standards equal to zero.) A baseline of current standards (i.e. zero requirements) would result in any costs and benefits associated with existing practices being counted as incremental effects of the new rules and,

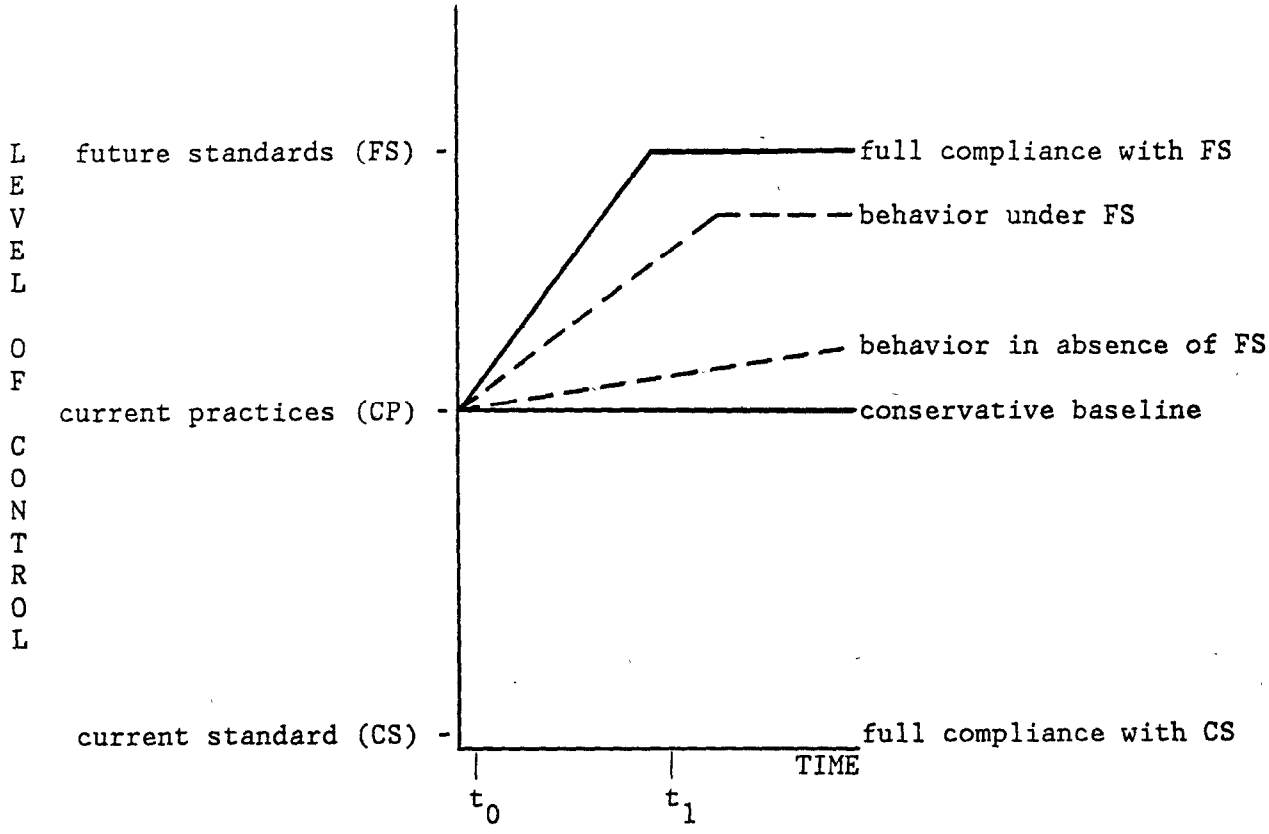
therefore, should not be used. For example, current efforts to control chemical X should not be included as an incremental effect of controlling chemical X under a proposed TSCA rule, since such efforts would exist in the absence of the proposed rule.

Exhibit 2-6 shows the alternative assumptions for Scenario 1. The most conservative reasonable assumption (and the one that is usually made) is to measure effects of the regulation as the difference between the costs (or benefits) associated with moving from the zero-sloped current practices line to the line representing full compliance with the future standard. Under this assumption, the regulatory analysis seeks to estimate the difference between the two solid lines in Exhibit 2-6. The resulting estimates of costs and benefits will be conservative (i.e., costs and benefits will not be underestimated) because the true real world effects attributable to the future standard are represented by the difference between expected behavior in the absence of the future standard and expected behavior under the future standard -- that is, the difference between the dotted lines in Exhibit 2-6.

The analyst should make every reasonable attempt to estimate both of the expected behavior lines (i.e., dotted lines) in Exhibit 2-6. As discussed previously, historical trends, perhaps adjusted for known important phenomena (such as expected innovations or learning curves) are probably the best source for estimating expected behavior in the absence of the future standard. Often, trends in installation rates for certain control equipment can be developed from the vendors of such equipment. Also, trends in general capital

EXHIBIT 2-6

BASELINE CONCEPTS FOR SCENARIO 1 (UNREGULATED STATE OF WORLD, IMPOSITION OF A REGULATORY STANDARD)



replacement may prove useful because new capital equipment often results in fewer environmental residuals than the equipment being replaced.

Estimating expected behavior under the proposed standard, or more precisely how behavior would deviate from full compliance with the proposed standard, is very difficult to do well. In the case of a new regulation there will be no data, such as compliance rates with existing standards, which could be used to project future compliance levels. It may be possible to justify using compliance rates for other standards as the basis for such estimates. In the absence of any reasonable method to project future compliance rates, however, there will be no good alternative to assuming full compliance with future standards. Of course, it is always possible to make alternative assumptions and present the results in sensitivity analysis form.

In summary, when faced with a situation where EPA is considering the imposition of a more stringent regulatory standard in an area, that is unregulated, the following baseline assumptions seem reasonable:

1. At a minimum, estimate the effects of going from current practices to full compliance with the future standard. This is the most conservative assumption with regard to costs or benefits, since it likely ensures that an upper bound estimate of costs is provided.

2. If possible, estimate expected behavior in the absence of the future standard and use that as a baseline.

3. If possible, estimate expected behavior under the future standard and use that in conjunction with the baseline developed in Step 2 to estimate actual expected effects.

Example for Scenario 1

Promulgation of pre-manufacturing notification (PMN) rules under Section 5 of the Toxic Substances Control Act (TSCA) is a good example for this scenario. The PMN rules require manufacturers and processors of new chemical substances to submit a notice to EPA before the chemical can legally enter commerce. EPA has 90 days to review the PMN submission and, depending upon the adequacy and substance of the data provided, the Agency can take several courses. The potential effect of the PMN rules on chemical industry innovation has become a highly controversial topic. Although data exists on the number and type of chemicals submitted to EPA for PMN review, it is not clear to what baseline this should be compared to assess the effects of PMN on chemical industry innovation. General baseline issues that need to be explored are:

- Current "Practices - What were the patterns of new chemical introduction and process innovation just before PMN rules were promulgated? To what extent was data required by PMN routinely compiled for new chemical substances? What sorts 'of chemical testing was routinely undertaken?

- Expected Behavior in the Absence of the Standard - What was the general trend in new chemical innovation in the 1960s and 1970s? To what extent is the chemical industry maturing? How are commitments to R&D changing relative to overall performance? Are there shifts away from some types of innovation and towards others? What effects have the recessions of 1980 and 1981 had on new chemical innovation?

- Expected Behavior Under the Standard - Are new chemicals now entering commerce that are not being subjected to the PMN process? Are chemicals being withheld from the market because of real or perceived effects of the PMN process? Are chemical industry suppliers and customers changing their behavior in such a way that could contribute to any unforeseen effects?

Answers to these questions would help to isolate the true effects of PMN rules on innovation by defining the appropriate baseline and the appropriate real effects.

2.2.2 Scenario 2: Regulated State of the World; EPA Imposes a More Stringent Regulatory Standard

When EPA is considering making an existing standard more stringent, it is important to realize that the current practices (or more generally, the expected practices in the absence of the future standard) of any firm affected could be at any one of the following four positions, as shown in Exhibit 2-7 (discussed in detail below):

CP(l) - current practices do not comply with current standards.

CP(2) - current practices meet current standards.

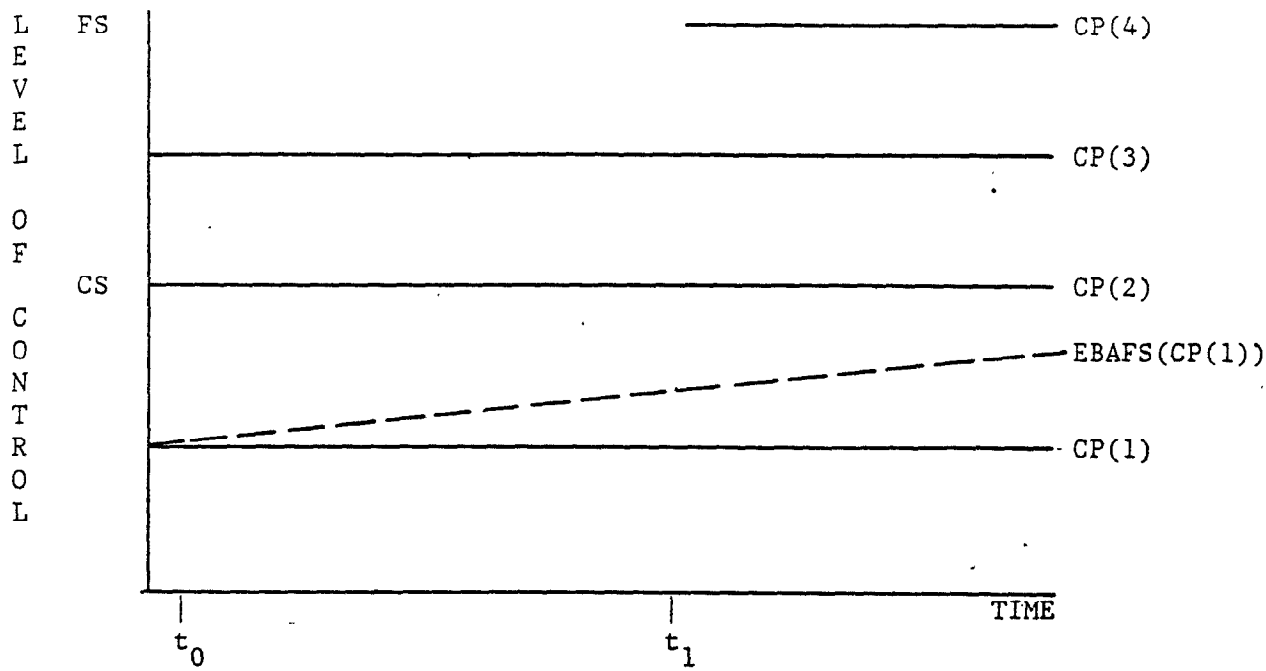
CP(3) - current practices exceed current standards, but do not meet future standards.

CP(4) - current pratices meet or exceed future standards.

The proportion of firms at each of the four possible current practice positions will differ according to the specific regulatory case. For example, for some cases, virtually the entire regulated community will be at or above full compliance with current standards, either because an enforcement mechanism exists to facilitate substantial compliance (e.g., permits), or a current standard has been established long enough to be integrated into current practice. Requirements for Best Practicable Technology (BPT) under the Clean Water Act are a good example of this type of case because most point sources are meeting or exceeding BPT requirements. In other cases, a

EXHIBIT 2-7

BASELINE CONCEPTS FOR SCENARIO 2 (EPA INCREASES THE STRINGENT OF AN EXISTING REGULATION)



SITUATION: CURRENT LEVEL OF CONTROL GIVEN BY	REAL RESOURCE EFFECTS ESTIMATED FROM CONSERVATIVE BASELINE	REAL RESOURCE EFFECTS ESTIMATED FROM EXPECTED BEHAVIOR BASELINE	THEORETICAL EFFECTS BASELINE
CP(1)	CP(1)	EBAFS(CP(1))	CS
CP(2)	CP(2)=CS	EBAFS(CP(2))	CP(2) = CS
CP(3)	CP(3)	EBAFS(CP(3))	CP(3)
CP(4)	CP(4)=FS	EBAFS(CP(4))	CP(4) = FS

CODE: CP = current practices; CS = current standards; FS = future standards, EBAFS = expected behavior in absence of future standard.

NOTE: EBAFS for CP(2), CP(3), and CP(4) are not shown because they are not generally expected to deviate from horizontal lines CP(2), CP(3), and CP(4) although they may deviate in specific regulatory cases. Expected behavior under the future standard cannot be generalized and therefore is not shown.

significant proportion of the regulated community may be operating below current standards, either because of technical or financial difficulties in achieving compliance, lack of information, or less than full enforcement. Compliance with National Ambient Air Quality Standards (NAAQS) is a good example for this situation because full compliance with NAAQS is not technologically or economically feasible.

Exhibit 2-7 demonstrates graphically the four relevant positions for current practices. For CP(1), a dotted line representing expected behavior in the absence of the future standard is also shown (EBAFS(CP(1)). Such a line has been provided in this case because it would be expected that even in the absence of future standards, current practices would move gradually towards compliance with current standards. For the other three current practice positions, expected behavior in the absence of the future standard may or may not have a significant positive slope and, therefore, these dotted lines are not shown. In some cases, technological innovations could stimulate improved control levels while in other cases, no such innovations would exist so that control levels would probably remain fairly static. Also omitted from Exhibit 2-7 are dotted lines representing expected behavior under the future standard because it is not possible to generalize how this behavior should be represented. If most of the regulated community is operating at or above current standards, it might be reasonable to assume that whatever forces are responsible for facilitating full compliance with the current standard will help to ensure full compliance with the future standard. Therefore, the expected behavior under the future standard might not deviate significantly

from full compliance with the future standard. However, if current practices do not meet current standards, as represented by CP(1), it may be reasonable to assume that expected behavior under the future standard will not meet future standards. In general, whenever expected behavior in either the absence or presence of future standards is expected to deviate significantly from one of the horizontal lines in Exhibit 2-7, it should be estimated (if possible) and incorporated into the regulatory analysis.

The chart at the bottom of Exhibit 2-7 suggests baseline alternatives for each of the four cases of interest. If the objective of the analysis is to assess real resources consumed in meeting the future standard, current practices always provide the conservative baseline. A less conservative baseline for assessing real resource effects would be expected behavior in the absence of the future standard. Only under CP(1) is such behavior generally expected to have a positive slope; otherwise it has not been generalized although it may well have a positive slope. Not shown in the chart is expected behavior under the future standard. However, if this is expected to deviate from full compliance with the future standard under any of four cases, it should be used in conjunction with expected behavior in the absence of the future standard to provide the best estimate of real resources consumed. Lastly, a “theoretical effects” baseline can be defined. This would correspond to the situation where effects are measured from full compliance with the current standards to full compliance with future standards regardless of expected behavior. For CP(2), CP(3), and CP(4), this theoretical effects baseline would be current practices. However, for CP(1), this theoretical

effects baseline would be full compliance with current standards. Even in this case, the analyst should make every attempt to estimate effects attributable to moving from current practices to current standards, although it such effects should not be attributed to the future standard.

Examples for Scenario 2

Most of the concepts presented for Scenario 2 are demonstrated in Chapter 3 as part of the analysis of adjustments to reportable quantity requirements under Sections 102 and 103 of CERCLA, However, to demonstrate the relevance of the four current practices positions, examples of regulatory cases which are predominantly like each of the four are listed below and briefly discussed.

SITUATION	EXAMPLE
CP(1)	National Ambient Air Quality Standards
CP(2)	New Source Performance Standards
CP(3)	Best Practicable Technology
CP(4)	Pesticide Registration Requirements, Drinking Water Standards

National Ambient Air Quality Standards (NAAQS) represent the situation where current practices do not meet current standards because many urban areas do not yet meet NAAQS. Although the primary reason for this lag relates to technological and economic feasibility, baseline selection for any adjustments to NAAQS would have to address the baseline issues raised in this section regarding CP(1).

New Source Performance Standards (NSPS) under the Clean Air Act represent the situation where current practices meet current standards (CP(2)) because

new sources cannot be built without meeting NSPS requirements. Thus, baseline selection is straightforward since current standards and current practices are equivalent.

Best Practicable Technology (BPT) under the Clean Water Act represents the situation where current practices often exceed current standards (CP(3)). This situation exists because some of the regulated industries are required to meet more stringent Best Available Technology (BAT) standards by a certain future date and many of the affected industries are well on their way to meeting BAT. In this case, the appropriate baseline would be current practices.

The situation where current practices already meet future standards (CP(4)) is best represented by certain pesticide registration requirements under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). In some cases, federal standards for interstate use of pesticides (labelling, requirements for application and use) are set by current intrastate practices. Another example of this situation is the establishment of standards for allowable radionuclides in drinking water under the Safe Drinking Water Act. Such standards are set based on current practices. In this situation, the baseline is current practice, so there should be no incremental effects of complying with the future standards.

2.2.3 Scenario 3: Regulated State of the World; EPA Imposes a Less Stringent Regulatory Standard

This scenario is of significant interest in cases where the result of rulemaking is deregulation. There are five possible positions of interest for current practices under this scenario, as displayed in Exhibit 2-8:

CP(1) - current practices exceed current standards.

CP(2) - current practices meet current standards.

CP(3) - current practices do not meet current standards, but exceed future standards.

CP(4) - current practices meet future standards.

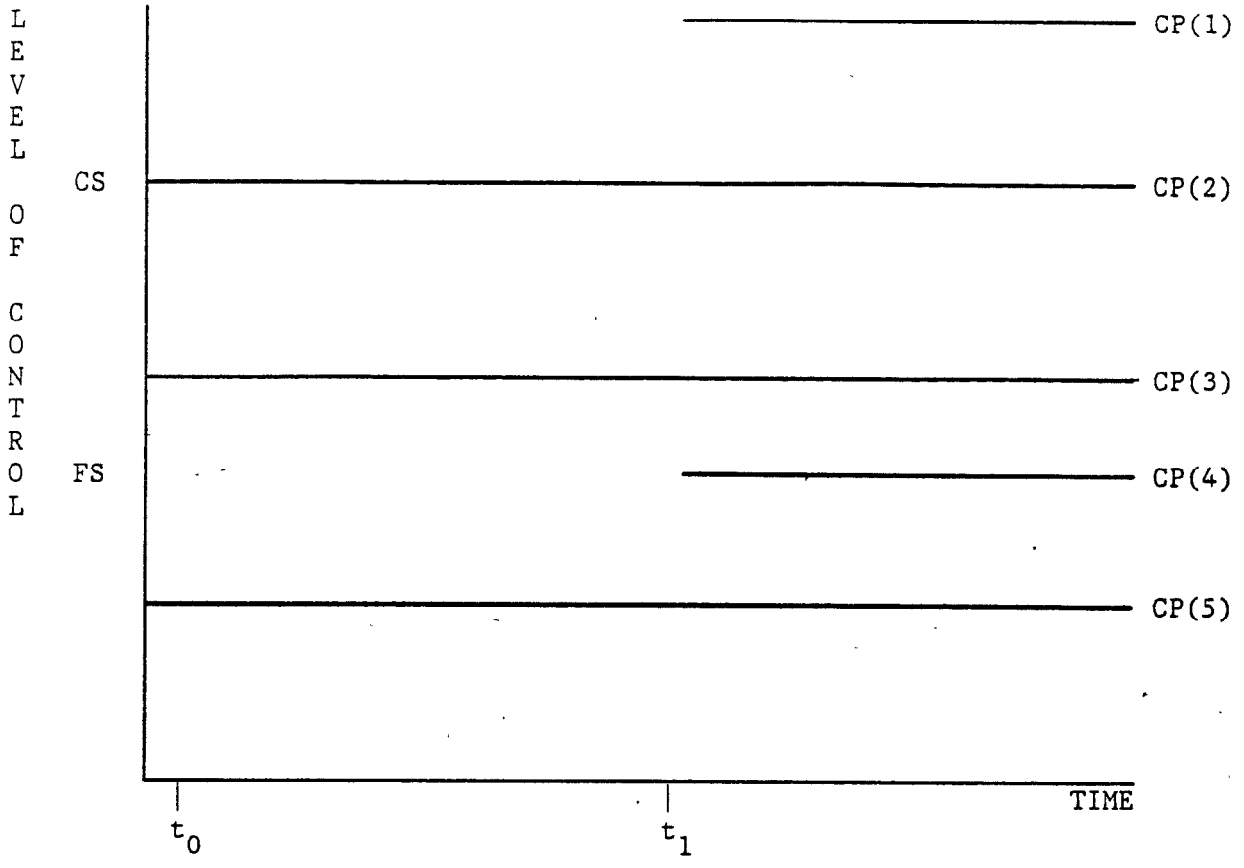
CP(5) - current practices do not meet future standards.

As in Scenario 2, it is possible for regulated entities to be at any of the five positions of interest. However, baseline assumptions will vary, depending on the location of current practices and the objective of the analysis.

Exhibit 2-8 contains no representations of expected behavior, either in the absence of, or in the presence of, the future standard. This is because these two expected behavior lines cannot be sufficiently generalized in a deregulatory environment. Although expected behavior in the absence of the future standard might be expected to have a positive slope (as in Scenario 2), it is not clear that this holds in a deregulatory environment. When firms have expectations of regulatory relief, it is not at all obvious that they will continue to improve their environmental controls in the absence of

EXHIBIT 2-8

BASELINE CONCEPTS FOR SCENARIO 3
(EPA RELAXES AN EXISTING REGULATION)



SITUATION	REAL RESOURCE EFFECTS BASELINE	THEORETICAL EFFECTS BASELINE
CP(1)	CP(1)	CS
CP(2)	CP(2)=CS	CS
CP(3)	CP(3)	CS
CP(4)	CP(4)=FS	CS
CP(5)	not applicable	CS

NOTE: Expected behavior in the absence or presence of future standards are not shown because they cannot be generalized in a deregulatory environment.

specific regulatory proposals. If anything, expected behavior in the absence of future standards might be expected to have a slightly negative slope in a general deregulatory environment. However, there is not sufficient evidence to support this assertion, so Exhibit 2-8 contains no representatives of expected behavior in the absence of future (relaxed) standards.

Furthermore, expected behavior under the future (relaxed) standard is difficult to generalize because regulated entities are not compelled to alter their behavior under deregulation. In some cases; some firms would actually have to incur costs to reduce their level of performance, so the relaxation may have no effect at all on such firms. For example, a firm which has installed pollution controls to meet an existing standard will generally not replace these controls with less effective equipment if a standard is relaxed. For these firms, cost savings will not be realized until new plant and equipment are installed. In other cases, some firms may benefit by some cost reduction because they will operate at a performance level below current standards, but above future standards. For example, firms that have installed pollution controls to meet current standards may be able to operate at a lower (though acceptable) level of performance (at lower costs) under the future standard. Finally, some firms may operate below the future standard because they might perceive that the regulatory agency may not seek full compliance with the future standard.

For these reasons, it is important to measure the incremental effects of the relaxation against expected behavior under the future standard, even though this expected behavior cannot be generalized. The notion of full compliance with the future standard will not always make complete sense. However, in cases where it does, it certainly should be used. For example, relaxing New Source Performance Standards (NSPS) under the Clean Air Act would result in requiring new plants to be designed at a lower level of performance than they were previously. In this case, full compliance with current standards should clearly be the baseline and full compliance with the future lower standard should clearly be the point to which reduced costs and benefits are measured.

The chart at the bottom of Exhibit 2-8 shows that the suggested baseline for measuring real resource effects (i.e. real cost savings and real benefits reductions) is generally current practices. However for CP(5), where current practices do not even meet the relaxed future standard, there are no reductions in real resource costs. In fact, regulated entities at CP(5) would have to incur real resource costs to meet the future standard, but it is simply not reasonable to attribute real resource costs to the relaxation of a standard. Real resource costs in this case could properly be attributable to any enforcement of the new standard. Attempts to demonstrate the resource" savings due to deregulation might contrast CP(5) to FS, on the one hand, with CP(5) to CS on the other. The former is smaller, indicating the resource savings due to deregulation.

For each of the five current practice specifications, a theoretical effects baseline is also specified in Exhibit 2-8. This is the baseline to be used when estimating incremental effects of moving from full compliance with the current standard to at least full compliance with the future (relaxed) standard. Based on the principles presented in Section 2.2, this theoretical effects baseline would always correspond to full compliance with current standards. For CP(1), where current practices exceed current standards, any real resource savings of moving from CP(1) to current standards are not necessarily attributable to the relaxed standard because presumably such savings could have been realized in the absence of the relaxation. Therefore, the theoretical effects baseline, is full compliance with current standards in this case. For CP(2), CP(3), CP(4), and CP(5), full compliance with the current standard could theoretically be achieved in the absence of regulatory change and therefore this is a correct baseline for regulatory impact analysis.

Examples for Scenario 3

Because there are really two different situations of concern within this scenario, brief examples of each will be provided.[7] The first example concerns proposed relaxation of automobile emission requirements. This example will require investigation of how industry will actually behave under a relaxed future standard. The second example addresses proposed relaxation of New Source Performance Standards (NSPS) for power plants -- an example

[7] This scenario is also illustrated in Chapter 3, since the adjustments to reportable quantities reduce reporting burdens if the new reportable quantity is higher than the old.

where costs and benefits can be measured in a straightforward manner from full compliance with current standards to full compliance with proposed standards.

Proposed Relaxation of Automobile Emission Requirements. In April, 1981, the Administration proposed a package of economic relief measures to- aid the automobile and truck industry. As one part of this package, the Administration proposed the doubling of the allowable nitrogen oxide emission standar'd for automobiles. This standard is currently 1 gram/mile, so the standard would become 2 grams/mile under the proposed change. The automobile emission standards are a good example for this scenario because full (or near-full) compliance is facilitated by a well-organized enforcement system incorporating self-inspections by the automobile manufacturers. Furthermore, penalties for non-compliance (especially willful noncompliance) are severe.

In assessing regulatory effects of the proposed relaxation, careful consideration must be given to how the industry will actually behave under the relaxed nitrogen oxide (NOX) emission requirement. In all likelihood, the proposed relaxation of the NOX standard could not be analyzed in isolation from other automobile emissions requirements, or even fuel economy requirements. In general, the reduction of one type of emission cannot be accomplished without affecting other emissions (e.g. particulate, hydrocarbons, sulfur oxides), sometimes adversely. Furthermore, fuel economy is related to automobile emissions. In general, as automobiles are reduced in size to meet fuel economy requirements, emissions are reduced. However, for

any given automobile, carburetor adjustments (or perhaps other adjustments) could be made that trade off fuel economy for reduced emissions.

In this environment, it may be very difficult to isolate the actual behavioral effects of changes to NOX emissions requirements, As a starting point, existing and emerging technologies for emissions control used by each of the automobile manufacturers should be understood to the extent that available data allow. Manufacturers that have the capability to meet the existing standard may not dramatically change their behavior under a relaxed standard and, therefore, may not get much of a real benefit. However, manufacturers who are the farthest from the existing standard may benefit the most. One of the' ironies of regulatory relief is that those firms whose performance relative to environmental standard lags the most, may get the most. relief; while those who have been at the forefront of environmental control, could actually incur a relative penalty. This could create a perverse incentive for firms to delay achieving any given standard-, should the regulatory pendulum ever swing the other way. Thus, it is important to try to determine how various firms will really alter their behavior under the future (more lenient) standard in order to estimate the actual costs and benefits. It would also seem that the distribution of regulatory relief benefits within the affected industry should be of some interest.

NSPS for Power Plants. EPA's 1979 NSPS for power plants requires removal of 90 percent of the sulfur dioxide (SO_2) from high-sulfur coals and 70 to

90 percent removal for low sulfur coals. In addition, all new plants must meet a performance standard of 1.2 pounds of SO_2 per million BTU'S. In essence, this percentage reduction requirement can only be met through the installation of scrubbers. There has been a proposal to eliminate the percentage reduction requirement and maintain only the performance standard, so that power plants using low-sulfur or medium-sulfur coal could employ alternative approaches to controlling SO_2 emissions.

The baseline selection is clear -- full compliance with the 1979 NSPS. This is because NSPS requirements apply to new plants only, so there is no current standards/current practices controversy. There are only current standards. The costs and benefits associated with elimination of the percentage reduction requirement could be estimated based on the difference between installation of scrubbers and the installation of alternative systems, for those new plants where alternative systems would be less costly. Reductions in compliance costs as well as increases in sulfur dioxide emissions (and the associated adverse health effects) should be considered in the regulatory impact analysis.

2.3 CONCLUSION

The selection of an appropriate baseline for regulatory impact analysis will depend on three factors:

- the regulatory scenario (as defined in this chapter);
- the position of current practices relative to current and future standards;
- the objective of the analysis (real resources estimates vs. theoretical effects).

In addition, there are complications regarding estimating expected behavior in the absence of a future standard, estimating expected behavior under the future standard, and properly attributing joint or induced effects. These must be addresed on a case-by-case basis -- it does not seem possible to generalize their treatment. It should be clear that there is not necessarily always a correct baseline choice, but that there are principles of choice and presentation of results which can help the analyst and policy-maker deal with this complex problem.

Chapter 3 illustrates many of the concepts presented in this chapter for a specific regulatory change now being considered by EPA.

CHAPTER 3

THE EFFECTS OF BASELINE, CHOICE ON THE COSTS AND SAVINGS OF REGULATION: AN ILLUSTRATION

This chapter presents an empirical example of the effects of the choice of baseline on the costs of regulation. The example is based on a draft regulatory impact analysis (RIA) of adjustments to reportable quantities of hazardous substance releases under Sections 102 and 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).[1] The example relates to Scenarios 2 and 3 in the taxonomy discussed in Chapter 2 because adjustments being considered by EPA are more stringent in some cases and less stringent in others. Section 3.1 of this chapter, Summary of Existing Regulation, Proposed Regulation, and Draft RIA, provides a brief summary of the proposed regulation and the draft RIA. Section 3.2, Baseline Options, discusses the application to the analysis of the reportable quantity regulation of the different baseline options discussed in the previous chapter. Finally, Section 3:3, Effects of Baseline Choice on Costs and Savings of RQ Adjustments, presents the cost and savings estimates of the regulatory alternatives for each choice of baseline, and examines the changes in costs and savings estimates which result from changing the baseline. Costs

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[1] ICF Incorporated, Regulatory Impact Analysis of Reportable Quantity Adjustments Under Sections 102 and 103 of the Comprehensive Environmental Respone, Compensation, and Liability Act, February 1, 1982 (draft).

and savings refer only to the economic burden associated with reporting and responding to releases. They do not include any changes in health and environmental risk (i.e., benefits) associated with reporting and responding to releases.

3.1 SUMMARY OF EXISTING REGULATION, PROPOSED REGULATION, AND DRAFT RIA

This section presents background information and summarizes the existing and proposed regulation (Section 3.1.1), and presents the methodology used in the draft RIA to assess the costs and savings associated with different regulatory alternatives (Section 3.1.2).

3.1.1 Summary of Proposed Regulation

Sections 102 and 103 of CERCLA contain provisions on designating substances as hazardous, setting reportable quantities (RQs), and notifying the National Response Center of a release of hazardous substances into the environment. These provisions broaden EPA's previous authority to monitor releases of designated hazardous substances by: (1) expanding the number of hazardous substances that must be reported when released; and (2) requiring reports of releases into all environmental media, rather than releases into navigable waters alone, as required under Section 311 of the Clean Water Act (CWA).

Section 102(b) of CERCLA authorizes EPA to establish RQs for all CERCLA-designated hazardous substances. Unless or until superseded by regulations, this section assigns the following RQs:

1. The RQ established under Section 311(b)(4) of the Clean Water Act (40 CFR Part 117) for the 297 substances covered by that section; and

2. A one-pound RQ for all other substances defined as hazardous under Section 101(14) of CERCLA. These include substances designated as hazardous under Section 102(a) of CERCLA, Section 307 of the Clean Water Act, Section 112 of the Clean Air Act, Section 3001 of the Solid Waste Disposal Act (Resource Conservation and Recovery Act), and Section 7 of the Toxic Substances Control Act.

EPA may, by regulation, adjust any or all of the statutory RQs. These adjustments, which may raise or lower RQs, are the subject of this analysis.

EPA's aim in adjusting RQs is to require the reporting of only those releases which the government needs to know about for purposes of response, monitoring, or enforcement. It is generally believed that at present only a small number of reportable releases are in fact being reported to the National Response Center (i.e., about 35 to 50 reports per week). EPA hopes, however, to encourage and facilitate reporting of those releases which are of greatest concern to the government by adjusting the statutory RQs more nearly to reflect these concerns. Thus, for example, many substances with one-pound RQs may be assigned higher levels, thereby relieving regulated parties of the burden of unnecessary reporting, and allowing EPA to concentrate its response program on the most serious releases, In other cases, RQs may be lowered, thus increasing the probability of early reporting and effective response, lessening potential health, welfare, or environmental damages. In this way, the regulatory action will seek to allocate resources more efficiently: scarce public and private resources will be directed to the most hazardous releases, while expenditures on less hazardous releases will be minimized.

A further reason for adjusting RQs is that the RQs established for the Clean Water Act (CWA) Section 311 substances, while appropriate for the orientation of the CWA, are not necessarily appropriate for the Superfund program. The CWA RQs are based on aquatic toxicity effects of hazardous substances released into navigable waters; Superfund is more broadly concerned with protecting public health, welfare, and the environment, and with the effects of releases into all environmental media. Thus, the regulatory action will consider adjustments to the RQs now assigned to Section 311 substances.

This report deals with three regulatory alternatives that were evaluated by EPA.[2] One of these is the baseline of leaving reportable quantities unchanged. In the RIA, there was a relatively straightforward stautory specification of baseline rules: if EPA does not alter RQs, they will remain as specified in Section 102(b) of CERCLA. The other two regulatory alternatives, based on technical criteria,[3] are described below:

> Alternative A, Selected Criteria Processing, assigns RQs to hazardous substances on the basis of data concerning the substances' carcinogenicity, mammalian toxicity, ignitability, reactivity, and aquatic toxicity. The rating system used is an expansion of the Clean Water Act Section

[2]Actually, EPA evaluated many more than three approaches to the RQ problem. However, for the illustrative purposes of this report, we deal with only three regulatory alternatives.

[3]For a more complete discussion of these rating scales and the Selected Criteria Processing System in general, see Rockwell International Corporation, Adjustments to Reportable Quantities of Hazardous Substances pursuant to CERCLA Section 101(14) (February 5, 1982, draft).

311 system for assigning RQs on the basis of aquatic toxicity. There are five reporting levels (1 pound, 10 pounds, 100 pounds, 1,000 pounds, and 5,000 pounds), which are linked to specific ratings of potential hazard or harm,

Alternative B, Dual Track Selected Criteria Processing, establishes only two RQ levels in order to simplify the reporting process. All substances that would have received an RQ of 1 or 10 pounds under Alternative A are assigned an RQ of 1 pound. Every other substance is assigned an RQ of 1,000 pounds.

3.1.2 Methodology for Assessing Costs and Savings of Adjusting Reportable Quantities

The key to estimating the effects of RQ adjustments is to note that regulations produce effects only if they change the behavior of the regulated community. Because the behavioral changes produced by the regulation cause the effects, the best way to project effects is to determine the category of actions that might occur, the effects of each category of action, and the numbers of each category of action that might occur. The total real effect of RQ adjustments, therefore, equals the number of each category of action produced by the regulation times the cost (or savings) of each category of action.

The number of actions taken is primarily a function of the number of reported releases. The number of reported releases is in turn a function of the number of reportable releases (i.e., those releases which equal or exceed the reportable quantities), the amount of overreporting, and the amount of underreporting. To estimate costs and savings under various regulatory alternatives, it is necessary to estimate both the number of reported releases

and the number of reportable releases under the current set of RQs, and then to estimate how reported and reportable releases would change if RQs were adjusted. Thus, here an attempt is made to estimate the incremental effects of the RQ adjustments in three different ways: (1) from full compliance with current RQs to full compliance with proposed RQs and (2) from current practices under current RQs to full compliance with future RQs; and (3) from current practices to expected practices under future RQs.

All of the effects of RQ adjustments vary with the changes in the number of reportable releases caused by adjusting RQs. Lowering RQs means that some releases newly fall under the provisions of CERCLA, and raising RQs means that some releases no longer fall under those provisions. The former set of releases are termed incremental reportable releases. Lowering RQs imposes costs on society because of the additional economic burden associated with reporting and responding to releases placed on regulated parties and taxpayers (through expenditures by EPA). Of course, lowering RQs also provides benefits to society because of reduced health and environmental risk associated with additional reporting and response. However, these benefits to society are not addressed here. Raising RQs provides savings to society by reducing the economic burden associated with reporting and responding to releases on regulated parties and taxpayers. These savings should not be confused with the broader concept of benefits (i.e., changes in health or environmental risk) often used in regulatory and cost-benefit analysis.[4]

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[4]This analysis therefore does not quantify the risk to the environment and public health associated with various regulatory alternatives (including the baseline).

In the remainder of this subsection, the three segments of this methodology are presented:[5]

- Estimating the number of reported and reportable releases with existing RQs (i.e., specification of current practices and full compliance baseline).
- Estimating the number of reported and reportable releases with adjusted RQs (i.e., specification of expected practices and full compliance regulatory alternatives).
- Estimating the types of actions taken as a result of changes in the number of reported releases, and the changes in economic burden resulting from each type of action (i.e., estimation of incremental economic effects).

The Number of Reported and Reportable Releases With Existing RQs. Total nationwide reported releases and total nationwide reportable releases under current RQs were estimated from EPA Region VII data using the following procedure:

- Estimate Region VII reported releases per year under current RQs.
- Estimate Region VII reportable releases by correcting for overreporting and underreporting (i.e., for situations in which releases that need not be reported are reported and the reverse respectively).
- Project the estimates of reportable and reported releases to the nation as a whole.

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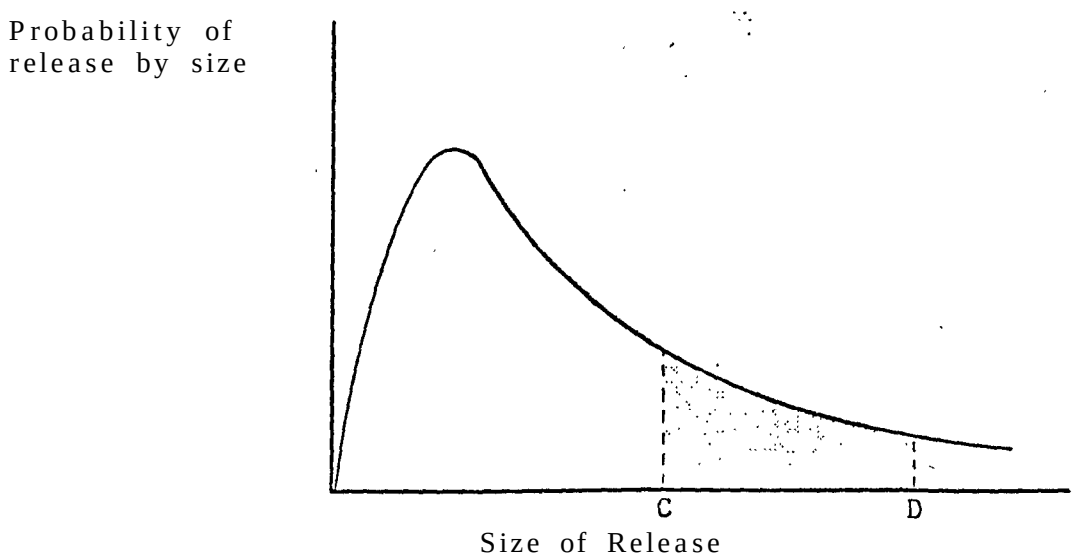
[5]The details of this procedure are found in Chapter 3 and Appendix A of ICF Incorporated, Regulatory Impact Analysis of Reportable Quantity Adjustments Under Sections 102 and 103 of the Comprehensive Environmental Response, Compensation, and Liability Act, February 1, 1982 (draft).

The Number of Reported and Reportable Releases With Adjusted RQs. The number of reported and reportable releases under different RQ assignments must also be estimated. Thus, it is necessary to determine the distribution, by size of release, of all releases of hazardous substances, both above and below the reportable quantities. Any changes in the RQ assignments will alter the reportable quantities from those currently established, thereby either including or excluding an incremental set of releases. The number of releases in this incremental set depends on the distribution of all releases by quantity released, hereafter referred to as the size distribution. For example, assume that the size distribution of all releases is as shown in Exhibit 3-1 (which is, in fact, a good representation of the distribution used here). If the reportable quantity of a substance changes from C to D, the percentage of releases between C and D can be calculated, given estimates of the parameters of the distribution. That percentage can then be multiplied by

EXHIBIT 3-1
SIZE DISTRIBUTION OF RELEASES



the total number of releases of that substance to find the number of releases affected by the RQ adjustments.

On the basis of analyses of available data, it was determined that the lognormal distribution best reflected the data on hazardous substance releases. Using an estimated lognormal distribution,[6] it is possible to project the number of reportable releases. Exhibit 3-2 provides the basic data on the size distribution of releases implied by the analysis. Almost 90 percent of all releases are less than one pound.

Using the methodology developed for the regulatory impact analysis of RQ adjustments, the number of reportable releases in any size category can be

EXHIBIT 3-2

SIZE DISTRIBUTION OF RELEASES

Size (1bs)	Percentage of Total	Percentage of Releases ≥ 1 lb
≤ 1	89.61	
1 - 1 0	6.50	62.53
10 - 100	2.72	26.21
100 - 1000	0.89	8.57
1000 - 5000	0.19	1.83
≥ 5000	0.09	0.86
TOTAL	100.0	100.0

Source: ICF estimates.

[6] Plus other assumptions detailed in Ibid.

estimated. Using data from EPA Region VII, the number of reported releases in each size category can be estimated. By correcting for overreporting (i.e., releases actually reported but below the RQ threshold, or releases actually reported for substances for which there are no RQs), the number of reported releases in each size category that is reportable under CERCLA can be estimated. Dividing the latter figures by the total number of reportable releases yields the percentage of reportable releases that is actually reported in each size category. As shown in Exhibit 3-3, the percentage reported (or probability of reporting) rises from a low of 13.3 percent for 1-10 pound releases to 99 percent for releases over 5,000 pounds.

EXHIBIT 3-3

PERCENTAGE OF REPORTABLE RELEASES ACTUALLY REPORTED UNDER EXISTING RQs, BY SIZE OF RELEASE

Size (lbs.)	Percentage Reported
1-10	.133
10-100	.266
100-1,000	.362
1,000-5,000	.630
5,000	.990

Source: ICF estimates.

This methodology can also be used to calculate the number of incremental reported and reportable releases generated by adjusting RQs up or down. These incremental releases can be added to the baseline estimates to produce estimates of the number of reported and reportable releases under each

regulatory alternative. The baseline estimates are discussed below in Section 3.2.

Types of Actions Taken and the Costs and Savings of Those Actions. Adjusting RQs causes both regulated parties and governments to take certain types of actions. Whether the actions generate costs or savings depend on whether the actions are caused by lowering RQs (costs) or precluded by raising RQs (savings). In order to estimate these costs and savings, the actions that follow the report of a release were identified and, based on interviews with responsible government and private parties, unit costs were assigned to each action. The product of the number of actions (based on the number of incremental reportable releases) and the unit cost yields the cost or savings caused by the RQ adjustment process. Details of the method are found in the draft RIA cited earlier.

3.1.3 Summary

This section has summarized the existing and proposed regulations governing reportable quantities, and has presented the methodology used to assess costs and savings in the draft RIA. To estimate the effects of RQ adjustments, the number of releases with reporting status changes attributable to RQ adjustments is calculated, the actions caused by changed reporting status, of these releases determined (assuming full compliance with the regulations), and the costs and savings associated with the changed reporting status of these releases calculated. Costs are generated by lowering

reportable quantities, thereby increasing the number of reportable releases and causing additional actions to be taken by regulated parties and government. Savings are caused by raising reportable quantities, thereby decreasing the number of reportable releases and causing some actions that had been taken to no longer be taken. The next section discusses the three baseline options whose effects on the cost and savings estimates are then analyzed.

3.2 BASELINE OPTIONS

Based on the discussion in Chapter 2, this section presents three different ways of calculating the economic effects of reportable quantity adjustments. These three approaches differ by either baseline behavior assumptions or assumptions about behavior under the future standard as shown below:

- Approach 1: The baseline is specified to be full compliance with current standards and effects of the future standard (proposed regulation) are measured to full compliance with future standards;
- Appendix 2: The baseline is specified to be current practices and effects of the future standard (proposed regulation) are measured to full compliance with future standards; and
- Appendix 3: The baseline is specified to be current practices and effects of the future standard (proposed regulation) as measured to expected practices under the future standards.

In the remainder of this section, each of these approaches is applied to the analysis of RQ adjustments just described. Then, in the following

section, the costs and savings of the regulatory alternatives are estimated under each approach, and the effects of the baseline choice on the cost and savings estimates are assessed.

3.2.1 Approach 1: Full Compliance with Current Standards to Full Compliance with Future Standards

Under this approach, the effects of the RQ adjustments are measured by the differences between the situation in which regulated parties are in full compliance with current reportable quantity regulations (i.e., the current standard), and the situation in which they are in full compliance with the adjusted reportable quantities (i.e., the future standard). Under the current standards baseline, used in the draft RIA, the baseline is represented by the number of reportable releases under existing RQs irrespective of actual reporting behavior (i.e., current practices).

3.2.2 Approach 2: Current Practices to Full..Compliance with Future Standards

As discussed in Section 3.1, all reportable releases may not be reported. Exhibit 3-3 suggests substantial underreporting, particularly for smaller releases. If nationwide reporting is at the same level as in Region VII (the source of the basic data set), only a fraction of all releases may currently be reported. In addition, there is some reporting of releases that need not be reported. Under the current practices baseline, the current level of reporting is the point from which the effects of regulations are measured. If effects are measured to a situation of full compliance with the future

standard, it is assumed that after the RQ adjustments, compliance with the regulation will be complete. Therefore, under this approach, the effects of RQ adjustments are measured as the difference between current practices, in which there is underreporting (and some overreporting) of releases, and the situation in which there is full compliance with the adjusted reportable quantities.

Under this approach, the costs and savings are calculated in two stages: stage one examines the effect of the move from current RQs (i.e., current standards) to adjusted RQs (i.e., future standards), assuming no change in behavior (i.e., in the percent of reportable releases actually reported); then, stage two examines the effects of the change in behavior (i.e., as the percent of reportable releases becomes 100 percent), or, put differently, stage two examines the change from current practices to full compliance with future standards.

3.2.3 Approach 3: Current Practices to Expected Practices Under the Future Standard

Under this approach, it is no longer assumed that, after the reportable quantity adjustments, compliance with the regulation will be complete. Instead, it is assumed there will still be some overreporting and underreporting, though not necessarily the same amount as under existing reportable quantities. In this case, the effect of reportable quantity adjustments are measured as the difference between the current situation, in which there is substantial underreporting (and some overreporting) of

releases, and the future situation, in which there is still underreporting and overreporting, although probably in smaller amounts. Underreporting and overreporting are assumed to decline because as discussion of the regulation proceeds and the regulated community participates in the regulatory process, it becomes familiar with the requirements of the rule. Moreover, uncertainty is reduced. These combine to increase adherence to the future regulatory standard, so the gap between practice and standard diminishes. While the direction of this plausible effect is clear, its magnitude is not immediately obvious. However, techniques exist for estimating or approximating the magnitude of this effect, as explained below. This issue relates to one of the more difficult and uncertain aspects of regulatory analysis: how to relate a' baseline to expected future practices (as illustrated by the dotted lines in some of the exhibits in Chapter Two).

For this analysis, it is necessary to estimate how underreporting and overreporting might change because of RQ adjustments. Although any estimates of the amount of change are somewhat speculative, experience with other programs suggests that the amount of overreporting and underreporting should decrease over time.[7] In addition, if the level of underreporting is high, decreases in the level of underreporting should also be large. If the level

[7]Experience with mandatory reporting of oil spills under the Water Quality Improvement Act of 1970 and of new chemicals under the Toxic Substances Control Act of 1976 suggests that the initial level of underreporting is relatively high but decreases over time.

of underreporting is small, change in the level of underreporting should also be small.

The probability of reporting a reportable release under adjusted RQs is shown in Exhibit 3-4 below. These figures were obtained from the reporting probabilities under existing RQs (Exhibit 3-3) by using the following rule: for each size category, assume that half the releases which are not reported under existing RQs would be reported under adjusted RQs. This rule, while arbitrary, is consistent with the reasoning about reporting changes discussed above. It suffices for the illustrative purposes of this report.

EXHIBIT 3-4

PERCENTAGE OF REPORTABLE RELEASES ASSUMED TO BE REPORTED UNDER ADJUSTED RQs, BY SIZE OF RELEASE

Size (lbs.)	Percentage Reported
1-10	.567
10-100	.633
100-1,000	.681
1,000-5,000	.815
5,000	.995

In Approach 3, the costs and savings are calculated in two stages: stage one examines the move from current RQs to adjusted RQs, assuming no change in behavior (i.e., in the percent of reportable releases actually reported); then, stage two examines the behavioral change under the assumed reporting percentages provided in Exhibit 3-4.

3.3 EFFECTS OF BASELINE CHOICE ON COSTS AND SAVINGS OF RQ ADJUSTMENTS

This section presents the costs and benefits of RQ adjustments under each of the three approaches and then compares them.

3.3.1 Approach 1: Full Compliance with Current Standards to Full Compliance with Future Standards[8]

Given the assumptions discussed in Section 3.1, in this approach all of the costs of RQ adjustment vary with the number of releases that move from below to above reportable quantities because of the RQ adjustments. These are termed incremental reportable releases. Therefore, the first step in estimating the costs and savings of RQ adjustments is to estimate the number of incremental reportable releases caused by raising and lowering RQs.

Having calculated the number of reportable releases under each regulatory alternative, the estimates of incremental reportable releases can be combined with the estimates of unit costs from Section 3.1 to calculate the total costs of RQ adjustment. These calculations are summarized in Exhibit 3-5. As shown there, Alternative A provides $2.8 million in net savings (defined as savings minus costs), and Alternative B imposes $3.8 million in net costs.

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[8] This is the same baseline option used in the draft RIA, but the cost and savings estimates differ from those presented in that document. Since the draft RIA was completed new adjustments to the reportable quantities and several other minor changes have been made.

EXHIBIT 3-5

ANNUAL NET SAVINGS TO REGULATED PARTIES
AND GOVERNMENT OF REGULATORY ALTERNATIVES

Approach 1: Full Compliance With Current Standards
to Full Compliance with Future Standards

	Alternative A (SCP)	Alternative B (Dual Track SCP)
Savings	$15,300,000 a/	$14,400,000
costs	$12',500,000	$18,200,000
Net Savings	$2,800,000	-$3,800,000

a/ All estimates are expressed in 1981 dollars, rounded to the nearest hundred thousand.

3.3.2 Approach 2: Current Practices to Full Compliance, with Future Standards

The estimates of costs and savings under this approach are shown in Exhibit 3-6. Alternative A is superior to Alternative B, as it was under Approach 1. However, unlike Approach 1, both alternatives generate substantial net costs for regulated firms under the assumptions of this approach.[9]

3.3.3 Approach 3: Current Practices to Expected Practices Under the Future Standards

The estimates of costs and savings under Approach 3 are shown in Exhibit 3-7. The results are similar to Approach 2 in that Alternative A is superior to Alternative B, and there are net costs to regulated firms under both alternatives . The net costs are not as great as under the assumptions of Approach 2.[10]

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[9] As discussed in Section 3.2, the costs and savings under Approach 2 are caused by two changes: the change from current RQs to future RQs, holding the current level of compliance constant; and the change from the current level of compliance to full compliance with the future RQs. The vast majority of the costs (79 percent under Alternative A, and 85 percent under Alternative B) are caused by the change from the current level of compliance to full compliance with future RQs. In contrast, most of the savings (over 85 percent under both alternatives) are generated by decreases in reported releases caused by raising reportable quantities (i.e., the savings are generated. by changes in the standard). In terms of the distinction made in Chapter 2 between the move from current practices to current standards and then to the future standard, the net change can be viewed as follows. The difference between the net savings estimates in Exhibits 3-5 and 3-6, $19.6 million, represents the effect of moving from current practices to the current standard.

[10] The costs and savings under Approach 3 are caused by two changes: the change from current RQs to future RQs, and the change' from current practices to future practices. Just as under Baseline Option 2, most of the costs are generated by the change in practices: 65 percent of the costs under Alternative A, and 75 percent under Alternative B are caused by this change. Most of the savings are generated by the decreases in reportable releases caused by raising RQs: over 95 percent of the savings under -each alternative are caused by this change.

EXHIBIT 3-6

ANNUAL NET SAVINGS TO REGULATED PARTIES
AND GOVERNMENT OF REGULATORY ALTERNATIVES

Approach 2: Current Practices to Full Compliance
With Future Standards

	Alternative A (SCP)	Alternative B (Dual Track SCP)
Savings	$ 3,500,000 a/	$ 3,500,000
Costs	$20,300,000	$26,800,000
Net Savings	-$16,800,000	-$23,300,000

a/ All estimates are expressed in 1981 dollars, rounded to the nearest hundred thousand.

EXHIBIT 3-7

ANNUAL NET BENEFITS TO REGULATED PARTIES
AND GOVERNMENT OF REGULATORY ALTERNATIVES

Approach 3: Current Practices to Expected Practices
Under the Future Standards

	Alternative A (SCP)	Alternative B (Dual Track SCP)
Savings	$ 3,200,000 a/	$ 3,100,000
Costs	$12,200,000	$15,300,000
Net Savings	-$ 9,000,000	-$12,200,000

a/ All estimates are expressed in 1981 dollars, rounded to the nearest hundred thousand.

3.3.4 Summary and Comparison

The net effects of the reportable quantity adjustments under the three approaches are displayed in Exhibit 3-8. As can be seen from this comparison, the choice of baseline option apparently makes a large difference in the direction and magnitude of the savings. For example, contrast Approaches 1 and 2, which use different baselines, while measuring effects to the same point (full compliance with future standards). Alternative A ranks highest in terms of net savings in each. But, importantly, there is a shift of $19.6 million in net savings. when the baseline is altered (from savings of $2.8 million to casts of $16.8 million in the case of Regulatory Alternative A). The effect on the estimate of net savings is, of course, sensitive to the presumed current level of compliance with the CERCLA reporting regulation. To the extent that this quantity has been understated (in the analysis of the draft RIA) the effect on the net savings would be correspondingly smaller. Similarly, the baseline choice contrast between Approaches 1 and 2 attributes all of the reduced savings to fuller compliance with the new RQ standard. It might be legitimately argued, however, that a substantial fraction of the cost of compliance with current standards could properly be attributed to CERCLA in that the statute itself establishes, the current standards baseline.

The contrast of Approaches 2 and 3 illustrates the importance of the end point to which effects are measured. Again, this time holding constant the baseline, there are substantial shifts in the level of net savings when the end point of the analysis is altered to reflect less than full compliance with the future standard (i.e., the adjusted RQ). It is also important to note

EXHIBIT 3-8

NET SAVINGS (SAVINGS AND MINUS COSTS) OF REGULATORY ALTERNATIVES UNDER DIFFERENT BASELINE OPTIONS a/

	Regulatory Alternative	
	A	B
Approach		
1	$ 2,800,000	-$ 3,800,000
2	-$16,800,000	-$23,300,000
3	-$ 9,000,000	-$12,200,000

a/ All estimates are expressed in 1981 dollars, rounded to the nearest hundred thousand.

that in this case the ranking of the two regulatory alternatives across the three approaches was unchanged,

3.4 CONCLUSION

This chapter has presented an empirical example of the effects of the choice of baseline (and the point to which effects are measured) on the costs and savings of regulation. The example is based on a draft RIA of adjustments to reportable quantities of hazardous substance releases under Sections 102 and 103 of CERCLA. The effects on costs and savings of the choice appear to be substantial in percentage terms.

It is important to note, however, that the analysis of alternative baselines presented here does not indicate that the baseline suggested in the original draft RIA is somehow wrong or inappropriate. In fact, it is fully consistent with the principles set forth in Chapter 2. Rather, the point of this analysis is that agency decisionmakers should recognize that the apparent results of. a given regulatory impact analysis are often quite sensitive to the choice of a baseline for the analysis.