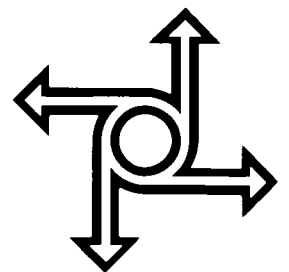


# **MONETARY INCENTIVES**

A Practical Guide to the Use of  
Monetary Incentives as a Regulatory Alternative

**September 1981**



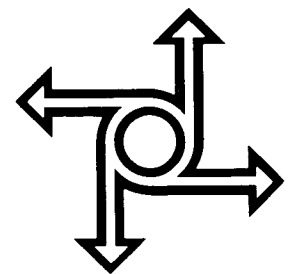
**Project on Alternative Regulatory Approaches**



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Monetary Incentives as a Regulatory Alternative

**September 1981**



**Project on Alternative Regulatory Approaches**

Guidebook Series on  
Alternative Regulatory Approaches

This series is intended to provide a practical introduction -- featuring both the theoretical and proven merits and limitations -- to a special set of alternative regulatory tools: approaches that are generally most compatible with the market forces that govern business decisions.

The series includes six books:

- |                          |                           |
|--------------------------|---------------------------|
| 1) Overview              | 4) Monetary Incentives    |
| 2) Marketable Rights     | 5) Information Disclosure |
| 3) Performance Standards | 6) Tiering                |

The series was produced by the staff of the Project on Alternative Regulatory Approaches and its support contractor, SRI International of Menlo Park, California, Richard A. Ferguson, Project Manager.

Project on Alternative Regulatory Approaches

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Book 4 - MONETARY INCENTIVES  
A Practical Guide to the Use of Monetary  
Incentives as Regulatory Techniques

September 1981

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## PREFACE

This guidebook is one of a series that is intended to familiarize regulators and regulation-watchers with market-oriented approaches to reaching regulatory goals.

One of the significant (although not the best-noted) products of the recent campaigns for regulatory reform has been the growth of a sense of self-consciousness about regulatory decisionmaking.

By and large, regulators now agree that their decisions can and should be a deliberate choice among competing alternatives, and should result from a systematic comparison of the relative costs and benefits among the array of choices. A more thorough analysis of such alternatives will be increasingly important during the reviews by the Office of Management and Budget of major new rules under Executive Order 12291 and in light of pending legislation advocating agency use of alternative approaches. Policymaking is becoming a conscious matter of choosing the "right" tool for the job at hand.

One class of regulatory tools that is of particular interest includes those that bring the least disruption to private decisionmaking in the regulated firms and use market forces to reduce the overall direct and indirect costs of regulation. These market-oriented techniques -- "Alternative Regulatory Approaches" -- stand in contrast to the traditional "command-and-control" form of regulation, which involves a detailed specification of private compliance requirements and formal sanctions against those who violate them. In general, alternative regulatory approaches can have these relative advantages over command-and-control regulation:

- They provide more flexibility and more incentive for regulated firms to devise least-cost ways to comply.
- They impose fewer indirect costs (e.g., red tape, inspections).
- They are results-oriented, rather than means-oriented.
- They reward private innovation.
- They impinge less on private choice and encourage market competition.
- They avoid the pitfalls of centralized, discretionary decisionmaking.

These alternative techniques are not new inventions -- some regulators have been using them for years. However, as a class they are not yet well understood, and they are still more often a subject of rhetorical debate than serious policy discussions. This tendency has caused some agency skepticism about their practicality. These guidebooks attempt to show that market-compatible techniques are more than interesting ideas -- they are interesting ideas that work to solve real governmental problems.

We do not presume that market-oriented solutions fit every regulatory program. Only those who know particular programs in detail can determine how appropriate an alternative regulatory approach is in a specific case. Thus, these guidebooks are intended as introductions to the techniques rather than as "how-to-do-it" manuals. We have relied extensively on actual examples of past use.

This guidebook on monetary incentives, for example, gives 18 examples of monetary incentives schemes that 10 Federal agencies have used or proposed, and one monetary incentives approach that several State and local governments have implemented. These examples are included for illustrative purposes only; no attempt has been made to evaluate the merit of each action.

We hope that a realistic summary of both the merits and drawbacks of these approaches will encourage regulators to begin to count them among the alternative tools at their disposal.

\* \* \*

## SUMMARY

Monetary incentive systems comprise several distinct market-oriented approaches for achieving regulatory goals and offer alternatives to traditional command-and-control regulation. These monetary inducements may come in a variety of forms, including: grants, subsidies, payments, fees, penalties, various forms of tax incentives, and various schemes to internalize costs -- e.g., mandatory insurance, performance bonds, and warranties.

Monetary incentives advance regulatory goals. They can be used directly or as part of a system of enforcing regulatory requirements. Thus, a system of economic incentives can be used both in conjunction with command-and-control regulation and as an alternative.

General Advantages -- The main advantage of an economic incentives approach to regulation is that it has the potential to greatly reduce the overall costs to the economy of achieving a particular regulatory goal. Business and other organizations can respond more efficiently to monetary signals than to legalistic agency commands. Monetary incentives schemes can reduce uncertainty for businesses and consumers, and cost less to administer for both the regulatory agency and the regulatory entity. They may also encourage innovation and competition, reduce agency administrative burdens, and provide greater policy flexibility.

General Limitations -- The main limitation of a monetary incentives system is that it may require more precise monitoring than alternative types of regulation. In addition, it is often difficult to determine the appropriate magnitude of the incentive that is necessary to ensure that the regulatory goal is met; it might increase the flow of funds into or through government agencies rather than simply make private markets more efficient. Finally, an incentive scheme may be impeded by political, legal, and institutional barriers.





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## PART I

# MONETARY INCENTIVES

### AN INTRODUCTORY GUIDE FOR REGULATORS

This section presents questions frequently asked about monetary incentives. The answers reflect actual agency experience.



## WHAT ARE MONETARY INCENTIVE SCHEMES?

This guidebook covers the use of various monetary inducements to firms or consumers to ensure that behavior is consistent with the goals of regulation. The five types of monetary incentives covered include fees, direct subsidies, monetary penalties, tax incentives, and agency measures (e.g., assignment of legal liability, mandatory warranties or performance bonds) to make the regulated firm incur the true "social" cost of its actions.

Monetary incentives schemes have been used or proposed in a variety of regulatory sectors, including emissions fees for pollution\*, grants for the construction of sewage treatment facilities, subsidies to air carriers for providing service on otherwise unprofitable routes, tax incentives for hiring disadvantaged workers, nonconformance penalties for vehicle pollution standards, and assignment of liability for offshore oil spills. A number of other instances are discussed in this guidebook. Some of these cases involve the use of incentives as an alternative to command-and-control regulation. The monetary incentive approach can also be used as a supplement to traditional regulation to make the enforcement of command-and-control regulation less costly and more effective.

### Adjusting for "Externalities"

When competition leads the private market to operate efficiently to produce and distribute scarce resources, regulation is often unnecessary. One of the most common justifications for government regulation is a perceived systematic failure of the private market to provide the right incentives to firms. A common cause of this condition is the existence of what economists call externalities (or spillover effects).

An externality occurs whenever one person's or firm's behavior does not take into account the effects of its actions, either positive or negative, on other persons or firms.

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\*An application that is used extensively in this guidebook to illustrate key concepts. An emission fee approach discards the idea of telling polluters exactly how much they can pollute in favor of assessing a monetary fee per unit of pollution, measured in dollars per pound of pollutant emitted.

### EXAMPLES

Pollution emitted by a given firm imposes costs -- physical damage, health effects, aesthetic effects -- on the surrounding community. These effects are not systematically taken into account by the firm when it determines production levels, industrial processes, or expenditures for pollution-reduction equipment, all of which affect the amount of pollution emitted. Thus, pollution is an example of a negative externality.

Basic scientific research that results in an unpatentable breakthrough may lead to significant benefits to many industries and consumers. However, these benefits are not taken into account in the firm's or individual's decision to undertake the research, since the benefits will accrue to others. Thus, positive externalities are often associated with scientific research.

Monetary incentives can be used as a regulatory technique to ensure that firms or individuals take these externalities into account. That is, with correct incentives, firms or individuals will take into account the external costs (and/or benefits) of their actions when making decisions. In economists' terms, an ideal monetary incentive approach will lead to the complete "internalization" of externalities. For example, a monetary incentives approach can be used to "internalize externalities" by making a firm pay (or be paid) in direct proportion to the effects of its actions on others. This can be an attractive alternative to a command-and-control regulation, which only grossly approximates cost internalization. Monetary incentives can be a tool for smoother, better-tailored integration of public and private objectives. Such an approach reduces the need for detailed mandatory rules of private behavior.

### EXAMPLES

A firm might be charged a fee per unit of air pollution emitted. The fee, ideally, would be set equal to the costs of that pollution borne by the surrounding community (i.e., a monetary measure of the damage caused by a unit of pollution).

Patents may be assigned to scientific discoveries so that those undertaking the research share in the benefits. Alternatively, grants, subsidies,

or tax incentives may be used to encourage research and development.

If it is clear that a firm pays fully for the negative effects of its actions on others, it is safe to let the firm decide for itself whether it is worthwhile to take actions to reduce the damage it is causing, and by how much. Under such conditions, firms will find it profitable to take corrective actions in accord with regulatory goals (pollution abatement, for example) up to the point where the additional (or "incremental") cost incurred to reduce damage equals the assessed fee. In the pollution fees case, for example, a fee of \$100 per pound will lead firms that can reduce emissions by adding equipment that costs \$90 per incremental pound to choose to add equipment. But a firm facing control costs of \$200 per pound would choose to pay the fee.

Such a system leads the firm to balance the total costs against the total benefits of reducing damages (assuming the fee has been properly determined). From the whole society's viewpoint, neither too much damage is permitted, nor is too much spent on preventing it. Conversely, by making research results patentable, those making decisions about how much and what type of research to undertake will have an incentive to make the socially "correct" decisions. With patent rights as an incentive, researchers can expect to share in the benefits of their discovery; without a patent, they might receive no share of the benefits they provide to society.

### Improving Enforcement

Monetary incentives can also be used as a complement to command-and-control standards to improve the compliance incentives of a given regulation. To provide effective incentives command-and-control regulations must be enforced. Often, the penalties used bear little relation to the harm caused by a violation. Monetary incentives can be used to make enforcement more efficient and effective.

The basic idea is to set the penalty for violating the regulation equal to expected social harm or damage done by violating the regulation. One idealized formula would impose a monetary penalty value equal to the social harm caused by violating the rule divided by the probability that the violation would be detected.

### EXAMPLE

If the total costs of an oil spill from a given type of tanker were \$1 million, and if the probability of determining which tanker caused the oil spill were .50, then the penalty for such an oil spill should be \$2 million.

When a monetary penalty is set to equal the expected social harm, a potential violator will violate a regulation only when the expected private gain exceeds the expected loss to society. Thus, just as in the case where monetary incentives are used as an alternative to command-and-control regulation, the use of monetary incentives as an enforcement tool leads the firm (or individual) to consider the total social costs of its actions and hence leads to an internalization of externalities.

\* \* \*

## WHAT ARE THE GENERAL ADVANTAGES OF THE MONETARY INCENTIVES APPROACH?

The primary advantage of a monetary incentives approach over command-and-control regulation is that it imposes on businesses and consumers the lowest aggregate costs of achieving a particular regulatory goal. In addition, a system of monetary incentives may require much less agency involvement and intrusion into business decisions, which means lower administrative costs for both the agency and the regulated entity.

### Lower Regulatory Costs

Monetary incentives can lead to much lower overall costs of achieving a particular regulatory goal if the incentives are designed to lead firms (or consumers) to make decisions based on the "true" social costs (including externalities) of their actions. Such a scheme may create dramatically different incentives for a regulated entity than exists under command-and-control regulation.

The key problem with command-and-control regulation is that it requires uniform compliance with a regulation for all firms, regardless of the relative costs or benefits of complying among firms. In the case of air pollution, for example, firms that would have to spend \$90 per pound to control a certain pollutant,



and others that would have to spend \$200 per pound to control the same pollutant; both may be required to control to the limits of current technology. A monetary incentive system permits a balancing of costs and benefits for each firm. The systematic elimination of these firm-by-firm imbalances -- a process governed by the market itself through the price system -- is what minimizes overall compliance costs.

### **EXAMPLE**

A firm subject to a pollution emission fee will find it profitable to pollute less (by using a substitute material or process), and thereby reduce its fee payments, when the cost of further pollution reduction is less than the fee. Thus, overall pollution reductions will be concentrated in firms with lower costs of reducing emissions rather than being spread among low-cost and high-cost reductions as would happen under uniform compliance requirements.

By ensuring that expenditures needed to comply with the goals of a regulation are made only when costs exceed the regulatory fee, wasteful expenditure is avoided. Conversely, with command-and-control regulation, there is no incentive for a business with relatively low compliance costs to exceed the uniform requirements of the regulation. The overall cost savings can be impressive.

### **EXAMPLES**

The Postal Rate Commission (PRC) provides strong monetary incentives for bulk mailers to presort their mail by offering lower postage rates for mailers who presort. Since some mailers can organize by addresses (using their computers) when printing labels, at much lower costs than the Postal Service can sort after the mail arrives at the post office, this incentives scheme leads to an optimal use of resources and dramatically lowers the cost of mail delivery (by over \$1 billion per year). The alternative of requiring that all mailers presort would impose large costs on firms that do not have the capability to presort. Thus, the current system lets firms determine whether or not it is in their monetary interest to presort.

HHS is developing an incentives scheme that would encourage greater efficiency in the treatment of renal disease. The new system would reimburse a

fixed amount (rather than according to the individual facility's costs), thus rewarding efficient treatment facilities with costs less than the reimbursement amount and penalizing inefficient facilities with costs greater than the fixed reimbursement amount.

Recent studies suggest that the savings generated by moving from command-and-control regulation to a monetary incentives scheme in order to achieve a given ambient level of pollution would be substantial -- on the order of 50 percent or more. According to some estimates, this might amount to tens of billions of dollars per year if all pollution emissions were regulated using a monetary incentives system. The savings result because firms with the lowest costs of reducing pollution are the ones that reduce their emissions the most.

A monetary incentives system also may have lower administrative costs than some types of command-and-control regulation. A monetary incentives system shifts some decisionmaking from the regulatory agency to the marketplace and to the firms and individuals that operate within it. This may benefit both the agency and the regulated entity. The agency benefits because it is freed of costly and contentious administrative decisions about who should bear the costs of regulatory policies.

### Innovation

With a monetary incentives scheme, not only does industry have an incentive to change existing production processes so they are in accord with regulatory goals, but it also has the freedom and incentive to develop new processes (such as production techniques that pollute less or more cost-effective pollution-control equipment) that lead to the achievement of regulatory goals at even lower costs to the economy. Unlike command-and-control regulation, a monetary incentives scheme does not specify the particular means of compliance, and there is less danger that regulation will freeze technology at current levels.

### Other Advantages

Monetary incentives have a number of other advantages. Often, they lead to increased competition -- especially when

compared to command-and-control regulations, where a government permit held by firms already in a market may represent a significant barrier to entry by new firms.

### EXAMPLES

The Federal Aviation Administration and the Civil Aeronautics Board place limits, for safety reasons, on the rate of landing and takeoffs at the most congested airports. "Landing slot" permits are now allocated by a discretionary process by committees of airline representatives. This procedure can prevent access to the airport by new carriers. However, if landing fees were charged instead, there would be no restriction of entry by new firms willing to pay the fees.

In some areas of the country that do not yet meet air quality standards, new firms that are potentially heavy emitters of pollutants cannot now obtain operating permits. However, with an emission fee system, all firms, both old and new, would be equally able to operate upon payment of the fee, which would be set high enough to keep overall pollution levels under control.

Because a monetary incentives system shifts decisionmaking from the regulatory agency to the impersonal private market, adversarial relationships between government and industry (or any regulated entity) are reduced. Similarly, this type of regulation may be much less intrusive into management decisions than command-and-control regulation and allows greater flexibility to firms in responding to public goals.

\* \* \*

### WHAT ARE THE GENERAL LIMITATIONS OF THE MONETARY INCENTIVES APPROACH?

There are two generic practical impediments to the use of various types of monetary incentives. First, it is rarely easy to know exactly what the correct monetary fee should be. Second, monetary incentives may be harder to implement if greater monitoring precision is necessary.

## Setting Appropriate Incentive Levels

A major difficulty in designing and operating a monetary incentives scheme is in determining the appropriate level of the monetary payment. Because externalities are, by definition, outside the market system (there are no "prices" to observe) and because they include abstract, but real, effects (like aesthetic impacts and psychological stress), they may be hard to quantify objectively. Unlike command-and-control regulation, where private activity is directly specified, the possibility that the monetary incentive will cause too little or too much private sector change may not be known until the system is in operation, raising the possibility that administratively difficult adjustments will be needed.

For the case of pollution control, one partial solution is to use industry compliance-cost data to estimate the effects of different fee levels on compliance behavior. Since industries will reduce emissions only when the costs of reduction are less than the fee, it is possible to use compliance-cost data to estimate the effects of different fee levels on the amount of overall pollution reduction. (A separate analysis is still needed to determine what levels of reductions are socially appropriate.) However, such procedures are likely to be imprecise, and trustworthy industry cost data may be difficult to obtain. Because of the approximation involved in setting the fee initially, experimentation with the fee level may be necessary.

A second important drawback of a monetary incentives scheme is the potentially higher cost of monitoring and enforcing the system. Because a monetary incentive is a payment that depends on some type of action being taken or some level of behavior being followed, extensive monitoring may be necessary to ensure that the particular level or behavior is in fact being followed. For example, with a pollution emission fee system, it is necessary to monitor the amount of pollution emissions with some precision, because the fee is based on it. In comparison, monitoring a uniform mandatory standard only requires verification that emissions are somewhere below the standard.

However, not all types of monetary incentives schemes require extensive enforcement and monitoring.

### EXAMPLE

If the Federal Aviation Administration were to charge landing fees to control airport congestion, the cost of determining who lands at which airport is likely to be small.

## WHAT ARE THE DIFFERENT TYPES OF MONETARY INCENTIVES?

The remainder of this guidebook presents five major types of monetary incentives and discusses their existing and potential applications. The five varieties are, obviously, conceptually similar -- but they vary widely in their administrative ramifications.

### 1) Fees

A fees system levies a charge based on the level of a given activity rather than setting a mandatory standard to specify or limit the activity. The best known example of a fee system is a pollution emission fee, where a charge is levied for each unit of pollution discharged. Under such a system, firms find it profitable to reduce pollution as long as the costs of reducing pollution by a unit of emissions are less than or equal to the fee for that unit. Such emission fees have been proposed for a wide range of air and water pollution problems but have had few actual applications in the United States.

#### EXAMPLE

Some sewage treatment facilities charge users according to the volume of effluents discharged. This provides an incentive for firms to reduce their effluent discharge through alternative production techniques when such reductions cost less than the direct sewage treatment fee.

A somewhat unique type of fee is one that is refundable contingent upon a particular action.

#### EXAMPLE

Oregon and several other States have imposed deposits on all beverage containers to prevent littering. Since the deposit or fee is returned when the product is returned, it provides a monetary incentive to return the product rather than to dispose of it in a socially costly manner.

A novel application of the fee concept occurs in a system in which the regulated entity itself sets the fee level.

### EXAMPLE

The Civil Aeronautics Board let the airlines themselves decide the appropriate amount to compensate persons monetarily who were "bumped" because of overbooking. The only requirement was that the amount of compensation be high enough to ensure that enough persons in an overbooked flight would voluntarily take other flights. Thus, with this system, the airlines were free to overbook in a way that maximized their own profits but yet did no involuntary harm to any passengers.

The primary design problem of a fee system is that it may be difficult to determine the appropriate level of the fee. For example, if an emission fee is set too low, socially unacceptable environmental damage could occur. In addition, a fee system requires extensive monitoring to ensure that behavior consistent with the fee payment is being followed. Finally, uniform fee structures are not desirable when the damage caused by a particular activity varies greatly from time to time or from place to place. Although regulators can overcome this problem by using a complex fee schedule that accounts for these differences, such a system may present high administrative costs. [Note: It is not clear that discretionary command-and-control regulation can provide better solutions to these three problems.]

User Fees are a special class of fees. User fees may be used as a substitute for regulation in the allocation of government-owned and government-created resources. This type of fee has less to do with internalizing externalities than making these resources provide the maximum possible values to society. For example, both the broadcast spectrum and landing slots could be allocated by a fee system instead of by discretionary regulation. Relying on user fees as an alternative to command-and-control regulation may lead to a much more efficient allocation of scarce resources.

User fees have been applied in an extremely wide variety of situations, including charges for mail delivery, sewage treatment, recreational facilities, airports, roads, bridges, industrial use of government-owned land, and government-provided health insurance. User fees work well when individual users of a public service or facility can be identified and monitored at low cost.

## 2) Adjustable Monetary Penalties for Noncompliance

Sliding-scale penalty systems (as opposed to flat fines) may be used to fashion more rational incentives in enforcing command-and-control regulations. As noted above, the ideal penalty is set equal to the expected social harm caused by the violation.

### EXAMPLES

The Environmental Protection Agency will assess nonconformance penalties on the manufacturers of heavy-duty engines that do not meet emissions requirements. The size of the penalty increases in proportion to the degree of nonconformance. This provides an incentive for manufacturers to bring their engines into conformance without threatening drastic sanctions for minor violations.

The Department of Labor's Mine Safety and Health Administration uses monetary penalties to enforce health and safety standards in mines. The magnitude of the penalty increases with such factors as the severity, frequency, and dangerousness of the violation. These monetary penalties provide an incentive for operators to maintain safe mines.

The Environmental Protection Agency has proposed monetary noncompliance penalties to reduce industrial air pollution. However, these penalties are calculated to recover the costs that a pollution source avoids by not complying promptly with the Clean Air Act requirement, instead of to reflect measure of the actual damage done.

Adjustable penalties have the same general advantages as all types of monetary incentives: they reduce the costs of achieving regulatory goals, foster competition, lower administrative costs, and allow for compliance flexibility. In addition, some would argue that they are more equitable, in the sense that everyone would pay the same price per unit of noncompliance, and none would be faced with costs in excess of the expected social damages resulting from their actions.

However, flat fees may be easier to administer than formula-based sanctions, and they provide somewhat clearer signals to firms. There may be some concern that monetary penalties will

provide weaker incentives than are needed because the expected value of the fine is less than the fine itself, or because there is a chance that a violation will go undetected, or the agency will fail to bring a successful enforcement case against a violator, or the agency will settle the case for a lower amount to avoid the high costs of formal enforcement proceedings. While in theory the fines could be adjusted upward to compensate, this is obviously an area that is hard to capture in reliable numbers.

### 3) Tax Incentives

Tax incentives usually take the form of either tax credits or tax deductions. They are given to firms or individuals that take some action or make certain expenditures that are consistent with regulatory goals. Similarly, special tax rates can be used to discourage certain types of behavior. Conceptually, tax credits or deductions are tantamount to subsidies or cash payments, and special taxes are similar to fees and penalties, except that the existing tax collection system is used to administer the payments or collections. Tax incentives have had an extremely wide range of uses; in fact, the formidable Federal income tax code itself could be construed as a scoreboard of past attempts to provide monetary incentives for various regulatory purposes, ranging from supporting charities to insulating one's home. Tax incentives for firms also have been used for a wide range of activities, from supporting pollution control projects to the hiring of disadvantaged persons.

Higher taxes also are imposed on firms engaging in activities that are deemed to be socially undesirable.

#### EXAMPLE

The Internal Revenue Service has established an excise tax on the sale of "gas guzzler" passenger cars, pursuant to the requirements of the Energy Tax Act of 1978, that is intended to discourage the manufacture and purchase of such cars. Such a tax would be economically justified if the price of gasoline is judged to be less than its true social opportunity cost. Such an incentive scheme is probably far less costly to the economy than an outright ban on the manufacture and sale of low-mileage cars.



The major relative advantage of the tax incentive approach is that the administrative apparatus of the tax system is in place and can be used at a relatively low agency and corporate cost compared to a separate payment and collection system.

The main analytic difficulty with taxes is determining the appropriate level and type of tax incentive to obtain the desired results. Anomalous incentives that complicate this determination may also crop up: for example, tax deductions are not valuable to firms that have no profits. In addition, certain types of tax incentive schemes favor capital-intensive approaches (because capital costs can be deducted but labor costs cannot), which may be economically inefficient.

Some agencies have encountered institutional snags in using the tax system for regulatory purposes. One is the practical problem that, despite numerous past exceptions, the key Congressional committees will resist changes in the tax code for purposes other than revenue generation. This is particularly true for those changes that they perceive as potential new loopholes for taxpayers. The Internal Revenue Service may also prefer to avoid tax schemes that involve specialized expertise (e.g., determining what pollution control designs qualify for tax credits) that exists only in the regulatory agency. Some coordination between dissimilar Federal agencies will thus be required.

#### 4) Establishment of Liability: Warranties, Bonds, and Insurance

As an alternative to the regulatory agency directly providing monetary incentives, it is possible to create such incentives without involving the government in payments to or from firms.

Several mechanisms can be employed to internalize the spill-over costs of private actions and therefore provide incentives to reduce them. Reliance on mechanisms, such as assigning legal liability for actions with harmful consequences, requiring warranties for manufactured products, and requiring insurance coverage or the posting of performance bonds, may be a useful alternative to the use of both command-and-control regulatory techniques and government-conferred monetary incentives.

The legal system, by the the assessment of monetary damages for actions causing harm to others, provides powerful incentives for avoiding such harm. The payment of a monetary court award to compensate persons for damages caused by others is one of the oldest means of internalizing costs and encouraging reasonable standards of conduct to prevent liability. The threat of litiga-

tion and the possibility of having to pay damage awards provides a monetary incentive to take action (e.g., make products safer, reduce risk of injury) to avoid liability. Several major product-liability suits may be as effective in keeping an unsafe product off the market as regulatory commands.

A large body of case law defines the type of evidence the damaged party must present and the situations where tort suits may successfully provide compensation. However, if the legislature believes common law remedies are inadequate, uncertain in compensating victims, or ineffective in achieving social goals, it can assign liability by statute.

### EXAMPLE

The Outer Continental Shelf Lands Act Amendments of 1978 (PL 95-372) created strict liability for owners and operators of vessels and offshore oil facilities that cause oil spills. By assigning liability, a powerful monetary incentive is created to prevent oil spills.

In addition, through the enforcement of mandatory product warranties, the legal system assigns responsibilities and ensures that manufacturers and sellers of products causing damage bear the cost of the damage.

### EXAMPLES

The Uniform Commercial Code (UCC) creates remedies in product-liability cases and supplements those available through common law. The UCC creates implied warranties of merchantability and use: the seller warrants that the merchandise is fit for sale and normal intended use (Sections 2-314 and 2-315) and may be sued by the buyer for breach of warranty if the product does not perform properly and/or causes damages.

The Clean Air Act (Section 207(b)) requires vehicle manufacturers to provide an Emissions Performance Warranty for each vehicle. The warranty requires the manufacturer to repair, at no cost to the owner, any emission control device that fails an EPA-approved test within any established time period. This provides an incentive to manufacture efficient and reliable devices that will not require repairs.

The major advantage of assigning liability is that it moves almost all decisionmaking from the regulatory agency to the private market and existing legal system. However, to provide the proper incentives, the legal system must have a reliable means for 1) determining who is liable or responsible, 2) setting appropriate damage awards, and 3) ensuring that compensation is paid. The costs of determining liability and obtaining compensation must be small compared to the compensation received, or there would be a distorted incentive for a damaged party to bring suit. The major potential shortcomings are: the possibility of prohibitive litigation expenses, difficulties in proving liability (e.g., it may be very difficult to prove causation), and uncertainty about collecting damage award payments. Mandatory insurance and the posting of performance bonds are two widely used mechanisms for ensuring that compensation is paid.

### EXAMPLES

Some States require mandatory automobile liability insurance to ensure that drivers will be able to provide monetary compensation when they cause damages.

The Mine Safety and Health Administration requires firms engaged in strip mining to post performance bonds to guarantee that they will have the financial resources to pay for reclaiming the land after the mining is completed.

Such liability insurance serves to internalize costs to the extent that it links the inherent risk of the activity and the dollar amount of premium payments. Similarly, performance bonds act as a monetary incentive for good behavior because they are generally forfeited only in cases of wrongdoing.

In fact, the relevance of insurance practice to regulation extends beyond the use of mandatory liability insurance to ensure financial responsibility. In most areas of health and safety regulation, for example, there is already a system of insurance incentives in place. These constitute a "natural" system of monetary incentives to internalize costs or reduce risks. Ways in which insurance incentives can soften the need for regulatory interventions are just beginning to be understood.

Some examples will demonstrate the potential connection to regulatory objectives:

## EXAMPLES

Fire and casualty insurers put heavy emphasis on prevention. Insurance premiums -- and whether a facility is insurable at all -- depend, in part, on management steps to prevent losses. In addition, insurers themselves provide loss prevention experts to clients. Such private practices protect the general public.

Workman's compensation insurance rates are, in part, experience-rates; that is, next year's rates reflect last year's claims. This makes it in the insured's firm's monetary interest to promote worker safety. (However, experience ratings are generally done for an industry, not a firm, which significantly dilutes an individual firm's safety incentive.)

Some automobile insurers have begun to give lower rates for car models that, based on loss data, appear to cause and sustain less damage. This gives at least a modest monetary incentive to car buyers to comparison shop, which sends signals back to car designers. (Similarly, nonsmokers' rates for life insurance represent a monetary incentive for avoiding a personal risk factor; and "good driver" rates for auto insurance reward safer drivers or, more precisely, avoidance of reported accidents.)

Some insurers have begun to rely on "environmental audits" of the adequacy of the risk-related management activities of clients, ensuring that risks are understood and controlled before they write policies.

In general, however, two major factors keep insurance incentives from aligning well with public programs. First, despite the above exceptions, premiums are not systematically set according to or portrayed to buyers reflecting relative risk. For example, product liability insurance rates are set for general product classes, but are not typically adjusted to accommodate the best-designed or worst-designed safety features within the class.

Second, the insurance system generally depends on the tort system to resolve disputes. This introduces the mediating factors of delay, cost, and uncertainty into the incentive system, since the ultimate awards (and subsequent cost pressures) in disputed cases may depend on formal trials and decisions by lay persons instead of risk experts.

Despite these complications, however a regulator may find that, in particular cases, improvement of monetary incentives in the insurance system will prove superior to detailed Federal regulation.

#### 5) Grants, Subsidies, and Payments

Grants, subsidies, and payments generally are funds provided by the government (usually through legislation) to the regulated entity or persons affected by the regulated activity for the purpose of encouraging behavior that is consistent with the goal of the regulation.

Capital grants are made by the Federal Government to States, counties, and municipalities to finance public works projects such as sewage treatment facilities, highways, mass transit systems, hospitals, and educational facilities. The monetary justification for such grants is that the benefits from many types of public projects "spill over" into communities other than those where the project is located. Thus, an individual community does not have adequate incentives to provide an optimum level of public goods or services.

#### EXAMPLE

A sewage treatment plant in San Jose, California has inadequate treatment capacity and occasionally discharges untreated sewage into the San Francisco Bay. This adversely affects the entire Bay Area. Presumably, the cost of correcting this exceeds the value to San Jose alone, but not the value to the entire Bay Area community, which includes international ports and harbors, as well as Federal naval facilities. A grant could provide incentives for San Jose to internalize its external pollution effects.

One advantage of capital grants is that they are relatively easy to administer. In addition, the size of the grant often depends on the amount of funds independently raised by the recipient. Such a "matching funds" system provides an additional incentive for the local agency or government to raise funds.

#### EXAMPLE

Sewage treatment grants may reimburse qualifying communities 75 percent of the costs for regular construction or 85 percent for the use of inno-

vative technology. This sort of system provides an explicit monetary incentive for the development of innovative ways to recover energy, reuse water, and reduce pollution. Innovative projects are also subsidized because of the possibility that the new techniques developed will have wide applicability and thus benefit other future facilities.

One risk of capital grants is that qualitative grant conditions may distort the use of funds, which may result in inefficient facilities that operate at higher total costs than they otherwise would.

### EXAMPLES

Capital grants generally provide funds for construction (i.e., capital expenditures), but not for operation and maintenance (e.g., labor). This may result in a perverse incentive that distorts the capital-labor mix and results in higher total costs of operation.

Another well proven drawback of grants programs is a tendency, once established, to drift away from their original rationale (e.g., to correct for externalities) and to become popularly perceived as instruments of Federal economic assistance to localities or regions, so that the costs to the economy grow well beyond benefits provided. Some claim, for example, that the multibillion dollar sewage treatment grants have fallen into this pattern.

### Subsidies and Payments

Subsidies and administrative payments comprise another type of monetary incentive scheme that encourages behavior consistent with the goals of regulation. Conceptually, they are closely related to taxes and fees, but seem to be used less commonly because they must appear explicitly in agency budgets. There is a monetary justification for subsidies for activities whose benefits cannot be fully enjoyed by the firm or individual engaging in the activity that generates the benefits. In such cases, without subsidies there are inadequate incentives to engage in the socially optimal level of the activity.

### EXAMPLE

The Civil Aeronautics Board has developed a subsidy scheme to ensure that "essential" air transportation is provided to small communities that had air service before deregulation but otherwise would be without air service after deregulation. One justification for this type of subsidy is that the social benefits of having air service exceed the private benefits.

Another form of subsidy is an indirect subsidy, in which the government either provides services for free or expedites some administrative or regulatory action if the regulated entity's behavior meets a given requirement.

### EXAMPLE

The Environmental Protection Agency has an accelerated pesticide approval procedure for firms that meet certain requirements regarding the chemical composition (e.g., "biological" substances that as a class pose no threat to organisms other than the target pest) of new pesticides. Since the lengthy process of approving new pesticides is economically costly, EPA's accelerated schedule is conferring monetary benefits on firms that develop biologically safe pesticides.

Subsidies also may be used as a form of compensation to persons experiencing harm from a negative externality.

### EXAMPLE

The Environmental Protection Agency has proposed that communities and individuals receive monetary or other kinds of compensation if a hazardous waste management facility were to locate near them. The facility would then seek to locate in a community with lower compensation demands (presumably reflecting less perceived risk to the communities). This system would provide an incentive for a facility to locate where it causes the least potential harm and places the siting costs on the facility.

Another type of subsidy is a procurement incentive in which the government buys products that satisfy some regulatory goal at a higher price.

### EXAMPLES

The Government has paid a premium for lawnmowers that are quieter than the Government's normal standards.

Similarly, the General Services Administration is developing a Federal procurement regulation that will allow Federal agencies to pay a premium price for certified low-noise products.

It is hoped that this procedure will, by creating an early and visible market demand for a new type of product, lead to the first few innovations in noise control technology that eventually will reduce the lawnmower price differential associated with the regulatory goal. The Government did not intend, however, to trigger immediate changes in private consumption of these products.

Subsidies must be designed with care to avoid unintentionally attracting new entrants into the regulated activity purely to take advantage of the subsidy.

### EXAMPLE

Consider payments to residents of a community where a hazardous facility actually located under the type of compensation program described previously. If payments were made to all residents over a period of time, this would provide a perverse incentive for persons to move to the community. To avoid this problem, payments should be based on characteristics not readily changeable by behavior. For example, payments could be made only to persons who were residents at the time the initial bid for compensation was made.

Subsidies or payments also should be designed so that the most economically efficient means of reaching a regulatory goal are used. For example, a subsidy on pollution control equipment purchases may prove inefficient if it induces firms to buy more hardware instead of selecting a pollution-control strategy that minimizes overall costs (including labor and operating costs as well as equipment costs).



## PART II

### AGENCY EXPERIENCE

This section gives detailed descriptions of 18 examples of monetary incentives currently in place or under active consideration by agencies. The examples show the rich variations in the way that agencies use monetary incentives. These examples are included for illustrative purposes only; no attempt has been made to evaluate the merit of each action.



## DEPARTMENT OF HEALTH AND HUMAN SERVICES

### CONGRESS DIRECTS HCFA TO PROVIDE GREATER INCENTIVES TO REDUCE KIDNEY DIALYSIS TREATMENT COSTS

The Social Security Amendments of 1972 (P.L. 92-603) extended Medicare coverage to include treatment of all kidney dialysis patients in need of it. This action was taken because the annual dialysis treatment costs were beyond most patients' financial capabilities.

Although the kidney dialysis program has been successful in protecting renal disease patients against the catastrophic costs of needed care, expenditures have steadily increased from \$228.5 million in 1974 to about \$997.4 million in 1979. These annual totals for kidney dialysis program expenditures represent total Medicare expenditures, including physicians services, kidney transplantation costs, inpatient and outpatient dialysis, training, and all other covered non-renal related care. The program currently provides Medicare coverage to the more than 45,000 people dependent on dialysis.

Most outpatient dialysis is provided by hospitals or independent dialysis facilities. For purposes of payment for outpatient maintenance dialysis treatments, the Health Care Financing Administration (HCFA) presently reimburses hospitals 80 percent of their reasonable costs, up to a national payment limit of \$138 per treatment. HCFA reimburses independent dialysis facilities 80 percent of the reasonable charge per treatment, up to the same payment screen of \$138 per treatment. Both hospitals and independent facilities may request and either be granted or denied exceptions to these limits.

HCFA has separate rules for reimbursing self-dialysis done in the beneficiary's home. In addition to the different reimbursement methods of outpatient dialysis facilities, for home dialysis services, facilities may enter into a target rate or 100 percent reimbursement agreement with HCFA.

According to HCFA's data, hospitals consistently incur higher dialysis costs than independent facilities. The labor costs for hospitals average about 30 percent higher than for independent facilities, and the average costs for supplies, overhead, and other expenses are about 13 percent higher. As a result, hospitals routinely request and receive exceptions, and their average reimbursement has risen to \$159 per treatment. The independent

facilities rarely request exceptions and their average reimbursement has remained at \$138 per treatment. It appears that independent facilities have developed cost-saving technology, drawing increasing numbers of patients away from hospitals. The increasing number of routine exceptions for hospitals exceeding the \$138 ceiling accentuates the inefficiency of the current reimbursement program. Although the reasonable-charge methodology offers the independent facilities an incentive to keep costs down, the reduced costs do not benefit the Government. Moreover, there is no real monetary incentive for hospitals to reduce cost.

In accordance with the End-Stage Renal Disease Program Amendments of 1978 (P.L. 95-292), in September of 1980 HCFA proposed to establish a "prospective" reimbursement rate for outpatient dialysis and self-care dialysis training. The HCFA payment would be 80 percent of this rate. The proposal would establish or formalize the differential treatment of hospitals and independent facilities, setting the reimbursement level at the median of the average cost per treatment of all facilities in that group. Both types of facilities would be paid a set fee without regard to actual costs, with exceptions granted for unusual circumstances. The prospective rate for each type of facility would be paid by HCFA even if the treatment costs fell below that rate. HCFA felt that allowing a facility to keep this excess payment would provide an incentive to lower costs and increase efficiency. Moreover, if a facility was required to return a portion of its cost savings to HCFA the incentive to reduce its costs would be diminished substantially. The result would be that hospitals and independent facilities furnishing services that cost more than the median cost would lose money if they did not bring their costs down. Every facility would have an incentive to reduce costs, because it would be permitted to keep the difference between the cost of the services it furnishes and the median cost to all facilities. As facilities reduce their costs, the median cost should be lowered, resulting in cost savings to the taxpayers. Standards to ensure the continued quality of care would remain intact.

In November 1980, the Council on Wage and Price Stability (CWPS) suggested that the proposed regulation had serious flaws that would not foster competition or bring costs down. CWPS argued that HCFA's proposal would allow hospitals to reassign excess costs to other Medicare programs that reimburse in a similar manner. CWPS felt that there were too many exceptions that HCFA could grant to hospitals claiming excess costs and that the number of exceptions would be large enough to raise the average reimbursement above present levels. All dialysis services costing below the median would automatically be paid the median, while those above the median might be eligible for exceptions. In addition, CWPS felt that the separate reimbursement rates for hospitals and independents would be a mistake. If hospitals

charge more, merely because they pay higher wages or have greater overhead, they should be offered no higher fee than independent facilities and should be discouraged from providing dialysis treatment if they cannot do it efficiently. This would foster and encourage competition. CWPS concluded that if a fixed-fee system were to be instituted, regulation of entry (by new dialysis operations) would only increase costs by preventing competition from newer low-cost providers.

Congress addressed this reimbursement problem through passage in the Omnibus Budget Reconciliation Act of 1981, (P.L. 97-35), Section 2145 of the Act authorizes the Secretary to issue regulations on a prospective payment system designed to establish separate composite rates for hospital-based and independent facilities. Each composite rate is to be based on a weighed formula that takes into account the proportion of patients on facility-dialysis and on home-dialysis and the relative costs of providing services in these two settings. The statute also includes an option to use other methods of reimbursement, provided the alternative method selected differentiates between hospital-based and free-standing facilities, provides greater incentives for increased use of home dialysis, and encourages more efficient delivery of dialysis services.

Because home (or self-administered) dialysis is significantly less expensive than institutional dialysis, Congress wanted HCFA to promote the use of this mode of treatment. In other words, facilities will be given an incentive to send patients home.

HCFA is currently developing proposed regulations to reflect this legislative mandate but it is uncertain how the system will actually operate.

Cite: 42 CFR Part 405; 45 FR 64008, September 26, 1980;  
Public Law 97-35, Section 2145.

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## DEPARTMENT OF INTERIOR

### OSM REQUIRES PERFORMANCE BONDS FOR SURFACE COAL MINING AND RECLAMATION OPERATIONS

The Office of Surface Mining Reclamation and Enforcement (OSM) is responsible for requiring all applicants for surface mining permits to file a performance bond to ensure that they can meet their reclamation responsibilities, and to establish liability for all reclamation operations within the permit area.

The requirement for performance bonds for all surface mining was part of a Congressional attempt to establish a nationwide program to protect the public and the environment from the adverse effects of surface coal mining operations and surface impacts of underground coal mining operations. Congress also instructed OSM to ensure that adequate procedures are undertaken to reclaim surface areas as contemporaneously as possible with surface coal mining operations, and to ensure that mining firms are financially able to fund reclamation so that, in the case of default, the public is assured that the reclamation is completed without the use of public monies.

To achieve these goals, all surface coal mining and reclamation permit applicants must file with the appropriate State regulatory authority a bond for performance, payable either to the United States or the particular State involved, and conditioned upon faithful performance of the mining permit and all requirements of the Surface Mining Control and Reclamation Act of 1977.

The bond covers the land within the permit area upon which the operator will initiate and conduct surface coal mining and reclamation operations within the initial term of the permit. As succeeding increments of surface coal mining and reclamation operations are to be initiated and conducted within the permit area, the permittee must file with the regulatory authority an additional bond or bonds to cover such increments. The amount of the bond required for each bonded area depends upon the reclamation requirements of the approved permit; the amount also must reflect the probable difficulty of reclamation, giving consideration to such factors as topography, geology of the site, hydrology, and revegetation potential. The amount of the bond must be sufficient to assure the completion of the reclamation plan if the work had to be performed by the regulatory authority in the event of forfeiture. The amount of the bond, which is set by the Regulatory authority, may not be less than \$10,000.

The bond must be executed by the operator and a corporate surety licensed to do business in the State where such operation is located. However, the operator may elect to self-bond, in which case certain conditions must be met; or the operator may elect to deposit cash, negotiable bonds of the United States Government or the particular State, or negotiable certificates of deposit of any U.S. bank. The cash deposit or market value of such securities must be equal to or greater than the amount of the bond required for the bonded area.

Under the reclamation bond program, operators are required to reclaim mined land in accordance with their approved reclamation plan to obtain release of the bond. If the operator intends to remain in the mining business and move on to other mining sites, he will need to develop and maintain a good reclamation record so that a surety company will underwrite bonds for him for future operations.

The bond or collateral is posted in an amount sufficient for the regulatory authority to complete the reclamation plan if the operator is unable to. The cost of reclamation to the regulatory authority would be higher than the cost to the mine operator, because the regulatory authority would have to bring equipment to the site, whereas the operator would complete reclamation with equipment already located at the site. Administrative costs are also added to the regulatory authority's costs, so that the work may be contracted out if necessary. Therefore, it would be less costly for an operator to complete the reclamation plan and obtain release of his collateral than to forfeit the collateral bond, since collateral is posted in an amount which exceeds operator costs of reclamation.

Liability under these performance bonds continues until all required reclamation, restoration, and abatement work has been completed and the permit terminated by release of the permittee from any further liability. In addition to the period necessary to achieve compliance with all requirements of the Act (and related regulations, including the standards for the success of revegetation) the period of liability under the performance bond continues for a minimum period beginning with the last year of augmented seeding, fertilizing, irrigation, or other work. The period of liability begins again whenever augmented seeding, fertilizing, irrigation, or other work is required or conducted on the site prior to bond release.

Although performance bonds are effective monetary incentives, OSM recently proposed a revision of the rules to give greater flexibility to State regulatory authorities in implementing the program.

The amendments were in response to extensive criticism of the OSM rules by both the industry and the State agencies that administer the rules. The rules were criticized by State agencies because local and State laws governing bond, sureties, and insurance were not allowed to operate effectively. Critics of the rules also complained that local reclamation techniques and professional practices were hindered by unnecessary Federal regulations.

Cite: 30 CFR Part 800; 44 FR 15385, March 13, 1979.

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## DEPARTMENT OF LABOR

### MSHA USES INCENTIVE-BASED CIVIL PENALTIES TO ENFORCE HEALTH AND SAFETY STANDARDS IN MINES

The Mine Safety and Health Administration (MSHA) enforces mandatory health and safety standards for coal and other metal/nonmetal mining industries. To ensure maximum compliance with these standards, the agency is empowered to assess a civil penalty of up to \$10,000 for each violation and up to \$1,000 per day for failure to abate a violation within the specified time.

The imposition of these civil money penalties is intended to promote the regulatory objective of improving the working environment of the Nation's miners by encouraging compliance with the Mine Safety and Health Act. Although MSHA establishes traditional command-and-control safety and health standards, it uses an incentive-based monetary penalty to enforce them. The magnitude of the penalty increases with such factors as the severity, frequency, and dangerousness of the violation.

In a December 1979 Columbia Law Review article entitled "The Assessment And Mitigation of Civil Money Penalties By Federal Administrative Agencies," Colin S. Diver characterizes the MSHA penalty formula as an attempt to isolate and measure the elements of the "harm" incurred by each violation of a standard. The formula separately assigns points for three such elements: the probability that a particular condition will cause actual harm, the number of persons endangered, and the severity of the harm likely to be experienced by the average exposed person. Although this approach involves arbitrary assignments of value, it has the positive effect



of directing enforcement officials to individual elements by which total harm might be determined. This approach is tailored to those situations where the harm is potential rather than actual.

In determining the amount of the penalty, MSHA is required by statute to consider the following six factors: the operator's history of previous violations; the appropriateness of the penalty to the size of the business of the operator charged; whether the operator was negligent; the effect on the operator's ability to continue in business; the gravity of the violation; and the demonstrated good faith of the person charged in attempting to achieve rapid compliance after notification of a violation.

MSHA assesses most violations according to a method which specifies a range of "penalty points" to be assigned for each of five statutory factors: size of the operator's business; history of previous violations; negligence; gravity; and demonstrated good faith in taking corrective action. A conversion table translates the number of points into a dollar figure. For example, 10 penalty points convert to a fine of \$20; 50 points convert to \$345; 75 points convert to \$1,250; 91 points convert to \$5,000; and 100 points convert to the maximum fine of \$10,000.

This system, developed and implemented in 1974, has proven to be an effective tool for assessing and collecting civil penalties. It has also been widely accepted by the mining industry as a fair method of carrying out the general requirements of the Act. Although there have been no formal studies conducted on the impact of the assessment program in improving safety and health in mines, MSHA believes that the reduction in the number of violations cited is at least in part due to the effectiveness of the civil penalty program. Spokesmen for the mining industry have also conceded that civil penalty incentives have encouraged greater compliance.

The Administrative Conference of the United States (ACUS) conducted a study of civil monetary penalties for Federal agencies in 1979 and published recommendations for a model civil penalty program that was largely based on the MSHA civil penalty system.

Cite: 30 CFR Part 100; 43 FR 235145, May 30, 1978;  
44 FR 38824, July 3, 1979 (ACUS model).

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## DEPARTMENT OF TRANSPORTATION

### MONETARY PENALTIES AND CREDITS USED TO ACHIEVE CORPORATE AVERAGE FUEL ECONOMY

The Motor Vehicle Information and Cost Savings Act (Title V) established a program to improve automobile efficiency in order to conserve energy. Under the Act, corporate average fuel economy (CAFE) standards were established for passenger automobiles beginning in 1978 and light trucks beginning in 1979. To discourage noncompliance with the standards and encourage manufacturers to exceed the standards, the title provides a system of penalties and credits. Penalties are assessed against manufacturers that fail to comply with applicable fuel economy standards.

The penalties are assessed at a rate of \$5 per vehicle for each tenth-of-a-mile per gallon by which the average fuel economy of a manufacturer's vehicles falls short of an applicable standard. Credits for exceeding the standards are earned at the same rate. Although these penalties are assessed for each model year that the standard is not met, the law allows these penalties to be offset by credits earned in any of the three preceding or three subsequent years. In other words, it is not a "violation" to fall below the standard in any one year as long as sufficient credits are earned within the two 3-year time periods. This allows manufacturers with slower implementation of fuel economy technology to "catch up" without experiencing additional economic hardships.

This system also provides rewards or incentives for technological innovations that enable the manufacturer to exceed the required standard. The credits earned in a "good" year may provide an incentive to achieve a high fuel economy since manufacturers will be able to rely on such credits to offset a technological setback or costly research and development failure.

This system of incremental penalties and credits demonstrated a Congressional intent to use a monetary incentive rather than a traditional "all-or-nothing" approach. The alternative traditional approach would have been to prohibit the sale of any vehicle not meeting the fuel economy standard. Congress rejected this alternative approach because it could have had catastrophic effects on the automobile industry, as well as the entire economy.

Although no manufacturer has ever paid a penalty under this system, it would be difficult to attribute their compliance solely to the

monetary penalties. Because of increased fuel prices and market demand for more fuel efficient cars, the effectiveness of the penalties is difficult to assess. Nevertheless, even during recent periods of high demand for large cars, CAFEs still increased for the U.S. manufacturers. This occurred throughout the time fuel economy standards were in effect. This indicates that the credits-and-penalties system has had the effect of promoting energy conservation.

Cite: 40 CFR Part 535; 45 FR 83233, December 18, 1980.

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THE OUTER CONTINENTAL SHELF LANDS ACT AMENDMENTS OF 1978 IMPOSE  
STRICT LIABILITY FOR OFFSHORE OIL POLLUTION

The Outer Continental Shelf Lands Act Amendments of 1978 (P.L. 95-372) created strict liability for owners and operators of vessels and offshore oil facilities that cause oil pollution. This internalizes the costs of cleanup, providing monetary incentives for better prevention.

This law applies to all owners and operators of offshore oil facilities and all vessels engaged in the transportation of oil that is produced from an offshore facility on the Outer Continental Shelf when such vessels are operating in the waters above submerged lands seaward from the coastline of any State, or the waters above the Outer Continental Shelf.

The establishment of strict liability is designed to be an incentive for oil rig and vessel operators to use more caution in avoiding accidents and oil spills. The statutory imposition of strict liability eliminates the need to prove common law negligence. Strict liability requires a higher duty of care (which is a legal concept that is established by local and case law) and is generally imposed by statute when the degree of danger or magnitude of damages warrants a stronger deterrent and more accountability. Although vessel and rig owners and operators are strictly liable for oil spills, the Act imposes a liability ceiling of \$250,000 for vessels and \$35,000,000 for offshore facilities, except when the incident is caused by willful misconduct, gross negligence, or violation of a Federal safety or operating standard. The vessel liability is lower because of its specific limited capacity, whereas an offshore facility could spill or discharge an unlimited amount over an extended period of time. The Act also removes the owner or operator from liability if the incident is caused solely by the negligent or intentional act of the damaged party or any third party.

Cite: Title III, Public Law 95-372.

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## FEDERAL MARITIME COMMISSION AND DEPARTMENT OF TRANSPORTATION

### USCG AND FMC ENFORCE FINANCIAL RESPONSIBILITY AND LIABILITY REQUIREMENTS FOR OFFSHORE OIL POLLUTION

The Outer Continental Shelf Lands Act Amendments of 1978 (P.L. 75-372) were enacted to ensure that certain types of economic losses resulting from oil pollution arising from Outer Continental Shelf (OCS) activities would be borne by the responsible parties. To accomplish this objective, Title III of the Act imposes liability for the consequences of oil pollution from offshore activities on the owners and operators of the sources of such pollution and also specifies requirements for evidence of an ability to meet that liability.

The responsibility for enforcing and administering Title III rests with the Federal Maritime Commission (FMC) and the United States Coast Guard (USCG).

The requirement for vessel and facility owners and operators to establish and maintain evidence of financial responsibility appears to have a dual purpose and effect. It is designed to be an incentive or inducement to promote safer handling and transportation of offshore oil, while guaranteeing to all concerned that damages from spills will be absorbed by those responsible. The statutory monetary liability to which an owner or operator of a vessel or an offshore facility is subjected is a significant risk factor that those who bid for leases or sell services on the OCS must consider. The rules provide that no vessel or facility may operate without obtaining liability coverage and demonstrating its ability to pay for damages it causes. The methods of establishing the financial responsibility may be by insurance, guaranty, indemnity, surety bond, or qualification as a self-insurer. Because the costs of these measures can be reduced through better spill-prevention safeguards, the rule provides a real monetary incentive scheme to serve both regulatory purposes. At the close of fiscal year 1980, 156 vessels carried valid Certificates of Financial Responsibility issued by the FMC. Applications involving an additional 16 vessels were being processed. Of those 156 vessels, 120 had been certified by FMC on the basis of commercial insurance coverage; 10 on the basis of self-insurance; and 26 on the basis of guarantees (similar to self-insurance). Of 1,124 facility applications received, 570 certificates were issued to owners or operators by the U.S. Coast Guard. The 554 certificates which are pending issuance are awaiting completion of owner/operator facility analysis. No penalties were assessed in 1980 for failure to obtain the appropriate vessel or facility certification.

The regulations required by Title III govern the establishment and maintenance, by the owner or operator of any vessel which uses an offshore facility, of evidence of financial responsibility that is sufficient to satisfy such vessel owner or operator liability for offshore oil pollution. The Federal Maritime Commission is responsible for the financial responsibility regulations involving vessels, while the Coast Guard is responsible for the regulations involving offshore facilities. The facility financial responsibility requirements are directed at providing the Coast Guard with an administrative process to verify and assure that the owner or operator of an offshore facility is a responsible party and has the financial ability to meet specific limits of liability. The financial responsibility certification process results in either the issuance or denial of a Certificate of Financial Responsibility. Failure to certify subjects an owner or operator of an offshore facility to a civil penalty not to exceed \$10,000. In the case of offshore facilities already on the OCS before the effective date of the financial responsibility regulations (March 17, 1979), failure to certify may ultimately result in requiring a particular owner or operator to cease conducting activities on the OCS with uncertificated existing facilities.

The Federal Maritime Commission issued regulations affecting persons who own and operate vessels carrying oil from offshore facilities above the Outer Continental Shelf. The Act also imposes upon such vessel owners and operators a new liability for damages and removal costs resulting from discharges of oil. Vessel operators are required to demonstrate that they are financially able to meet such potential liability, up to a certain limit, before their vessels may lawfully engage in any segment of the transportation of oil from an offshore facility above the Outer Continental Shelf. These regulations set forth the manner by which financial responsibility can be demonstrated to the Commission in accordance with the new law, and provide for the issuance of Certificates of Financial Responsibility, which must be carried aboard vessels and presented to officials of the U.S. Coast Guard upon request.

Approximately 400 oil spills occurred on the outer continental shelf in 1980. The maximum size of the spills was 80 barrels. This figure supports predictions that Title III oil spills would not be common occurrences. The infrequency of major oil spills on the continental shelf is indicative of unique problems that prompted the financial responsibility requirements. That is, major or significant spills are infrequent, but when they do occur, they tend to be catastrophic, i.e., involving hundreds of thousands or even millions of gallons of oil. Thus, any additional deterrent effect that the financial responsibility requirements will add is important but hard to analyze or measure statistically.

Cite: 33 CFR Part 135; 43 FR 56840, December 4, 1978;  
44 FR 16860, March 19, 1979 (USCG);  
46 CFR Part 544; 44 FR 16918, March 20, 1979 (FMC).

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## DEPARTMENT OF TREASURY

### IRS ESTABLISHES GUIDELINES FOR GAS GUZZLER TAX ON PASSENGER CARS

The Internal Revenue Service (IRS) has established Excise Tax Regulations on the sale of "Gas Guzzler" passenger cars, pursuant to the requirements of the Energy Tax Act of 1978. This Act reflects a Congressional concern that the annual energy consumption by passenger automobiles is too high.

The gas guzzler tax must be paid by a manufacturer on the sale of each new 1979 and later model year automobile which falls below certain statutory fuel efficiency standards. Tax tables were provided by the Energy Tax Act that assess gas guzzler taxes on the magnitude of deviation from the Corporate Average Fuel Economy (CAFE). The tables are constructed so that only significant deviations are subject to the tax, which is progressive. Generally, these standards start from 3 to 5.5 miles below the CAFE standard. For example, although the CAFE standard in 1982 is 24 mpg, a car with a fuel economy of 18.5 mpg is not subject to a gas guzzler tax, but a car with a fuel economy of at least 17.5 mpg but less than 18.5 mpg is subject to a \$200 tax. A 1982 car with a fuel economy of less than 12.5 mpg is subject to a \$1,200 tax.

The gas guzzler tax complements the system of penalties for noncompliance with CAFE standards. Although the 1975 Energy Policy and Conservation Act (EPCA) provides a system of fleetwide standards and penalties that is increasing the efficiency of new automobiles, along with consumer demand, Congress believed it was necessary to further discourage production and sale of inefficient automobiles by reducing consumer demand for such automobiles. While the mandatory CAFE standard discourages production of inefficient automobiles, many of these automobiles are still being manufactured. As long as a manufacturer meets the average fleetwide standards, he may continue to produce inefficient automobiles without penalty. The consumer demand for less efficient cars (i.e., generally cars with larger engines, substantial weight, and

energy consuming options) remains strong. This demand, it is believed, will encourage the future production of inefficient automobiles to the extent that the manufacturers could still meet the average fleetwide standards.

The primary rationale for the gas guzzler tax is that it would dampen demand for inefficient cars and thus provide the auto manufacturers with a further disincentive to produce inefficient cars. It was designed to have a particularly strong impact during the 1979-1985 period, when manufacturers will still have the latitude to produce a substantial number of inefficient cars because of the relative ease of meeting the fleetwide standards in these years.

While the EPCA noncompliance penalties, if imposed, would increase the cost of cars, they would do so on a fleetwide basis because there is no requirement that all of the increased costs be passed through to consumers who purchase the inefficient cars. In fact, in order to remain competitive with other manufacturers meeting the fleet average standard, a manufacturer subject to the penalty would probably have to absorb part or all of the penalty and refrain from passing it on to the consumer. The Energy Tax Act, however, requires that the gas guzzler tax be added directly to the individual sticker price.

Congress also felt that it was important for the tax to be highly visible to indicate to consumers that there is a serious energy problem and that the Congress has taken action to deal with it. When the consumer sees the amount of the gas guzzler tax shown on the car invoice, (as the Department of Energy, IRS, and Environmental Protection Agency will require) he will realize he is paying a premium (which, in many cases, is substantial) to purchase an inefficient car. The tax is generally posted directly on the price sticker of the car. Thus, consumers would be provided with a financial and, perhaps, psychological incentive to purchase more fuel-efficient automobiles.

Congress also felt that if individuals are to be permitted to purchase inefficient cars and impede the conservation effort made by others, they should as a matter of equity pay a considerable premium, or gas guzzler tax, for this privilege. The Act requires all revenues from this tax to be placed in a special "Public Debt Retirement Trust Fund" to reduce the national debt.

The primary objection to the imposition of this tax was voiced by manufacturers who argued that the CAFE penalties were designed to address this problem and that this additional tax was unnecessary and duplicative. Another argument is that the manufacturers are making adequate progress in fuel efficiency technology and that in a very short time only a small number of very expensive luxury cars



would be affected by the tax. Thus a person buying a car costing \$100,000 or more would not be deterred by a tax of one or two thousand dollars. The energy savings would also be inconsequential if the number of cars affected were low.

Cite: 26 CFR Parts 48 and 136; 45 FR 8589, February 1980.

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## ENVIRONMENTAL PROTECTION AGENCY

### EPA EXPEDITES THE REGISTRATION OF BIOLOGICALLY SAFE PESTICIDES BY PROVIDING FINANCIAL ADVANTAGES

The vast majority of the more than one thousand pesticide active ingredients regulated by Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) are manmade organic and inorganic chemicals and are innately toxic to many species. Less than one percent of the pesticide active ingredients registered by EPA are inherently different in that they affect the target pest in a particular way. EPA calls these pesticides "biorationals" and divides them into two categories. The first group, microbial agents, is exemplified by living or replicable biological entities, such as viruses, bacteria, fungi, and protozoans. These products control target pests by causing death in the target pest. The second group includes naturally occurring biochemicals, such as plant growth regulators and insect pheromones and hormones and also function by modes of action other than toxicity. For example, pheromones can disrupt mating by their action as sex attractants.

Biorationals are especially advantageous as long-term agents that can eventually result in regional control of a certain pest. Used in this manner, they eventually may be substituted for the conventional pesticides, which frequently pose hazards to humans and the environment and must be continually applied.

In 1979, EPA proposed an alternate registration process for this group of naturally occurring biorationals. EPA's new policy is intended to promote the registration of new biorational pesticides by reducing the costs and delays of registration. EPA recognized that biorational control agents pose lower potential risk than

conventional pesticides because of their non-toxic mode of action and their natural occurrence.

EPA proposed to expedite the registration of these biorationals by minimizing the costly and time consuming conventional testing requirements. Although biorational registrants will not be relieved of the burden of proof of their safety, EPA will expedite the registration process by assuring that the registration requirements are appropriate to their nature and are not unduly burdensome. Priority will also be given to innovative biorational controls in the registration process.

This "fast tracking" alternative registration process creates a monetary incentive to develop these biorational pesticides because it reduces the costs normally involved with new pesticide development and testing. The administrative delays and paperwork are also reduced, creating monetary advantages through a regulatory preference. This regulatory preference is similar to a monetary subsidy to manufacturers of these biorationals. The practical effect of this is that the conventional registration process, which can take up to a year or more, can frequently be reduced to 2 or 3 months. Manufacturers have viewed this process favorably and it has gained international attention as a pioneer concept.

Cite: 40 CFR Part 162; 44 FR 28094, May 14, 1979.

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#### EPA PROVIDES GRANT INCENTIVES FOR THE CONSTRUCTION OF INNOVATIVE MUNICIPAL WASTE TREATMENT FACILITIES

The Clean Water Act of 1977 includes a monetary incentive scheme to encourage the use of innovative and alternative technology in the Environmental Protection Agency's multi-billion dollar municipal wastewater treatment construction grants program. There was concern that sewage treatment regulation provided systematic disincentives to the development and use of new, more cost-effective ways of cleaning up our waterways. For example, if a municipality tried a new approach that promised cost savings but later proved to fall short of Federal standards, it faced the prospect of paying for a new replacement treatment system.

The Innovative and Alternative Technology Program was established by Congress to allow increased grant assistance to qualifying

communities for the construction of wastewater treatment facilities. The program provides a monetary incentive for planning, designing and constructing municipal treatment facilities that represent an advancement of the state-of-the-art technology and promote national policy goals regarding energy and pollution. These goals include greater recycling and reuse of water, nutrients, and natural resources; increased energy recovery and conservation, reuse, and recycling; improved cost effectiveness in meeting specific water quality goals; and improved toxics management.

The new program is a modification of the Federal Construction Grants Program, with several important added features, such as 85-percent grants for the construction of innovative or alternative municipal treatment technologies instead of the normal 75-percent grants. The 10-percent grant increase will be paid out of a special fund set aside annually from each State's allocation that can only be used for innovative/alternative technology as defined by EPA. The principal difference between alternative and innovative wastewater treatment technologies is the degree to which they have been developed and implemented. Alternative wastewater treatment processes and techniques are those that have been proven and used in actual practice. Innovative processes and techniques are developed methods which have not been fully proven under the circumstances of their contemplated use. The goal of achieving greater recycling and reclamation, however, is clearly an objective of both innovative and alternative technologies. If a new innovative/alternative technology fails to meet design goals during the first 2 years of operation, another grant may be awarded for 100 percent of the costs of replacing or correcting the failed system. This means the local government and the local taxpayers will not have to pay for trying new technologies that do not work.

The provisions pertaining to innovative and alternative technologies are intended to achieve greater use of systems that reclaim and reuse water, productively recycle wastewater constituents or otherwise eliminate the discharge of pollutants, or recover energy.

One of the major problems facing municipal officials is the rapidly increasing cost of constructing wastewater treatment works, particularly those using conventional treatment processes. The operation and maintenance costs of wastewater treatment have also risen sharply during the past 5 years and cut deeper into local municipal budgets.

The innovative technology program recognizes that if a special effort is made during the planning stages of municipal treatment works, many potential money-saving and energy-saving techniques could be identified and incorporated into new facilities.

Innovative technologies can come about as new process and equipment inventions; improvement and modification of old or known processes; new or unique combinations of known processes and techniques; greater integration and use of natural processes; and maximum use of physical surroundings and environmental conditions.

In addition to new or improved applications of alternative technology, technologies that originate as conventional forms of treatment, but contain elements of increased risk and benefit, may qualify as innovative if they save 15 percent total cost or 20 percent net primary energy over the most cost effective non-innovative alternative.

Both Congress and EPA recognized that there might be a reluctance on the part of designers and municipal governments to take a chance on unproven innovative technologies. This concern has given rise to the 100 percent payback provision of the new law. If an innovative or alternative technology fails to meet design goals within the first 2 years of operation, the Federal Government will pay 100 percent of the cost of replacing or correcting the failed system. With this provision, a municipality is protected, as long as it thoroughly investigates innovative technology as part of the planning process.

Under present law, innovative and alternative grants can be made until September 30, 1981. The Administration has requested a one-year extension of the program so that innovative and alternative technology grants can be made until 1982. As a means of providing additional flexibility for the program, the Administration also requested that the States have the option of setting aside a portion of their annual allocation of construction grants funds specifically for innovative and alternative technology projects.

Cite: 40 CFR Part 35, Subpart E; 43 FR 44022, September 27, 1978.

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#### EPA ENCOURAGES THE USE OF COMPENSATION INCENTIVES IN SITING OF HAZARDOUS WASTE MANAGEMENT FACILITIES

Because of frequent and sometimes vocal opposition to the siting of hazardous waste management facilities by local citizens, the Environmental Protection Agency (EPA) has recommended a number of

possible remedies. To help resolve these disputes, EPA has recommended the use of "compensation" incentives that are described in a handbook designed for use by both local and State governments and developers of hazardous waste facilities.

Compensation is a means for developers and States to repay individuals, local governments, and groups for facing unavoidable, intangible, and unpredictable adverse effects. Compensation places siting costs on the generators of hazardous waste and eventually with the consumers of their products. The generators of hazardous waste are also given an incentive to locate the facility where it would be least disruptive. The facility developers would be able to "bargain" with local communities in order to find a suitable location.

Local opposition to hazardous waste facilities is not based on ideological grounds as is much of the resistance to nuclear plant sites. Instead, opposition to hazardous waste facilities tends to carry the theme "we do not want it here." Most opposition to local plant siting is based on obvious and unavoidable risks such as threats to ground and surface water, air pollution, and fires and explosions.

There are also many other adverse effects from hazardous waste facilities that arouse opposition. Increased heavy truck traffic may clog streets, create dust, increase the possibility of dangerous accidents, and cause the roads to deteriorate more quickly. Noise and odors may also create problem. Property values may decline or not increase as rapidly because of the proximity of hazardous waste facilities. The entire area may suffer because of lower property tax collections. A community may also spend more to maintain sophisticated fire protection and prepare for accidents or spills. Another possible effect is a loss of community stature because it may now be perceived as the "dumping ground" for the region's waste. There may also be an actual or imagined decrease in the quality of life because of an unsightly facility with unwanted side effects.

There are four means by which compensation may be employed. The first means of compensation is relatively simple -- the hazardous waste facility builder replaces the affected resource or service. Some examples include repaving access roads, training firefighters and police officers for special emergencies, providing specialized equipment, and replacing or restoring property and vegetation.

The second means of compensation simply involves direct cash payments to offset adverse effects generated by or expected from hazardous waste facilities. This approach requires the facility to absorb the costs of the adverse effects. This monetary incentive to the local community would diminish opposition and provide a means to cope with adverse effects.

"Tipping fees" are the most commonly used way to provide direct cash payments to localities. Tipping fees are levied on each unit of waste accepted at the facility. They may be assessed by truck-load, pound, cubic yard, or gallon. For example, Connecticut requires either a 5-cents-per-gallon tipping fee or a payment based on the gross receipts of the facility. A gross receipts tax is another way to provide direct monetary payments to a community. Still another approach is to make payments to the community in lieu of taxes, and pre-specify these payments to limit uncertainty. States could also allow for increased State aid to communities that host hazardous waste facilities. Each of these approaches involve continuing payments, but one-time cash payments may be more effective in certain circumstances.

Monetary payments also present some problems because of their unorthodox approach. Facility owners frequently do not readily admit to the imperfections or potential dangers of their plants and processes, and may be opposed to these seemingly unnecessary costs. There is also an inherent difficulty in accurately estimating, and reaching agreement on, the costs the facility imposes and the amount of compensation to be paid. For immeasurable effects, such as annoyance from truck noise, it may be best to negotiate the amount of compensation. For more tangible impacts, such as the expected deterioration of roads, it is easier to estimate the appropriate compensation.

In addition to the problem of how much the compensation should be, there is also the question of whom to compensate. When those affected can be identified, it is best to compensate directly. For diffuse community-wide effects, the payments should pass through the local government because of the administrative burden of reaching all affected parties.

A third means of compensation would call for the establishment of contingency funds and insurance. These are promises to pay for adverse consequences that cannot be reliably predicted. Some of the mechanisms are letters of credit, surety bonds, trust funds, emergency response funds, and liability insurance.

The fourth means of compensation is to provide land value guarantees. It is a common concern of owners of land adjacent to proposed facilities that a facility might lower property values. A developer might sign contracts with adjacent homeowners so that if they decide to sell within 5 years, a local and mutually agreed-upon appraiser could assess what the property value would have been without the facility. The developer would agree to either purchase the property at this price or make up the difference between the appraiser's estimate of the value if no facility were there, and the current

value. The developer might agree to make up this difference at the end of 5 years even if there has been no sale.

The developer could establish a similar contract with the owners of homes along an access road, but only to guarantee the property value if they sell. The developer could commit in writing to the locality that if the appraiser concludes that other properties are affected, the developer will honor claims, but only for sales that occur within 5 years.

Cite: "Using Compensation and Incentives When Siting Hazardous Waste Management Facilities," prepared for EPA by Urban Systems Research and Engineering, 1981.

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#### EPA IS DEVELOPING ECONOMIC INCENTIVES FOR REDUCING HEAVY-DUTY ENGINE AND HEAVY-DUTY VEHICLE EMISSIONS

The Environmental Protection Agency (EPA) is developing a "nonconformance penalty system" (NPS) of economic incentives for pollution abatement from 1984 and later model year heavy-duty engines (HDEs) and light-duty trucks (LDTs) over 6,000 pounds gross vehicle weight. Penalties are authorized to apply to any Clean Air Act Section 202(a) emission standard.

Amendments to the Clean Air Act authorize the EPA Administrator to allow the certification, production, and sale of heavy-duty engines or vehicles with emission levels in excess of prescribed emission standards but with established "upper limits" to prevent environmental damage), provided the manufacturer of these engines or vehicles pays a monetary penalty for each unit so produced. Without such a mechanism, any engine or vehicle that does not meet the emission standards cannot be sold. Congress felt that this economic consequence would be too harsh for those manufacturers unable to immediately develop and produce HDEs or LDTs capable of meeting emission standards. The upper limit provision of the NCP system prevents the introduction into the marketplace of grossly polluting engines or vehicles.

In creating the nonconformance penalty system, Congress established three mandatory criteria to protect the environment and the marketplace. These are: 1) the penalty must increase as the

emissions nonconformity increases; 2) the penalty must increase periodically to inhibit its use as a permanent substitute for achieving compliance; and 3) complying manufacturers must not be placed at a competitive disadvantage.

Three alternative approaches for calculating the penalty rate have been considered. All approaches are based on incremental costs, i.e., costs avoided by an engine's or vehicle's failure to meet appropriate emission standards. Incremental costs include those borne by the manufacturer, such as hardware costs associated with each engine or vehicle, and those borne by the end-user, such as increased fuel consumption and maintenance requirements.

In the "actual cost" approach, the penalty is equal to the calculated full cost, including the indirect cost of any performance degradation borne by consumers, of bringing a particular nonconforming engine or vehicle configuration into compliance with the standards. The underlying philosophy in this approach is that

a potential purchaser ought to be at least indifferent, in economic terms, to buying the nonconforming unit with its price increased to reflect the penalty, as opposed to the same unit brought into conformance. An actual cost-based penalty will automatically increase with the degree of nonconformity, since the cost of bringing an engine or vehicle into compliance generally increases with the degree of the original nonconformance. After the initial penalty has been set, the penalty can be increased by a fixed percentage over subsequent time periods to create an incentive for the development of production units that meet standards.

In the second approach, the penalty rate is based on the marginal cost of reducing the emissions of a typical HDE or LDT to bring it into compliance with the standards. When approaching an emission standard from higher emission levels, it generally becomes more expensive to remove each incremental unit of emissions. The most expensive incremental reduction is to move to the standard from a level just above the standard; the cost of doing this is the "marginal cost" of compliance at the standard. This approach can result in penalties significantly higher than the cost of bringing a particular engine or vehicle into compliance. These generally high penalties should provide a substantial degree of protection to the conforming manufacturer, as required by the Clean Air Act. Like the actual cost approach, the marginal cost-based penalty can be set up to escalate over time to provide an increasing incentive to conform.

EPA has recently evaluated a third alternative, a penalty rate based on the "average" cost of compliance with 1984 emission requirements. In this approach, the cost component includes costs borne by the manufacturer, which are reflected in an increase in



the HDE's or LDT's purchase price, plus costs that a consumer would incur in using the complying engine or vehicle over its useful life. When the total cost component is divided by the appropriate emission reduction required to comply with 1984 standards, assuming that both costs and emission reductions are based on an industry-wide "average" HDE or LDT, the result is an average cost-based penalty rate. It should be noted that this approach assumes that emissions increase linearly as a function of costs to comply; the marginal cost alternative, however, attempts to determine the actual shape of the emission/cost curve, which may not be linear.

Although individual vehicle noncompliance test procedures are no different from the old method, more testing is necessary to establish the quantitative level of noncompliance. Under the old method, testing simply certified whether or not the vehicle population was in compliance. Since costs of testing are directly proportional to the quantity of tests performed, there might be a significant increase in testing costs under the noncompliance method. The typical noncompliance penalty is expected to be a very small fraction of the vehicle sales price. For example, in 1984, a heavy-duty gasoline engine emitting 15.5 grams per brake horsepower per hour and costing \$3,500 would only pay a noncompliance penalty of \$49 (in 1984 dollars). The 1984 carbon monoxide standard is presently set at 20 grams per brake horsepower per hour.

Nonconformance penalties have several potential results. They could allow manufacturers developing new emission control technology to pursue that development without the fear of not being able to certify or produce if a specific standard is missed due to unforeseen events. NCPs also could help preserve the competitiveness of the heavy-duty engine and vehicle markets by ensuring that a manufacturer will not be forced out by transitory supply or technological problems. In addition, the penalty system will be designed to minimize the likelihood that any manufacturer will gain an economic advantage by failing to comply with an emission standard.

EPA has made a preliminary estimate of the costs associated with establishing nonconformance penalties. Beyond administrative and testing costs, the penalty itself should not create significant costs, since the emission standards themselves require manufacturers to institute emissions-reducing measures. The penalty is simply a more flexible mechanism to ensure that the standards are eventually met.

Cite: 40 CFR Part 86; 44 FR 9463, February 13, 1979;  
44 FR 40783, July 12, 1979.

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## EPA USES ECONOMICALLY BASED NONCOMPLIANCE PENALTIES TO REDUCE INDUSTRIAL POLLUTION

The Environmental Protection Agency (EPA) has issued regulations to assess and collect noncompliance penalties under Section 120 of the Clean Air Act. These mandatory penalties are designed to recover the costs that a pollution source avoids by not complying with Clean Air Act requirements and to eliminate the competitive advantage that a firm may achieve by avoiding the compliance costs.

A firm may commit many air pollution violations due to technical or financial problems, or due to noncompliance, which can be far less expensive than the capital and operating investment needed to comply. Violators not meeting air pollution standards may confront a perverse incentive because noncompliance allows them a competitive advantage. Their products can be produced more cheaply than those of their competitors who have complied with the pollution standards. Noncompliance penalties imposed on violators are set to equal the money they saved by not installing the required air pollution control equipment, removing the major incentive to delay the installation of pollution control equipment.

Although the majority of the Nation's 23,000 major sources of air pollution are in compliance with State and Federal Clean Air Act requirements, a substantial number are not. In many cases, firms have not yet complied with applicable deadlines (usually mid-1975) related to attainment of National Ambient Air Quality Standards for the protection of public health.

Sources that have violated the law by failing to install and operate pollution control devices, or to take other steps necessary to achieve compliance, have enjoyed an economic advantage. The possibility of economic savings constitutes an incentive to delay or avoid compliance.

Before the 1977 Amendments to the Clean Air Act, the enforcement measures authorized by the Act did not include direct economic incentives to comply promptly. Section 120, added by the 1977 Amendments, requires EPA to assess and collect an administrative penalty designed to capture the economic savings resulting from certain periods of noncompliance. Beginning from the date the source receives a notice of noncompliance, a penalty will be assessed to recover the costs avoided thereafter by a source as a result of its failure to comply.

The noncompliance penalty is designed to recover the economic benefit gained by a noncomplying source from the date on which it

receives a notice of noncompliance until final compliance is achieved. In order to capture savings realized from earlier noncompliance, EPA may seek civil penalties through court action. For example, a company that delayed installing a \$1 million pollution control unit for one year would not only have to go ahead and spend that amount, but also could be charged the interest it presumably earned on the \$1 million.

Section 120 of the Act provides for a penalty of not less than the economic benefit of delay to the owner or operator of the source. The Act specifies that, in determining this benefit, EPA should consider three components: the quarterly equivalent of the capital costs avoided; the operation and maintenance costs avoided; and "any additional economic value which such a delay may have for the owner or operator of such a source."

The first component is addressed to owners of sources that have not invested in required air pollution controls. These owners have had the opportunity to invest their funds instead in project that yield a direct economic benefit to the firm. The second component of savings from delayed compliance results from avoidance of the operation and maintenance costs that would have been incurred if the source had complied. These include labor, raw materials, and energy costs, as well as any other expenditure directly associated with the operation of the pollution control equipment. In addition, certain operation and maintenance costs may be required to achieve compliance even where no pollution control equipment is required. Delaying compliance means that these expenditures have been avoided and that the source owner had the opportunity to invest these funds in projects yielding a direct economic benefit. The noncompliance penalty recovers these savings.

EPA has constructed an economic model that takes into account the first two components described by Congress, but does not take into account the third component -- "any additional economic value." EPA believes that, at present, it is not possible to quantify and calculate the additional economic value of noncompliance in an administratively manageable fashion. Should it become evident that the additional values not described by the model are calculable, EPA will propose appropriate changes to the economic model.

The EPA economic model calculates the economic benefit of noncompliance by comparing two cash flows -- that which the source would have experienced had it achieved compliance on the date it received a notice of noncompliance, and that which it is estimated it will experience as a result of its delay. Because these cash flows occur at different times, a basis of comparison is provided by discounting them to their present value equivalents. The model then calculates the difference between these two cash flows and the proper quarterly payment schedule that the source must follow.

The same model is used to make a final calculation when the source has achieved compliance.

Since January 1981, 15 noncompliance notices have been issued. Penalties were collected from several sources and others are in various stages of adjudication.

Cite: 40 CFR Parts 66 and 67; 44 FR 17310, March 21, 1979;  
45 FR 50086, July 28, 1980.

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EPA ESTABLISHES A PERFORMANCE WARRANTY TO ENSURE THAT VEHICLE  
EMISSION CONTROL SYSTEMS WILL OPERATE EFFICIENTLY

One of the objectives of the Clean Air Act is to curb the increase in air pollution caused by vehicle emissions. Section 207(b) of the Clean Air Act establishes an Emissions Performance Warranty. The performance warranty runs to the ultimate purchaser and each subsequent purchaser. It is designed to provide a monetary incentive to the manufacturers to design and produce efficient and reliable emission control devices and systems. The warranty provides assurance that the emission control device will either operate properly or be repaired by the manufacturer.

In general, the emission performance warranty will require a vehicle manufacturer to repair, at no charge to the owner, any emission control device or system that causes a vehicle to fail an Environmental Protection Agency (EPA) approved emissions "short test" during its useful life. The warranty applies if the owner is subject to a penalty or sanction under State or Federal law because of the emission test failure, and if the owner has maintained and operated the vehicle in accordance with the manufacturer's written instructions.

Emission tests that meet these criteria are to be used by State and local governments as part of their vehicle Inspection/Maintenance (I/M) programs for the purpose of measuring emissions performance. The "Idle Test" is the most commonly used test of the three different "short tests" established by EPA in 1980. In essence, the raw exhaust gas is measured with simple instrumentation to determine hydrocarbon and carbon monoxide concentration, with the engine in an idling condition. This test is available at a price low enough that many garages, service stations, and dealerships are

now using it in their normal maintenance work. EPA has also issued a fixed set of standards applicable to all light-duty vehicles for compliance with emissions requirements as measured by the short tests. These standards constitute the maximum at which the performance warranty may be involved.

The warranty fills the gap that exists after the car passes the Federal certification test of exhaust emissions at the time of manufacture. It assures that the manufacturer will design the emission system not just to pass the factory test but to effectively perform throughout the useful life of the vehicle. It accomplishes this by making the cost of repairs to faulty systems a part of the manufacturer's costs. There is a strong incentive to minimize post-purchase emission system repairs by making the system more efficient and reliable. Thus, when a 1981 or later model year light-duty vehicle fails the emission test, the warranty becomes operative and the manufacturers are responsible for the repair or replacement of the emissions control device.

The effectiveness of this performance warranty cannot be assessed yet because it applies to 1981 models. However, a number of parties, including vehicle manufacturers and automotive aftermarket parts manufacturers, have filed petitions in court challenging the warranty. The challenging parties argue that the warranty will be too costly and will have anti-competitive effects. In addition, they argue that the warranty improperly holds vehicle manufacturers responsible for the acts of dealers and manufacturers of certified parts. They also contend that the warranty covers too many components of the emission system.

Cite: 40 CFR Part 85, Subpart V; 45 FR 34829, May 22, 1980.

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## GENERAL SERVICES ADMINISTRATION

### GSA CONSIDERS FEDERAL PROCUREMENT INCENTIVES FOR "LOW NOISE"

#### PRODUCTS

The Federal Government is in a unique position to influence decisions that are made by certain manufacturers regarding their product lines. Because the Federal Government is a major consumer of a wide range of goods, it may use its market leverage to promote public policy objectives. Thus a monetary incentive is utilized

in place of a traditional, or command-and-control, regulatory approach.

Procurement incentives generally reflect a willingness by the Federal Government to pay a slightly higher price for goods and services that meet specified standards of performance. Such a subsidy can induce innovation that may, once on the market, spread to products not intended for government purchase. This kind of incentive has been authorized in at least three major pieces of legislation: the Clean Air Act Amendments of 1977, which promoted the use of low-polluting vehicles; the Resource Conservation and Recovery Act of 1976, which promoted the use of recycled materials by Federal agencies; and the Noise Control Act of 1972, which promoted the reduction of noise from commonly used equipment.

However, the only example of such a policy being implemented is a Federal procurement regulation being developed by the Government Services Administration (GSA) that will allow a Federal agency to pay a premium price for a certified low-noise product.

The proposed GSA rule prescribes policies and procedures that give preference to low-noise-emission products (LNEPs) that are certified by Environmental Protection Agency (EPA) as substitutes for products presently being purchased by the Federal Government.

The Act establishes a contract preference for low-noise-emission products. The preferences are designed to promote the purchase or lease of products that emit noise in amounts significantly below the levels specified in EPA noise emission standards. However, the products must be suitable substitutes for the items presently being purchased by the Government for use by its agencies. To benefit from the preference, the EPA Administrator must certify that the product is a low-noise-emission product and determine that it is a suitable substitute product.

The law allows GSA to pay up to 125 percent of the retail price of the least expensive product for which it is a certified substitute. This price differential allowance runs contrary to traditional Federal Government procurement policies and may be criticized as an undesirable precedent.

For GSA to implement the procurement policies of the Act, it must resolve four problems. The first problem concerns a divided responsibility for purchasing and pricing. The law leaves the responsibility for the purchase of low-noise-emission products with the individual agencies. However, it also associates GSA with each purchase by requiring a price determination by the Administrator. The problem of relating the actual purchase to the price determination has been minimized by providing for the optional transfer of the procurement to GSA.

The second problem concerns the allowable 125-percent price differential. Recent increases in retail prices indicate that computing the differential on the basis of a price paid in the past might eliminate the program. Given the continuing rise in prices and assuming that the prices of components for regular products and LNEPs have risen equally, it seems probable that a low-noise-emission product would cost more than 125 percent of a product bought a few years ago. The proposed solution provides one pricing procedure when the product has been purchased within the past year and a second procedure when the most recent buy was made more than a year earlier.

The third problem concerns the most recent procurement price. The Act requires the price differential to be computed on the basis of the most recent procurement price of the least expensive type of product for which the low-noise-emission product is a substitute. The Act does not specify how to determine what government agency paid the most recent procurement price. It is not practicable to require a single procuring activity to canvas other Government offices to determine that price. As with the problem of increasing prices, the proposed solution permits the procuring activity to use the current procurement or its previous procurements to find the price of the least expensive product.

The fourth problem concerns the matter of giving effect to the preference factors in the Act. The law requires that priority be given to any class or model of LNEP which does not require extensive periodic maintenance to retain its low-noise-emission qualities or which does not involve operating costs significantly in excess of those products for which it is a certified substitute. The solution for this problem involves the establishment of quantitative standards for making the preference.

In general, a chief advantage of procurement incentives is that the reward of a Federal contract is an effective incentive to alter manufacturing decisions of firms that seek these contracts. Administrative costs associated with these programs should not be great, and they may provide the easiest means to encourage innovation in products to meet public policy objectives.

A chief disadvantage is that it may be difficult to determine the amount of a premium that should be paid for an environmentally sound product. Local employment problems could also occur, although unemployment in one area would be balanced by an increase in jobs somewhere else. The added costs of the program might also increase government spending levels. Procurements not made solely on cost and quality factors will result in taxpayers receiving less of the purchased services for their tax dollars, although the other benefits that accrue (e.g., quieter products) should be considered.

Cite: 40 CFR Part 203 (EPA).

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## CIVIL AERONAUTICS BOARD

### CAB DEVELOPS A SUBSIDY SYSTEM TO ENSURE ESSENTIAL AIR TRANSPORTATION SERVICE TO SMALL COMMUNITIES

The Airline Deregulation Act of 1978 increased the competitive pressures on airlines to eliminate unprofitable routes and made it easier for them to do so. To deal with situations where small communities were threatened with loss of service, the Act added a new section (§419) to the Federal Aviation Act to ensure that no eligible community lost all its air service under deregulation. This section guarantees that at least essential air service will continue at these communities. Section 419 also authorizes the Civil Aeronautics Board (CAB) to subsidize air carriers, especially commuter air carriers. This subsidy ensures an essential level of air service at each affected community.

Since 1938, the Act has contained a subsidy provision (§406). Although the CAB has built incentives into that subsidy system to encourage air service at small communities, it was not always effective in preventing the withdrawal of carriers from these small points. Until the passage of the Deregulation Act, this subsidy provision had not been significantly modified since the adoption of the Civil Aeronautics Act. Its primary intent was the development of a national air transportation system, rather than ensuring air service to small communities. This required the Board to consider the financial need of the carrier's entire system in establishing subsidy rates. This approach enabled carriers to expand and acquire larger aircraft. While this worked well in building the air transport system and nurturing carriers to self-sufficiency, the shift to larger equipment made high-frequency service to smaller points increasingly impractical. Because the old subsidy was limited to certificated carriers, the Board was unable to subsidize the air-taxi industry, whose equipment was better suited to serving the small points.

Section 419 does not dictate a particular subsidy approach, because Congress expected the CAB to develop new and innovative subsidy methods. In responding to the legislative authority to develop a subsidy system, the CAB looked at four alternatives.



The four alternatives that were considered included a "low-bid" system, which was not seriously considered; a "cost-plus" system, which was rejected; a "shared incentive," which may be used in certain circumstances; and a "fixed-incentive rate" approach which the CAB chose to employ.

The CAB considered and rejected ideas for a "low-bid" system (or awarding subsidies only to those who propose to perform the essential services at the least cost). The CAB believes that the lowest bidder may not be the most reliable or efficient carrier. If it turns out that the low bidder cannot perform the service at the promised price, the subsidy would have to be increased or the carrier replaced. This could lead to a loss of credibility in the system, decreased traffic at the affected community, the risk of start-up problems on the part of a new carrier, and other problems that should be minimized if air service for small communities is to be successful. The CAB considers the amount of subsidy sought by applicants in the process of choosing which one to subsidize.

Another approach that the Board has considered, but rejected, is the "cost-plus" subsidy system. This would be a relatively simple approach, in which the CAB would set a target loss an estimate representing of the financial loss that the carrier would sustain in providing essential service to the eligible point. However, as the carrier's costs decreased, or revenues increased, the Board would revise the subsidy downward to account for the carrier's actual performance. Thus, a carrier would not benefit from performing better than expected. On the other hand, if the carrier's costs increased or revenues decreased, the subsidy would rise under this system. A steadily increasing subsidy without any corresponding increase in service is a likely result of the cost-plus system, because it does not offer the carrier any incentive to strive for greater cost-efficiency or to develop the market beyond the level of service determined to be essential.

If traffic is stimulated at small communities, more flights can be added profitably, thereby improving service without increasing subsidies. It is important that the subsidy program reward efficiency and not discourage a carrier from adding flights above essential service levels. This requires that incentives be built into the program.

The approach that CAB is now pursuing is the "fixed-incentive rate," which is the direct opposite of the cost-plus system. Under both approaches, the CAB would set a target loss, the amount of money the carrier could be expected to lose providing essential service at the point. While under the cost-plus system the Board would pay for all the carrier's losses that exceeded the target, under a fixed rate, the carrier would have to absorb all such losses in excess of the target. The advantage of the fixed rate from a

carrier's standpoint is that to the extent that it could "beat the rate" (incur losses lower than the target loss), its profits would increase accordingly. While these profits in such cases might appear excessive over the short run, they would be justified by the improved service and eventual reduction in or elimination of the carrier's subsidy need. The success of fixed incentive rates depends to a large extent on accurate forecasting.

The carriers and the Board must develop cost and revenue projections that are realistically attainable if carriers make reasonable attempts to control costs and to develop markets.

A fixed incentive rate subsidy program also has several disadvantages. A carrier may be reluctant to accept the risks inherent in a fixed rate unless it is confident that it can beat the rate. This may force the CAB to set the projected loss higher than seems appropriate in order to obtain agreement from the carrier to provide the essential service. More significantly, there is a danger of service disruptions under the fixed rate. Since the CAB would not allow carriers to continually renegotiate the rate because of the risk that it be effectively converted into a cost-plus system, the only alternative for a carrier forced to absorb losses under a fixed rate might be to terminate service at the eligible point. Although the CAB would hold the carrier to that service and continue to compensate it until it found a replacement, the resulting uncertainty and change in carriers would be detrimental to the long-run air service needs of the community affected.

The CAB is also still considering another approach, the "shared incentive," under which the airline would also be reimbursed for a predetermined projected loss and allowed a reasonable profit. The difference is that under the shared incentive rate, the Board would compensate the carrier for some of its additional losses instead of all of them, as in the cost-plus system, or instead of none of them, as in the fixed rate system. The advantage of this approach is that it may pose less danger of service terminations. It represents the middle ground between the cost-plus system and the fixed-incentive rate.

Since a carrier would reap some benefit from increasing its revenue or reducing its costs, there would still be an incentive under a shared rate for it to develop the market and control its costs, although the incentive would not be as strong as under a fixed rate, where the carrier reaps all the benefit or pays all the cost. On the other hand, the fact that the risk of loss is shared affords the carrier some protection against disappointing results. The sharing of excess losses may make it less likely that there will be service terminations or the need to repeat the carrier selection process.

The main disadvantages of the shared rate are that incentives are weaker, it is more difficult to administer, and reporting will be more burdensome for the carriers than under the fixed-rate system. Under a fixed rate, it would only be necessary for the CAB to establish a subsidy rate that would be the basis for the payments. The shared rate, however, has more variables, because a formula for sharing extra profits and losses would have to be established. Since it would be necessary to compute periodically the payments due the carrier under the formula, carriers being subsidized under a shared rate would be required to submit more detailed information to the CAB on their costs and revenues than would be required of carriers under a fixed rate. Carriers on a shared rate also would have to submit reports more frequently.

In sum, both the fixed rate and the shared rate appear to meet the most important objectives of a subsidy program -- ensuring that essential air service is provided to small communities -- and that there are incentives to improve that service. The incentives appear stronger under a fixed rate. Also, the fixed rate is simpler to administer and less burdensome to carriers. So far, carriers have generally preferred fixed rates because of the certainty associated with them. The CAB would, therefore, employ the fixed incentive rate for most carriers, unless a strong case were made for the shared approach. In some cases, the CAB may arrange a hybrid system combining characteristics of both rate system.

Cite: 14 CFR Part 271; 45 FR 83254, December 19, 1980.

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#### CAB USES MARKET INCENTIVES IN AIRLINE BUMPING REGULATIONS

To compensate for cancellations and no-shows, commercial airlines have long engaged in overbooking and bumping for certain flights. Airline policies traditionally provided that the bumped passengers would receive no compensation unless the airline could not get them to their destination within 2 hours of their original arrival time (4 hours, on international flights). However, many passengers did not think they were adequately compensated for this inconvenience.

In attempting to develop a regulatory solution to this frequently irritating and inconvenient practice, the Civil Aeronautics Board (CAB) required the airlines to first ask for passenger "volunteers." A volunteer would willingly accept the airlines offer for compen-

sation, at a bargained amount, in exchange for relinquishing a confirmed, reserved space. In other words, the "bumpers" are permitted to select themselves on the basis of an economic incentive. If there are not enough volunteers, additional passengers may be bumped -- generally those checking in last -- but they must receive compensation equal to the price of their ticket, with a minimum payment of \$75 and a maximum of \$460. If the carrier arranges alternative transportation acceptable to the bumped passenger that is scheduled to arrive at the destination within 2 hours (4 hours, for foreign air transportation), compensation is halved.

The CAB has suggested a number of ways in which the airlines might obtain volunteers, but allowed the airlines to decide how to do so at the lowest possible cost to themselves, considering both the monetary costs and the desirability of minimizing passenger ill will. (However, the CAB does specify the compensation that must be provided if a passenger is bumped involuntarily.)

The CAB rule still permits overbooking, but encourages airlines to reduce involuntary bumping to the lowest practical amount. The airlines traditionally overbooked for economic motives that were acceptable to the CAB, i.e., overbooking allowed them to fly with fuller passenger loads, increasing revenue and efficiency. But under the circumstances, the CAB felt that the airlines should be required to compensate the passengers who had to be bumped.

The CAB considered several alternatives before selecting this volunteer approach. These included a policy that would give priority to those passengers whose reservations were received first.

This approach was rejected because it did not take into account special conditions, such as individuals responding to the sudden illness of a parent. Another suggestion was to give priority to individuals in order of check-in. However, this approach was rejected, because a passenger might be delayed by the lateness of an earlier connecting flight.

The economic rationale is twofold. Passengers are encouraged to give up their seat in exchange for some bargained-for amount. Generally, this will be an amount somewhat lower than the compensation given to involuntary bumpers, or free airline tickets. If there is an insufficient number of volunteers, passengers are denied boarding on the basis of a predetermined boarding priority plan and are paid an amount determined by the rule. Ordinary market incentives generally can be counted on in this way to subject both overbooking and bumping to the efficient limits, that is, the airlines can be expected to engage in the practice only up to the point at which the economic benefit to them of the fuller planes that overbooking assures is equaled or exceeded by

the cost to them of securing the requisite number of voluntary or involuntary bumpees. In other words, the cost of compensating both voluntary and involuntary bumpees will tend to restrict the carrier's use of these practices.

According to former CAB Chairman Alfred E. Kahn, the only practical problem with the bumping policy is that there is often a surplus of volunteers.

Cite: 14 CFR Part 250; 43 FR 24283, June 5, 1978.

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## POSTAL RATE COMMISSION

### PRC INCENTIVES ENCOURAGE PRESORTING OF MAIL TO REDUCE POSTAL COSTS

The Postal Rate Commission (PRC) has taken a series of actions to provide monetary incentives to reduce postal sorting costs by offering rate incentives to bulk mailers who presort their mail. Since the computers of mailers can presort mailing lists into zip code sequence with relative ease, large-volume mailers can reduce the Postal Service workload by presorting mail to avoid manual processing. In postal jargon this is called "worksharing," which means that joint mailer-Postal Service productivity is improved (by replacing manual and manually assisted machine sorting with computers).

In 1976, the Commission approved a first-class presort classification with a one-cent reduction for presorting. In addition, it approved rate reductions for presorted, special-rate fourth-class materials (i.e., books and records). The Commission increased the rate reduction for first-class presort to 2-cents in 1978 and 3-cents in its last rate proceeding in February 1981. In February 1981, the Commission also approved a carrier route first-class presort rate reduction of 4 cents. Carrier route-presorted mail bypasses all mail processing until the delivery unit and is the most finely presorted mail presently possible.

The Commission approved separate classifications and rates for three-digit, five-digit, and carrier route presort for regular second-class mail (i.e., "for profit" publications) in 1978, for nonprofit second-class in 1981, and nonprofit and regular

third class in 1980. The purpose of these changes was to provide progressive incentives to mailers to presort mail to the maximum extent possible and to minimize the need for Postal Service processing.

For third-class carrier route presort mail, the Commission provided a large cost-based rate incentive in its February 1981, rate decision. This major change in rate policy produced immediate results. Carrier route third-class mail volume has increased more than 60 percent in the first postal quarter in which this rate incentive was in effect. Moreover, it is expected that first-class presort will soon constitute 25 percent of total first-class volume.

Presorting is a clear example of a situation in which a traditional command-and-control regulation would have been ineffective and burdensome. The alternative of requiring that all mailers presort would impose large costs on firms that do not have the capability to presort. Thus, the current system lets firms determine whether or not it is in their economic interest to presort.

The major adverse consequence of presort discounts is that they may eliminate postal jobs as increased reliance upon mailer computerization leads to decreases in Postal Service sorting.

The PRC staff estimates that the presort discounts currently in effect are saving mailers over \$1 billion in postal fees annually, and reducing Postal Service operating costs by substantially more than \$1 billion.

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## STATE AND LOCAL AGENCIES

### PRODUCT OR CONTAINER DEPOSITS ARE USED BY STATE AND LOCAL GOVERNMENTS TO REDUCE LITTER AND CONSERVE ENERGY

A deposit system creates a monetary incentive to return a product, its package, or its container. Under the system, a monetary deposit is paid by the consumer when purchasing the product and refunded upon delivery of the product or its container to a designated site. In this manner, a monetary impetus encourages recovery of litter and solid wastes and promotes the recycling and reuse of the product, its package or container, and/or its raw materials.

Deposits are generally placed on items that are frequently littered, such as bottles and cans. The deposit removes consumer indifference to the social costs of litter -- counted in aesthetic terms and the costs of cleanup, disposal, and wasted resources and energy. Further, when containers are returned, producers have a greater incentive to use materials that can be recycled.

Prior to the early 1960s, the most practical and widespread method of distributing soft drink and beer containers was through returnable bottle systems. Now, in an effort to increase recycling and eliminate environmental litter and solid waste problems, caused in part by throwaway containers, some governmental jurisdictions have enacted, and others are considering, the implementation of compulsory container deposits for specified products. Deposits can be placed on products at a variety of points in the production-consumption cycle. Selection of the point at which to apply the deposit depends on the administrative feasibility of collecting the deposit at that particular point. The deposit would be refunded to an individual who returns the product to an authorized collection station. The system should be effective if the deposit is set high enough to encourage either consumers to return products for proper disposal or others to recover these products in order to collect the deposit.

Product deposits are usually created by local or State legislation as an environmental control strategy. Once the legislation is enacted, the product deposit requires initial administrative supervision. However, after this mechanism is established, minimal government supervision is necessary.

Some studies show that product deposits have been effective in reducing litter in States that have beverage container deposit laws. For instance, bottle and can litter decreased by over 65 percent in both Oregon and Vermont in the year after the deposit and refund schemes went into effect. Proponents also have claimed that significant energy savings could result from product deposits. One Environmental Protection Agency (EPA) study in 1975 estimated that 218 trillion BTUs (equivalent to approximately 37.5 million barrels of oil) could be saved annually by the implementation of returnable bottle and can legislation in the United States. Other studies have indicated that the prices of beer and soft drinks in returnable bottles would be slightly lower than in disposable bottles. One important advantage of bottle deposits is that they were operated extensively in the past. Thus, it is clear that the private sector can administer the program with little government supervision.

It is possible that adverse local industry impacts could result from bottle deposit regulations. For example, Oregon's law, which bans cans with detachable tab openers and places a deposit on all

containers, resulted in the closing of the largest canning plant in the State. Deposits may also render obsolete certain types of capital equipment. In order to minimize the impact of the legislation, a substantial amount of lead time is required before product deposits are implemented, so that industry can adjust equipment and capital spending plans. Consumers may also be adversely affected if the deposit return centers are inconveniently located. Unless this issue is appropriately dealt with, it may be quite expensive and time consuming for consumers to recover the deposits. This could offset the monetary incentive to redeem the deposit.

Another factor that must be carefully considered is the necessity of setting deposit charges so as to gain maximum benefit from the law. That is, the deposit rates should not be set so low that the incentive to return the product evaporates. Conversely, deposit charges should not be set so high that consumption patterns will change drastically. A market intrusion of this magnitude could create unwarranted impacts on product and container manufacturers. Periodic adjustments in deposit charges may be necessary in order to maximize deposit incentives and benefits.

There are several beverage container deposit laws around the country. Of the four States with container deposit laws (Oregon, Vermont, Michigan, and Maine) Oregon's program is the most extensively documented. A minimum deposit of 5 cents is placed on all bottles and cans, with the exception of standardized containers used by several companies, where the deposit is 2 cents. Both retail and wholesale stages are included. The program enjoys a high degree of public support and has generally achieved the goals of reducing litter and solid waste and conserving resources. Its success has been due to high redemption rates (in excess of 90 percent) and a smoothly functioning return system. Predictions of dramatic employment declines, increased beverage prices, and lower sales did not materialize. Government jurisdictions below the State level have also enacted bottle deposit legislation.

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**PART III**

**ANNOTATED BIBLIOGRAPHY**



ANNOTATED BIBLIOGRAPHY

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## PROJECT ON ALTERNATIVE REGULATORY APPROACHES

The Project on Alternative Regulatory Approaches was a 2-year project initiated by the former U.S. Regulatory Council and completed in September 1981. The Project promoted alternative, market-oriented regulatory strategies. Alternative regulatory approaches are departures from traditional "command-and-control" regulation, which involves strictly specified rules and formal government sanctions for failure to comply.

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  - 5) Information Disclosure
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- Minutes from the Project colloquium series for regulators, September 1981 -- Summaries of ten presentations by leading regulatory scholars, including Robert Crandall of the Brookings Institution, Marvin Kusters of the American Enterprise Institute, and Roger Noll of the California Institute of Technology.
- Bibliography, September 1981 -- A listing of about 100 publications covering alternative regulatory approaches.
- Resource Center File Listings, September 1981 -- A list of approximately 300 Federal applications of alternative regulatory approaches for which there are files currently available for agency and public review.
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- "An Inventory of Innovative Techniques," April 1980, 47 pp. -- A description of 66 early applications of alternative approaches, written for the lay public.

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