COMMITTEE FINDINGS AND STAFF PAPERS ON NATIONAL BEVERAGE CONTAINER DEPOSITS

OF THE RESOURCE CONSERVATION COMMITTEE

This publication (SW-733) is the second report (January 1978) to the President and Congress submitted by the Resource Conservation Committee. Included in this published version are two additional staff papers not submitted with the original report.

RESOURCE CONSERVATION COMMITTEE

1979

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RESOURCE CONSERVATION COMMITTEE

1979

THE RESOURCE CONSERVATION AND RECOVERY ACT OF 1976

Section 8002(j) of Public Law 94-580

"(j) RESOURCE CONSERVATION COMMITTEE.—(1) The Administrator shall serve as Chairman of a Committee composed of himself, the Secretary of Commerce, the Secretary of Labor, the Chairman of the Council on Environmental Quality, the Secretary of Treasury, the Secretary of the Interior, and a representative of the Office of Management and Budget, which shall conduct a full and complete investigation and study of all aspects of the economic, social, and environmental consequences of resource conservation with respect to—

"(A) the appropriateness of recommended incentives and disincentives to foster resource conservation;

"(B) the effect of existing public policies (including subsidies and economic incentives and disincentives, percentage depletion allowances, capital gains treatment and other tax incentives and disincentives) upon resource conservation, and the likely effect of the modification or elimination of such incentives and disincentives upon resource conservation;

"(C) the appropriateness and feasibility of restricting the manufacture or use of categories of consumer products as a resource conservation strategy;

"(D) the appropriateness and feasibility of employing as a resource conservation strategy the imposition of solid waste management charges on consumer products, which charges would reflect the costs of solid waste management services, litter pickup, the value of recoverable components of such product, final disposal, and any social value associated with the nonrecycling or uncontrolled disposal of such product; and

"(E) the need for further research, development, and demonstration in the area of resource conservation.

"(2) The study required in paragraph (2)(D) may include pilot scale projects, and shall consider and evaluate alternative strategies with respect to—

"(A) the product categories on which such charges would be imposed;

"(B) the appropriate state in the production of such consumer product at which to levy such charge;

"(C) appropriate criteria for establishing such charges for each consumer product category;

"(D) methods for the adjustment of such charges to reflect actions such as recycling which would reduce the overall quantities of solid waste requiring disposal; and

"(E) procedures for amending, modifying, or revising such charges to reflect changing conditions.

"(3) The design for the study required in paragraph (2)(D) of this subsection shall include timetables for the completion of the study. A preliminary report putting forth the study design shall be sent to the President and the Congress within six months following enactment of this section and followup reports shall be sent six months thereafter. Each recommendation resulting from the study shall include at least two alternatives to the proposed recommendation.

"(4) The results of such investigation and study, including recommendations, shall be reported to the President and the Congress not later than two years after enactment of this subsection.

"(5) There are authorized to be appropriated not to exceed $2,000,000 to carry out this subsection.

RESOURCE CONSERVATION COMMITTEE

THE FEDERAL INTERAGENCY COMMITTEE ESTABLISHED UNDER PUBLIC LAW 94-580
401 M Street, S.W., Washington, D.C. 20460

JAN 23 1978

To the President and the Congress:

I hereby transmit for your consideration the second report of the Resource Conservation Committee, which was established under Section 8002(j) of Public Law 94-580. This is the second in a series of four reports. The first report, submitted in June 1977, presented the Committee's Implementation Plan. This report describes the Committee's activities over the last six months and presents the Committee's first substantive findings and recommendations.

The findings and recommendations in this report relate primarily to the issue of Federal beverage container deposit legislation. Although studies are currently underway on numerous resource conservation policy issues, the beverage container deposit issue is the first to be thoroughly reviewed by the Committee. It was chosen first because legislation on the issue is pending in Congress and the Committee felt a responsibility to provide timely information and recommendations.

We are currently in the midst of review of the solid waste product charge concept, as requested specifically in the Resource Conservation and Recovery Act and by the President's Environmental Message. The Committee has deferred its final decision on beverage container deposit legislation until it understands the relationship between that issue and the solid waste product charge issue. In addition, the Committee's work plan now includes those policy issues described in Part IV of the Implementation Plan.

The Committee is intent on soliciting wide public participation in its work. The Committee has sponsored several public meetings and the staff has met with numerous public and private interest groups thus far. We will, of course, especially appreciate your comments and suggestions.

Respectfully submitted for the Resource Conservation Committee,

Douglas M. Costle
Chairman

Enclosure

THE RESOURCE CONSERVATION COMMITTEE

DOUGLAS M. COSTLE, Chairman
Administrator, Environmental Protection Agency

JUANITA M. KREPS, Secretary of Commerce

CECIL D. ANDRUS, Secretary of the Interior

F. RAY MARSHALL, Secretary of Labor

W. MICHAEL BLUMENTHAL, Secretary of the Treasury

CHARLES WARREN, Chairman, Council on Environmental Quality

ELIOT CUTLER, Office of Management and Budget

NINA CORNELL, Council of Economic Advisors

ALVIN ALM, Department of Energy

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*This paper was not part of the 1978 RCC Report as submitted to the President and Congress.

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I. COMMITTEE FINDINGS

A. At its December 14, 1977, meeting the Resource Conservation Committee endorsed the following statement:

> "Critical issues involving the entire solid waste problem require urgent priority attention.
>
> The Committee finds that:
>
> 1. The imposition of mandatory deposits is an effective means for reducing litter associated with beverage containers.
>
> 2. Up to two percent of the solid waste stream could be eliminated by the imposition of mandatory deposits.
>
> 3. Product charges, which are currently under consideration by the Committee staff, might substantially reduce problems associated with the solid waste stream and encourage recycling, albeit with a lesser impact than mandatory deposits on litter resulting from beverage containers.
>
> 4. Upon completion of additional studies, the Committee will make a recommendation, at the earliest possible date, on the desirability of Federal mandatory deposit legislation. When the current studies on product charges are completed, the Committee will make a recommendation with respect to a legislative proposal on product charges.
>
> 5. Although the Committee is not recommending Federal mandatory deposit legislation at this time, its conclusions by the Committee are contained in the following section."

B. In keeping with the Committee's desire to design specific policies as a necessary part of the policy evaluation process, the Committe has reviewed, discussed, and debated a series of eleven issues related to the design of a detailed legislative proposal relating to the beverage container deposit issue. The Committee felt that it was important to make recommendations on these design issues so that the issue would be clearly understood prior to a decision regarding whether to support beverage container deposit legislation. The following are the Committee recommendations on each of these policy design issues, which were also endorsed at the December 14, 1977 Committee meeting: (A more detailed discussion of each of these issues is presented in Staff Background Paper No. 3 in Section V of this report.)

Issue No. 1: Which beverages should be covered?

- Beer and carbonated soft drinks in sealed containers, with a discretionary option for the EPA Administrator to include others by regulation (subject to guidelines).

Issue No. 2: Which containers should be covered?

- All sealed containers for the designated beverages, regardless of material used, with a discretionary option for the EPA Administator to include or exclude others by regulation (subject to guidelines).

Issue No. 3: What should be the size of deposit?

- Five cent minimum, indexed to the Consumer Price Index, in full cent increments.

Issue No. 4: Should deposits be uniform or multiple?

- Uniform minimum deposit.

Issue No. 5: At what stage of the distribution system should the deposit begin?

- Distributor-wholesaler.

Issue No. 6: Should deposit system be phased in?

- The effective date of any legislation should be two years from the date of passage.

Issue No. 7: Should economic losses be compensated?

- No recommendation at present, pending the outcome of studies by the Department of Labor and an interagency group under the direction of the Council of Environmental Quality.

Issue No. 8: Should nonrefunded deposits be taxed away or regulated (other than as normal contribution to income)?

- No (No special tax provisions are necessary. The present tax code is sufficient).

Issue No. 9: Should pull tabs be banned?

- No

Issue No. 10: Should cartons or carriers be regulated?

- No

Issue No. 11: Should State and local deposits be preempted by Federal law?

- No position

C. In addition to the Resource Conservation Committee Findings, several individual members requested that their additional statements be included. The following are those statements:

1. Department of Commerce

The objective of beverage container deposit legislation and basic structure of the Committee's recommendations on design issues is to use economic market forces to solve an environmental problem. This is accomplished by imposing a higher cost on the consumer who does not return the beverage container. This is an effective way of addressing the beverage litter problem from the consumer's perspective. However, this is not the only aspect of the litter and waste reduction equation. A greater, and probably more significant long term beneficial consideration to this environmental problem, can accrue from the supply component of the economic equation. In this latter respect it is possible to draft legislation which would encourage the development and application of technology which would reduce the environmental problems associated with the materials used in the beverage container field.

The Committee's legislative design approach, presented under subsection B above, limits the economic incentive to reduce litter to the consumer by imposing a five cent minimum deposit on beverage containers. This minimum deposit approach overlooks an excellent opportunity to provide an economic incentive from the business or industry perspective. Namely, to provide the Administrator with the additional option to reduce the minimum deposit in one cent increments between five cents and zero upon finding that a new technology is significantly less environmentally degrading. The Committee's present recommendation permits the Administrator to reduce the deposit to zero under design issue No. 2, but overlooks the economic incentive that could be created by providing the Administrator with the additional flexibility of incremental reductions between five cents and zero. We believe a greater long term economic incentive opportunity for litter and waste reduction exists by encouraging the development of new technologies that coincide with our environmental goals by means of providing appropriate economic incentives. In this context it is well known that the development of new technologies is a slow process with incremental cost savings oftentimes less than a fraction of a cent per pound of material. Thus, if we desire to enable the Administrator to encourage new technological developments in a positive manner toward our enviornmental objectives the option of permitting incremental cost reductions between five cents and zero provides such a mechanism.

Conversely, the failure to provide this cost reduction flexibility, may well be counterproductive. The creation of a gap between zero and five cents creates a tremendous barrier to the advent of new technology. The effect of this gap is to freeze technology as opposed to providing a realistic incentive for change toward more enviornmentally acceptable approaches.

Accordingly, legislation, if recommended, should also include economic incentives to encourage the development of technology to mitigate the litter and waste problem. What specific technologies will be encouraged is difficult to ascertain. However, it is possible to envision that such economic incentives would foster new technology across a broad range of fields not limited to container material. For example, new container designs may result that are more readily adaptable for recycling or new uses. New systems and processes for accommodating on-site or off-site collection, disposal, new uses or any other technology which promotes the reduction of litter and waste.

In conclusion a more farsighted approach for legislation that is designed to reduce litter and waste is to provide a positive economic incentive to foster the development of new and innovative technology. To provide the Administrator with the additional flexibility to incrementally reduce the deposit between five cents and zero would provide such an approach.

2. Council on Environmental Quality

The Council on Environmental Quality, although concurring with the Resource Conservation Committee's decision to postpone making its recommendations, believes that there is sufficient evidence to support the immediate adoption of national beverage container deposit legislation. Our analyses indicate that, although there may be disagreement about the magnitude of the likely benefits, there is overwhelming evidence that mandatory beverage container deposit legislation would result in significant reduction in litter, net cost savings to consumers and municipal and State governments, net energy savings, and net employment increases. It is also a policy that would achieve these benefits with a minimum of government regulation.

The only serious question that has been raised about the policy is the cost of the consumer inconvenience it will create. Most people understand clearly the implementations of beverage container deposit legislation in terms of how it would affect them as consumers. With this knowledge, they have consistently indicated in public opinion polls strong support for such a policy. Thus, for the one question that cannot be quantitatively estimated, the people affected

have stongly expressed their belief that the benefits exceed the costs.

Rarely does government have the opportunity to adopt a policy having all of the above characteristics. The policy has been thoroughly analyzed over a period of years by a number of different groups. These analyses consistently indicate that it will provide at least some amount of net benefits across a wide range of measures. It does not require large government expenditures or regulation. And finally, it is a policy that is strongly supported by a well informed public.

We believe that these factors argue strongly for adopting beverage container deposit legislation now, and that the conclusions of the past studies will not be changed by additional studies that the Committee will sponsor. However, being convinced that this is so, and recognizing the value of having all members of the Committee supporting the proposal, we concur with the Committee's decision to undertake some additional studies so that those who still have some doubt may also be convinced.

3. Department of Labor

I support the Committee findings in this report, but I feel they require clarification.

I strongly support the need for a consistent, effective policy on solid waste management aimed at resource conservation.

I recognize that a system of beverage container deposits can contribute to this goal by reducing the litter of discarded beverage containers. Whether Federal legislation in this area should be proposed depends upon an assessment of its benefits and costs, including those accruing to society as a whole as well as those affecting individual sectors of the economy.

In particular, a crucial element in making any cost/benefit assessment is the extent to which deposit containers will be returned by consumers. The Committee estimates that up to two percent of the solid waste stream could be eliminated by beverage deposits is based on a return rate of over ninety percent. While this figure may represent our best judgement at the present time, it is based largely on the experience in two States with deposit legislation, Oregon and Vermont. Since these States may not be representative of the country as a whole, I am looking forward to the experience in other States.

II. THE RESOURCE CONSERVATION COMMITTEE AND ITS WORK

The Resource Conservation and Recovery Act, enacted October 21, 1976, established the interagency Resource Conservation Committee to conduct studies and prepare reports and recommendations for the President and the Congress on resource conservation issues over a two-year period (Section 8002(j) of P.L. 94-580). The Administrator of the Environmental Protection Agency chairs the Committee, which includes the Secretaries of Commerce, Labor, Treasury, and Interior; the Chairman of the Council on Environmental Quality; and a representative from the Office of Management and Budget. In addition, the Committee also invited the Council of Economic Advisors and the Department of Energy to participate because of the obvious relevance to economic and energy issues.

The Committee has been asked to conduct "a full and complete investigation and study of all aspects of the economic, social, and environmental consequences of resource conservation." Resource conservation is defined in the Act as "reduction of the amounts of solid waste that are generated, reduction of overall resource consumption, and utilization of recovered resources."

As provided by the Act, the Committee is to examine a wide range of policy issues including: "A. The appropriateness of recommended incentives and disincentives to foster resource conservation; B. The effect of existing public policies (including subsidies and economic incentives and disincentives, percentage depletion allowances, capital gains treatment and other tax incentives and disincentives) upon resource conservation, and the likely effect of the modification or elimination of such incentives and disincentives upon resource conservation; C. The appropriateness and feasibility of restricting the manufacture or use of categories of consumer products as a resource conservation strategy; D. The appropriateness and feasibility of employing as a resource conservation strategy the imposition of solid waste management charges on consumer products, which charges would reflect the costs of solid waste management services, litter pickup, the value of recoverable components of such products, final disposal and any social value associated with the nonrecycling or uncontrolled disposal of such products; and E. The need for further research, development, and demonstration in the area of resource conservation."

As previously reported in the Implementation Plan, the objectives of the Committee are to: (1) develop and evaluate selected policies affecting the efficiency with which our society uses materials; (2) involve all major interests in the formulation of these policies; (3) present these findings and opinions to Congress in a series of policy reports which will express the preferred options and recommendations of the Committee. These policy reports will be submitted to Congress at approximately six-month intervals.

This report is the second of four mandated by the Act. It presents the Committee's findings and recommendations to date on the first policy issue the Committee chose to evaluate--the question of whether to recommend Federal beverage container deposit legislation.

The Committee is currently conducting a thorough review of the solid waste product charge issue, as requested by both the enabling legislation and the President's Environmental message. Staff and contractor studies on this issue have been underway for many months, and the Committee will be focusing intensively on the issue during the next few months. Three public meetings across the country have already been held to gather public input on the issue.

In addition, the Committee will be reviewing a full range of alternative potential and existing policy issues in the coming months. These studies will include, but not necessarily be limited to the following policy issues:

-- subsidies for resource recovery

-- litter taxes

-- severance taxes

-- percentage depletion allowances for extractive resources

-- capital gains tax treatment of timber income

-- freight regulations

-- deposit and bounty proposals

The previous section presented the Committee findings to date on national beverage container deposit legislation. The following section is a brief reiteration of the principles and general approach that the Committee has endorsed as guidance in developing and selecting conservation policies. Section IV describes the Committee's public participation program over the last six months. Section V incorporates six background papers prepared by the Committee staff to aid in the Committee's study and decision making process. A lengthy appendix, in four volumes, provides a compilation of the public comments and input received to date on national beverage container deposit legislation proposals.

III. PRINCIPLES AND APPROACH FOR POLICY STUDIES

There are a number of basic principles, criteria, or general social values that might serve as guidlines in formulation public policies for resource conservation. The Committee feels it is appropriate to reassert, as a general statement of philosophy, those principles and values that it considers most important both in assessing resource conservation and recovery policies and in recommending alternatives that will be in the greatest public interest. Without attemption to rank these criteria in order of relative importance and recognizing that these criteria will frequently be in conflict, the Committee proposes to follow the principles listed below throughout its work.

1. Free-market principles. To the maximum feasible extent, conservation policies should not interfere with the free choice of producers, consumers, and local governments to make decisions in a decentralized fashion. This criterion is consistent with the broader democratic philosophy of freedom of choice and also represents our basic faith in the private market system as the primary mechanism for allocating society's resources. Adherence to this principle does not imply a blind faith in the status quo, however. Certain shortcomings in market structure (e.g., monopoly) and the absence of effective private market mechanisms to provide for certain public goods (e.g., environmental protection) allow a valid corrective role for government consistent with, and indeed essential to, the efficient and equitable functioning of the competitive private enterprise system.

2. The "polluter-pays" principle. In simplest terms, the polluter-pays principle means that whoever is responsible for pollution (environmental damages) should be charged the costs of preventing, controlling, or correcting these damages. Although there are exceptions to any rule, this principle states that pollution costs should be neither subsidized by taxpayers in general nor borne directly by those exposed to the pollution.

   For pollution related to industries or products, it should be emphasized that the concept of "polluter" refers not only to the industry in question but also to the consumers of that industry's products as well. In effect, the "polluter-pays" principle means that

those producing and consuming pollution-associated products pay. It is unlikely that pollution control costs assessed the producer will be totally or even largely absorbed out of "excess profits." Under some market conditions, such costs will to a substantial extent be passed along to consumers of these products. In the long-run the extent of the pass-through will depend upon the availability of less-wasteful products and less-polluting technologies and the actual value placed on that product by the consumer.

3. Social and economic equity. Implementation of any significant new policy will, if effective, engender changes. Often such changes will be more beneficial to some groups than to others. The short-term consequences of a specific conservation policy might be that specific industries, labor groups, and geographical regions of the nation would experience "windfall" gains and/or losses. For example, some consumer groups may find their living costs rising much more rapidly than others. In the longer-term, major shifts in economic opportunities may occur.

Such questions relate to the distribution of costs and benefits (as opposed to their total magnitudes). Often equity issues are the major features which determine whether a specific proposal will be accepted or rejected. For example, any scheme that is seriously regressive--that is, imposes a disproportionate burden on the poor--is unlikely to receive serious consideration. The purpose of emphasizing this criterion is not to argue against change. Change is necessary and essential if progress in conserving resources and in improving the efficiency with which materials are used is to occur. Father, the issue is that in developing, evaluating, and recommending conservation policies, it is essential that the Committee consider how the interests of various groups will be affected. If serious equity problems appear with a specific proposal, efforts can be made to minimize or reduce these problems by redesigning the policy. For example, the introduction of the policy could be stretched out over a period of time to reduce any transitional dislocation problems. Alternatively, certain groups could be exempted from the requirements. In still other cases, society might directly compensate groups negatively affected by the policy or might impose special taxes on groups enjoying unearned windfall profits.

4. Economic efficiency. In broadest terms, economic efficiency may be defined as the situation in which society gets the most of those goods, services, and environmental benefits it desires within the constraints of existing resources and technology. Developing efficient policies requires that one compare total social benefits with total social costs to ensure that society does not sacrifice more goods and services than are justified by the benefits of the policy.

5. Administrative feasibility and cost. Policies should be simple enough to be understood by parties involved in implementation and compliance. A conservation policy should not require information or data that cannot be acquired at reasonable cost. From a practical viewpoint, the total cost of administration and enforcement for both public administrative agencies and private parties should be small compared to the benefits derived. The Committee will explicitly assess these administrative costs for any policy proposal considered.

Approach To Policy Development And Evaluation

The principles outlines above are insufficient in themselves to provide unambiguous policy direction. Often, analysis highlights the fact that one principle or impact must be traded off against another. Policy development, evaluation, and selection is a complicated and delicate process involving a blend of philosophical principles, economic theory, and quantitative assessments of the effects of proposed measures. The Committee recognizes that quantitative estimates often tend to dominate and obscure other selection criteria and therefore will endeavor to ensure that principles and theory receive due consideration. Ultimately, political values and processes will play the deciding role.

Recognizing the difficulties involved in policy development, the Committee proposes the following approach:

1. Design Sepcific Policies. Policy reports frequently lack effectiveness because they discuss policy alternatives at a level that is too abstract. At a relatively early stage in the evaluation of each policy area, specific and detailed proposals need to be designed before any substantive quantitative analysis or public review process can begin. Indeed, grappling with detailed design issues is, in itself, a major aspect of policy development. Much of the

effort of the Committee will go into designing specific proposals.

2. Utilize Quantitative Analysis Methods. Although the Committee has few illusions about the degree of quantitative accuracy possible with existing methods and data, it still intends to evaluate alternative policy proposals using cost-benefit or other quantitative procedures wherever practical. To achieve this, the Committee may devote resources to developing and improving the existing data base as well as to improving current estimating procedures. The extent is to ensure that the decisions of the Resource Conservation Committee are made in as logical and accurate a fashion as practicable. Attempts will be made to estimate the effects of policies on the cost of materials, on the quantities of waste generated and disposed of, on materials and energy requirements, and on environmental variables. Measures of other areas of benefit or cost impacts such as employment, regional economics, international trade, administrative cost, and enforceability, will need to be refined or developed during the course of the Committee's work. The Committee recognizes that the state of the art of assessing the economic value of environmental and conservation benefits is not well developed. As a result, certain benefits of conservation may have to be stated in physical rather than economic or market-value terms.

3. Emphasize Gradual Transition and Implementation Features. To mitigate the limitations and uncertainties noted above, the design of a policy should provide for adequate monitoring, feedback, and subsequent corrective adjustments. Where dislocations are a problem, policies should also be designed to be phased in over time so that changes will occur less abruptly, allowing affected groups better opportunity for adjustment.

4. Encourage Public Participation and Review. Participation and debate by public and private interest groups will be provided for and encouraged throughout the study period. Their reactions, comments, and suggestions will be used in revising the policies and will be reported along with the Committee's findings, conclusions, and recommendations.

IV. PUBLIC PARTICIPATION PROGRAM

As expressed in the previous section, the Resource Conservation Committee is committed to encouraging a high degree of public participation and review in its policy evaluation process. This is in keeping with the provisions for public participation which are so intensive to the intent of RCRA and its implementation. The following section discusses the Committee's efforts to date to involve the public in the discussions of resource conservation issues.

Public meetings are being sponsored by the Committee as one of the mechanisms for gathering public comments. The first such meeting since the last report was held October 19, 1977, in Washington, D.C., and was devoted to national beverage container deposit policy. The meeting was widely announced, and a set of questions for which the Committee sought public opinion was mailed to over 10,000 people. Approximately 250 people attended the all-day meeting, held at the Commerce Department Auditorium. The program included 40 speakers who represented a wide cross-section of congressional, industry, environmental, and private citizen interests. Delegates from each of the agencies represented on the Committee attended these public meetings. Public input was sought in written as well as oral form. The Committee received approximately 500 letters from concerned groups and citizens. The record resulting from this meeting and the written comments received are included in the Appendix to this report.

A second set of public meetings, held in November, was devoted to the solid waste product charge concept, which is the next major policy on the Committee's agenda. These meetings were held November 17, in Washington, D.C.; November 18, in Cincinnati; and November 21, in Portland, Oregon. These meetings were also broadly publicized and resulted in a wide range of input from a cross-section of speakers. Approximately 35 speakers participated in this set of meetings and nearly 100 letters have been received to date concerning this issue. Since the solid waste product charge proposals will be covered in the next Committee report, the transcripts and written comments from these three public meetings will be incorporated at that time.

Open Committee Meetings. The Committee has decided that its formal deliberation and decision-making meetings will be open to the public. Verbatim transcripts of these meetings have also been prepared and are available for public scrutiny.

Other Meetings. Committee representatives and the Committee staff have also had numerous meetings and briefings with various individual groups such as the Glass Packaging Institute, Environmental Action, the U.S. Brewers Association, National Wildlife Federation, Can Manufacturers Institute, National Solid Waste Management Association, American Paper Institute, National Governor's Association, the Society of Plastics Industries, Coca Cola Company, U.S. Chamber of Commerce, American Public Works Association, National Association of Recycling Industries, National League of Women Voters, etc. The Committee staff has made a conscious effort to be available for these informal consultations to ensure substantive participation by those groups and individuals interested in the Committee's activities.

V. STAFF BACKGROUND PAPERS

This section is a compilation of the six background papers that were developed by the Committee staff to aid in the Committee's study and decision-making process. The first three were originated by the staff to help focus the Committee's attention and provide a common basis for discussion. The second three were developed in response to specific concerns raised by the Committee during the review and deliberation process. The following is a brief description of each of these papers:

1. Rationale for Beverage Container Deposit Legislation -- Presents the problem definition and the justification arguments for Federal action and briefly reviews several basic alternative approaches.

2. Costs and Benefits of a National Beverage Container Deposit System -- Discusses several key assumptions used in the analysis and presents estimates for benefits and costs expected to result from such a measure in 1985.

3. Issues Regarding National Beverage Container Deposit Proposals -- Presents a detailed listing and discussion of policy design and evaluation issues.

4. Transitional Adverse Economic Impacts of Mandatory Deposit Legislation -- Describes the transition process that would likely take place in the beverage packaging, distribution, and handling industry after passage of national deposit legislation and presents a worst case analysis of adverse labor and capital stock impacts.

5. Beverage Container Return Rates -- Presents historical trends and current experience with deposit systems and attempts to predict the return rates likely under a national deposit system.

6. Localized Employment Impacts, Glass Industry -- Investigates the potential for severe local labor impacts due to glass container plant closings.

RATIONALE FOR NATIONAL BEVERAGE CONTAINER DEPOSIT LEGISLATION

I. Introduction

In the last two decades, the distribution system for beer and soft drinks shifted from one in which most containers were returned and refilled to one in which most containers are thrown away after a single use. Among other effects, this shift created a substantial increase in litter, solid waste, and resource use as detailed in the following sections of this paper. The analysis performed to date indicates that the adverse impacts of this shift can be reduced or eliminated by instituting a Federal mandatory deposit system for beverage containers. Such legislation would provide refunds to consumers to encourage the return of containers for reuse or recycling.

Section II discusses the various reasons why mandatory deposit legislation has been actively considered by all levels of government and why it is appropriate to consider it at the national level. The discussion is largely qualitative; an accompanying background paper on the costs and benefits of deposit legislation provides additional quantitative data. Section III discusses the consistency of mandatory deposits with the policy selection criteria endorsed by the Resource Conservation Committee in its First Report to the President and the Congress, Implementation Plan for the Resource Conservation Committee. Section IV briefly reviews several alternative approaches to deposit legislation.

II. The Rationale for Federal Action

In the early fifties, soft drinks and beer were predominantly packaged in refillable bottles. The glass container then in use was relatively expensive to manufacture and the practice of the industry was to recover and refill bottles. To encourage consumers to return empty containers, the beverage industry voluntarily established and maintained a deposit/refund system.

This situation had several advantages. Beverage consumption created little solid waste since most containers were returned and reused many times before discard. Littering was minimal since not only would the litterer lose his deposit (at 2 cents a container, it was a substantial fraction of the original beverage cost) but also the availability of the refund created an immediate incentive for others to collect any containers that were littered.

The refillable system required little energy and material, since the resource requirements of each refillable container were averaged over many trips. Also, the widespread use of deposits meant that most beverage containers could be returned to almost any store, thus minimizing the inconvenience to the consumer of returning them. The reliance on refillables and the deposit/refund system essentially placed a user charge on those consumers who did not return the empty containers.

In the sixties, as labor costs increased and new technology made available a wider array of more convenient and less expensive beverage containers, the situation changed rapidly. The market share of beer and soft drinks in refillable/returnable containrs plummeted from over 90 percent of all fillings in 1950 to 17 percent for beer and 34 percent for soft drinks in 1975.1/ The beverage industry had little economic reason for encouraging the return of empty cans or one-way bottles and the deposit/refund system was severely truncated. The shift from a deposit/refund system to a throwaway system increased public costs for container litter control and disposal, and for increased resource use, which provides a rationale for government intervention.

Reduce Public Costs for Litter Control

With the decline of the deposit system, the act of littering--a major externality associated with beverage consumption--no longer incurred a direct economic penalty; moreover, no economic incentive existed to collect littered containers. The costs of litter including both cleanup costs and the detrimental effects on neighborhoods, parks, roads, ect., were shifted from the litterer to society at large. This violates the principle that those responsible for pollution should bear its costs.

Beverage containers create a substantial litter problem. Beverage containers are estimated to average 20-30 percent of all litter by item count and 40 to 60 percent on a volume basis.2/ In addition, their size and visibility make them particularly noticeable. Moreover, the relative permanence of cans and bottles in the environment makes them among the most aesthetically damaging forms of litter. These aesthetic damages are not readily estimated, but the increasing value placed on wilderness, parks, forests, and other recreational areas suggests they are appreciable. Littered bottles and cans are also potential safety hazards. Actual expenditures for litter control, which reduce litter only to a limited extent, are currently estimated to be as high as $1 billion.3/

National beverage container deposit legislation could address this issue by restoring both the refund, which would encourage individuals to collect and return discarded containers, and the lost deposit penalty for littering, which would discourage individuals from discarding empty beverage containers in the first place.

Reduce Public Costs of Solid Waste Management

The shift to non-returnables also exacerbated another problem associated with all municipal wastes--the fact that those generating solid wastes are not billed for waste collection and disposal in proportion to the public costs incurred by the amount of waste they generate. In almost all municipalities, solid waste management costs are passed on to the public either as fixed monthly assessments or through the property tax mechanism. Consequently, those individuals purchasing throwaways and thereby increasing the total solid waste bill pay no more than those reducing overall waste by purchasing beverages in refillable containers. The deadline of the deposit system shifted large quantities of empty beverage containers from the industry-maintained separate collection and cleaning system to the municipal waste management system. Responsibility was shifted from those discarding the empty containers to the general public. Again, this violates the basic principle of environmental equity that those responsible for pollution should bear the associated costs.

Beverage containers now comprise about 7.8 million tons, or 6 percent, of municipal solid waste per year. Current estimates of the national costs of collection and disposal average around $30 per ton.4/ Thus the implicit subsidy to collect and dispose of beverage container wastes in 1975 was about 235 million dollars. National deposit legislation would address the solid waste issue by diverting most beverage containers from municipal waste into reuse or recycling programs.

Ensure Efficient Resource Use

The shift to one-way containers significantly increased the material and energy resources required to package and distribute beverage containers. From an economic perspective, however, an increase in resource use constitutes a social problem only if the increase occurs because resource prices do not fully reflect the cost of resource use. As noted, the failure to internalize the costs of littering and solid

waste does implicitly subsidize the throwaway container. Moreover, because many of the costs of air and water pollution associated with materials processing are not charged to those using the materials, the use of material and energy resources is less expensive than it would be if all social costs were internalized. Other tax and regulatory policies also bias downward the prices of energy and other natural resources. For these reasons, some Federal action to correct these market failures and thereby conserve resources may be warranted.

The Resource Conservation Committee staff estimates that the packaging and distribution of soft drinks and beer consumes over 33 percent of all glass, 14 percet of all aluminum, 2 percent of all steel, and significant amounts of paper and plastics. The current system also requires considerable energy--about 383 trillion BTU's annually.5/ Deposit legislation would reduce material and energy use by encouraging the return of beverage containers for reuse or recycling.

Conflicting State and Local Laws

The shift to the throwaway container with its attendant problems has led to many legislative efforts at the city, county, and State levels to pass deposit legislation. Although only four States have passed such legislation, more States are expected to do so. To the extent that such laws conflict with one another (and all current State laws do differ considerably), unnecessary inefficiencies in beverage distribution may result. A uniform national law would avoid this problem.

Consumer Choice

The industry's shift away from the deposit/refund system coincided with a trend toward large national facilities and a reduction and consolidation of regional operations, particularly in the brewing industry. This consolidation enabled the industry to take advantage of the economies of scale associated with the packaging of beverages in throwaway containers and lowered the cost premium associated with the use of such containers.

This consolidation had both positive and negative effects on consumer choice. Although the trend probably increased the availability in local stores of brands produced in other regions, it also probably hastened the demise of many local brands. Consumers still wishing to purchase beverages in refillable containers found it more and more

difficult to do so because retail outlets became increasingly unwilling to handle such containers. These changes have militated against the continued use of refillable containers.

Mandatory deposit legislation should increase the availability of refillable containers. However, it is possible that such legislation could reduce the range of brands offered for sale in some locations.

The "Throwaway" Society

To many Americans the throwaway beverage container is the paramount symbol of waste. They view the use of substantial amounts of energy and natural resources to package a relatively nonessential product as inherently wrong in a world of increasing scarcities and international dependency. Moreover, they consider the use of throwaway containers undesirable given the existence of a workable conservation-oriented alternative.

Summary of Rationale Favoring Legislation

Taken together these issues constitute what has come to be known as the "beverage container problem." Mandatory beverage container deposit legislation would address these issues by restoring some or all of the features of the earlier returnable system thereby reducing the public costs associated with the non-returnable system. The primary benefits associated wth the legislation include the reduction of litter, solid waste, and resource and energy requirements. Such legislation should also make the purchase and return of refillable containers less difficult for those consumers who prefer to use such containers and would signal a movement in public policy toward a less wasteful, more conservation-minded society.

Groups opposing mandatory deposit legislation generally do not take issue with the rationale that the public costs associated with the current beverage container system should be internalized. Rather, they argue that the costs of mandatory deposit legislation exceed the benefits and that beverage containers should not be singled out for Federal action just because they may be a symbol of waste. An examination of the benefits and costs of the proposed legislation is included in Staff Background Paper No. 2.

III. Consistency With Policy Selection Criteria

Mandatory deposit legislation is generally consistent withthe policy selection criteria endorsed by the Resource Conservation Committee in its First Report to the President and the Congress.

Reliance on Market Mechanisms

Mandatory deposits modify the economic consequences of not returning containers and raise the price of the primary consumer benefit associated with convenience packaging, i.e., disposal convenience. However, the deposit requirement works within the current market structure by otherwise allowing full freedom of choice to producers and consumers in making their production, packaging, and purchasing decisions.

Adherence to "Polluter Pays" Principle

Under a deposit scheme, the beverage container's contribution to two major environmental pollution problems particially created by beverage containers--solid waste and litter--become the responsibility of those selling and consuming beverages. This is consistent with the "polluter pays" principle. The solid waste burden would be shifted to beverage distributors and consumers under the deposit system. Ensuring that the litterer alone bears the costs of his activity is less feasible, since littering is a surreptitious activity. However, under a mandatory deposit system the litterer would forfeit his deposit and as a result would be directly penalized.

Efficient and Effective Policy Mechanism

As indicated in the accompanying paper on the costs and benefits of deposit legislation, a nationwide beverage container deposit system appears to create no long-term economic inefficiency with respect to resource allocation. The major costs of this policy would be the losses in consumer convenience, the increased costs of handling returned containers, and the transition costs (increased capital investment and job losses) involved in a shift in container mix. This shift would be brought about by changes in consumer demand patterns as a result of a mandatory deposit.

The major benefits are reductions in litter, solid waste, and resource consumption. On the average, direct costs to the consumer of packaged beverages should not be increased and will most likely be reduced due to increased use of refillable containers.

Administrative Feasibility

The feasibility of administering deposit legislation within the private sector has been demonstrated not only historically but also in the States that now have such

laws in force. Public sector administrative costs should be negligible since no direct Federal regulatory or fiscal actions are required. The only public costs should be for the monitoring of the impacts of the legislation.

Equitable Distribution of Costs

The deposit mechanism should not impair the long-term vitality of the soft drink and beer industries, as witnessed by the economic health of these groups within States where deposit legislation is in effect. However, some adverse economic impacts would occur during the transition to a more extensive returnable/refillable system. The adverse impacts are analyzed in Staff Background Paper No. 4. As indicated above. beverage prices to consumers should, on balance, be decreased somewhat.

IV. Alternative Policies

The deposit approach addresses the litter, solid waste, and resource conservation issues by requiring that those concerned with the packaging, distribution, and consumption of beverages take responsibility for these problems or pay a penalty. The individual who discards his containers as waste or litter loses his deposit and automatically creates an incentive for others to correct these problems.

Although no other single policy addresses all of these issues in exactly the same way as deposit legislation, policies have been suggested which would address one or more of these concerns. Certain of these alternatives could be viewed as complementary policies as well as direct substitutes for beverage container deposit legislation. The major alternative proposals are discussed below.

Increased Education/Enforcement

This policy would address only the litter issue by an expanded program of public education against littering, combined with more effective enforcement of anti-litter laws.* This approach has been the major policy on litter over the last several decades. Such a policy does not create any economic incentives to reduce or control litter, but may reduce the propensity to litter. Such an approach is a natural complement to the deposit approach, but probably would not, based on current evidence, reduce beverage container litter as effectively as a deposit/refund scheme.

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* This approach has been developed and promoted by Keep America Beautiful, Inc., in particular.

Direct Recycling Subsidies

This policy option would rely on various measures (e.g., subsidies and Federal grants, possibly financed by a product charge) to increase the recovery and recycling of postconsumer wastes.** Although such measures could reduce solid waste disposal requirements, they would have little impact on litter. Also, unless a Federal subsidy is extremely large, and widely distributed, benefits would lead to nationwide container recycling or reuse in a relatively short time period. In any event, most recycling schemes can be made compatible with a mandatory deposit system. Subsidies to users of recycled materials, for example, would be directly complementary to the recycling objective of deposits on metal and plastics containers.

Litter Taxes

Under this concept, items appearing in litter would be charged their respective collection and disposal costs.*** The revenues would be used for litter reduction and collection programs. As proposed to date, litter taxes would provide little incentive to change product design or merchandising behavior. They also fail to provide the consumer with an incentive to reduce litter.

However, a litter tax can be applied to all littered items, including categories such as cigarette butts, candy wrappers, and convenience food packaging for which a mandatory deposit scheme would be impractical. Thus, all components of litter can be made to pay their share of litter collection and disposal costs. One problem with such an approach would be in determining the amount of tax to be charged each litter component. Determination of the appropriate distribution of tax revenues for litter control would also be difficult. Litter reduction impact would depend upon the ability of the various State and local governments to establish and maintain an effective program to use the revenues generated by the tax. Again, a litter tax and mandatory deposits can be compatible.

** Various industry groups involved in secondary materials recovery and reuse have been the major advocates of subsidy proposals.

*** An example of this approach is the Washington State Litter Control Act.

Ban on Non-Refillables

A ban eliminating all non-refillable containers would presumably reduce wastes, but it would seriously disrupt the beer, soft drink, and container industries. Moreover, it would prohibit consumer selection of certain types of containers which might be particularly appropriate or desirable for some situations.

Solid Waste Disposal Charges

This alternative would require that the government levy a charge equal to solid waste management costs on products destined for disposal as municipal waste.* As proposed to date, the charges would be based on the virgin material content of such products in order to create a recycling incentive. Funds collected would be distributed to local governments. This proposal would internalize the public cost of solid waste management and should increase recycling and conserve resources; however, this measure would not address the litter problem.

Additionally, the disposal charge would not have the same symbolic impact on the public as a mandatory deposit requirement because the charge would have little visibility to the consuming public. Beverage container deposits could supplement disposal charges by addressing the beverage container litter issue; beverage containers could be exempted from the disposal charge to the extent that deposits would remove beverage containers from municipal waste.

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* This policy has been suggested by several ligislators, most recently by Senator Gary Hart (Senate 1281).

REFERENCES

1/ Beverage Industry Annual Manual, 1976-77, p. 130.

2/ U.S. Environmental Protection Agency, Office of Solid Waste Management Programs. Resource recovery and waste reduction; fourth report to Congress. Environmental Protection Publication SW 600. Washington, U.S. Government Printing Office, 1977, p. 69.

3/ Powers, Roger W., President, Keep America Beautiful, Inc. Testimony before the California Senate Committee on Natural Resources. January 17, 1974.

4/ U.S. Environmental Protection Agency, Op. cit., Chapter 2.

5/ Research Triangle Institute. Energy and economic impacts of mandatory deposits; final report. Federal Energy Administration, Sept. 1976. 752 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-258 638.)

COSTS AND BENEFITS OF A NATIONAL BEVERAGE CONTAINER DEPOSIT SYSTEM

Over the last several years, a number of studies have attempted to predict the costs and benefits of either State or Federal beverage container deposit legislation. Each of these studies used a different set of assumptions and concentrated on different aspects of deposit legislation. All of the studies have been widely reviewed and criticized for different reasons.

The purpose of this paper is to predict the nature and maximum range of the costs and benefits of national beverage container deposit legislation using data from the latest of these studies and a set of assumptions that seems most appropriate given current knowledge of the beverage and packaging industries. The analysis focuses on national rather than regional impacts of proposed Federal legislation.

National beverage container deposit legislation would cause a refundable deposit to be placed on beer and soft drink containers. The results of this legislation would be a shift in the beverage packaging mix to a greater reliance on refillable bottles, increased recycling of aluminum and steel, reduced beverage container litter and solid waste, reduced pollution, reduced energy and materials use, additional container handling requirements, and a loss of consumer convenience.

I. Methodology

In this paper we present the results of a long-run equilibrium analysis of two scenarios which we believe bracket the likely impacts of mandatory deposit legislation. The approach used to estimate benefits and costs was as follows: First, baseline beverage sales and packaging mix were projected to 1985. Then, based on the experience of States which have enacted mandatory deposit legislation, the RCC staff estimated the possible range of impacts that national legislation could have on the packaging mix. The staff then developed a series of assumptions including likely return rates, recycling rates, and the dates for when legislation would pass and go into effect. Current beverage shelf prices were adjusted to reflect changes in the marketplace caused by the deposit system. The Research Triangle Institute (RTI) beverage industry model was then used to estimate the impact of these assumptions on capital requirements, total employment, energy and material use, reductions in solid waste, litter, and pollution, and the change in consumer

outlays for beverages. Finally, the impact of the legislation on consumer convenience was examined.

II. Assumptions Used In The Analysis

The estimates of costs and benefits of mandatory beverage container deposit legislation depend heavily on the assumptions used in the analysis. In fact, disagreements over which assumptions should be used have been a major source of controversy in the debate about the proposed legislation. For this reason, all the assumptions used in previous studies and the criticisms of them have been reviewed, and the RCC staff has developed the following new set of assumptions outlined below for this analysis.

Legal Requirements: A law requiring a minimum 5-cent deposit on all malt beverage and carbonated soft drink containers was assumed to pass in 1978 and go into effect in 1980. It was assumed that the deposit refund responsibility would be placed on the distributor/wholesale. The proposed legislation under discussion is consistent with these assumptions.

Baseline Assumptions

The long-term trends previously described by RTI for malt beverage and soft drink sales were assumed to continue. The trend to increasing use of metal cans was also projected to 1985. The 1985 projection by the General Accounting Office of packaging market shares was used as a guide and adjusted to include a 10% share for large non-refillable plastic bottles. This 10% share of the total beverage container market was consistent with industry projections of a 15% soft drink market share for plastic bottles by 1985.1/

Since the baseline projection was not intended to be an exact forecase, aggregate packaging shares were rounded to the nearest 5%. The baseline packaging mix is shown in Table I. Refillable bottle use for malt beverage packaging almost disappears in the baseline due to the structure of the brewing industry, but the refillable bottle was projected to maintain a substantial share of the soft drink packaging market.

1/ Conversation with industry representatives on 9/29/77.

Table I
Baseline Packaging Mix
(Percent of Beverage Volume)

	1977			1985		
	Malt Beverage	Soft Drink	Total	Malt Beverage	Soft Drink	Total
Refillable Bottle	14	38	27	4	32	20
Non-refillable Glass Bottle	23	26	25	21	10	15
Non-refillable Plastic Bottle	0	0	0	0	18	10
Metal cans	66	36	48	75	40	55

Source: RCC staff update of projections developed by the Research Triangle Institute in 1975

In recent years the aluminum can has been steadily increasing its share of the can market. RTI's projection of continuing market penetration for the aluminum can was assumed for the baseline projection. 2/

The assumed baseline return rates for refillable bottles and the recycling rates for glass and metal non-refillable containers are shown in Table II. The 1975 return rates--91% for soft drink bottles and 92% for malt beverage bottles-- were used for the baseline projection, 90% appears to be a floor rate for economic use of the refillable bottle, and the beverage industry in the past has raised the required deposit on refillables when necessary to maintain the 90% return rate. The secondary material recycling rates used in the baseline are RTI projections based on a Franklin Institute Study.

Table II
1985 Baseline Return Rate and Recycling Assumptions

Soft drink bottle return rate	91%
Malt beverage bottle return rate	92%
Steel recycling rate	10%
Aluminum recycling rate	40%
Glass recycling rate	5%

2/Research Triangle Institute, Energy and Economic Impacts of Mandatory Deposits, Sept. 1976, NTIS PB-258-638, pp. B-19 and B-23.

Packaging Market Shares Following Federal Deposit Law

The most important set of assumptions made to analyze the impact of mandatory deposit legislation is the packaging mix after the industry has adjusted to the deposit requirement. Previous studies have assumed a wide range of possible market shares, all of which the RCC staff found to be unrealistic. Accordingly, the staff developed two new scenarios which were felt to bracket the possible impacts of a Federal deposit law. The packaging mixes used in the impact analysis are shown in Table III. The rationale for the mixes used in these scenarios is presented in Staff Background Paper No. 4. The costs and benefits of national legislation were assessed for 1985 because the transition analysis in Staff Background Paper No. 4 showed that the transition would be completed by 1985 in the scenario containing the most extreme shift from the baseline.

TABLE III
1985 Packaging Mix Scenarios Used For Impact Analysis
(Percent of Beverage Volume)

	Mix I			Mix II		
	Malt Beverage	Soft Drink	Total	Malt Beverage	Soft Drink	Total
Refillable Bottles	28	50	40	51	67	60
Non-refillable Glass Bottles	16	5	10	9	2	5
Non-refillable Plastic Bottles	0	18	10	0	18	10
Metal Cans	56	27	40	40	13	25

Source: RCC staff analysis

The RTI model develops impact projections of packaging mix separately for the malt beverage and soft drink industries. The baseline projection resulted in beverage market shares of 54% for soft drinks and 46% for malt beverages in 1985. These two percentages were used to construct the aggregate packaging mixes for the two scenarios.

An effort was made in specifying the packaging mixes for soft drinks and malt beverages to maintain the baseline relationship between metal cans and non-refillable and management standpoint. The split between malt beverage and soft drink industry sector. The brewing industry is more centalized and has a more complex distribution process than the soft drink industry; this reduces the cost advantage of refillable bottles in the brewing industry and results in a smaller refillable bottle market share.

The positions of steel cans and aluminum cans relative to each other were assumed to remain as in the baseline. The deposit system favors the aluminum can because of its higher recycle value, but the baseline already contains a trend to aluminum cans, and the reduction in can production due to the legislation would slow new investment in can production.

Shelf Price Impact Assumptions

One of the most important aspects of a national beverage container deposit analysis is estimating the impact deposits will have on the shelf prices of beer and soft drinks. RTI estimated 1985 shelf prices for beverages in each container type by beginning with actual 1975 beverage shelf prices and then adjusting them for cost changes projected to occur at the various stages of production and distribution. The RTI beverage industry model uses projections of increased handling costs for non-refillable containers at the retail and distribution levels, forfeited deposits, and recycling revenues gained by distributors or manufacturers to determine industry cost changes.3/ Because the market is assumed to be competitive, it is assumed that forfeited deposits will not result in permanent increase in profits but will be reduced through price competition. Shelf price changes are the net effect of changes in capital and labor costs.

In response to industry criticisms that existing shelf prices of malt beverages in refillable containers did not adequately represent the costs of providing these beverages on a much more extensive scale (refillables are currently available for use primarily for on-premise consumption of the beverage and near breweries where they can be provided at low cost), 3 cents per container was added to the 1975 shelf prices of malt beverages for the impact analysis. This makes the refillable bottle marginally less expensive than the aluminum can in the impact scenarios.

Other Assumptions Used in the Impact Analysis

In the RTI study sponsored by Federal Energy Administration, 90% return rates were used for cans and bottles, and 100% recycling rates were used for returned cans. The return and recycling rates for cans were criticized as unrealistic, so the RCC staff developed new assumptions more in line with previous experience and the value of the different materials. These rates are shown in Table IV. An analysis of return rates is contained in Staff Background Paper No. 5.

3/ See Bingham, Taylor H. et al, Energy and Economic Impacts of Mandatory Deposits, Research Triangle Institute, 1976, pages 45 and 46, for a more detailed discussion of the data and assumptions used in determining shelf prices.

Table IV

1985 Return Rates and Recycling Rates Used in Impact Analysis

	Baseline	Mix I	Mix II
Refillable Bottle Return Rate	91%	90%	92%
Metal and Glass Container Return Rate	-	80%	86%
Average Container Return Rate	-	85%	90%
Steel Can Recycling Rate	10%	40%	80%
Aluminum Can Recycling Rate	40%	80%	95%
Glass Container Recycling Rate	5%	20%	50%

RTI's study for FEA contained coefficients of retail employment which were based on a study of refillable container management in supermarkets. These coefficients were reduced to take into account the likely use of employee slack time in small package and convenience stores.

The quantities of total beer and soft drink consumption are projected within the model as functions of beverage prices and other factors. Accordingly, the present analysis made no further assumptions about beverage sales after institution of mandatory container deposits. In the absence of any evidence to the contrary, it was assumed that no reduction in sales would occur due to the loss of convenience associated with mandatory deposits.

The reductions in materials and energy use and litter and solid waste as a result of the mandatory deposit legislation are a direct result of the assumed changes in packaging mix and return rates. The RCC staff relied on the RTI analysis of energy and materials use for the direct reductions associated with the law.

Beverage container disposal costs would be reduced as the quantity of solid waste is reduced. Collection costs probably would not be reduced proportionately in the short run, but removal of a portion of the waste stream would reduce the need to expand collection services and would result in savings in the long run. The solid waste savings calculations were based on current national collection and disposal costs, which were increased to $35 per ton to take into account the more stringent disposal standards in 1985.

III. Analysis of Costs and Benefits

Given these assumptions, the RTI/FEA computer program was used to project the low response (Mix I) and high response (Mix II) outcomes for 1985 used as the basis for the Resource Conservation Committee staff analysis of benefits and costs. The computer model directly projects a large number of comparisons between baseline estimates and scenario results, including numbers of containers, detailed sectoral employment, energy requirements, total consumer expenditures, quantities of containers recycled, and many others. The RCC staff also made a number of additional calculations to translate some of these values into other results not directly produced by the model. These primarily included impacts on solid waste, litter, raw material requirements, and selected environmental impacts.

These cost and benefit estimates are summarized in Table V and discussed in the remainder of the paper.

Table V

Summary of National Costs and Benefits of Mandatory Federal Beverage Container Deposit Legislation (Estimates for 1985 Scenarios)*

		Mix I**	Mix II***
1.	Net Direct Cost Savings to Consumer ($ Million)	656	1,757
	Net Savings per Filling (cents)	0.6	1.5
2.	Consumer Inconvenience Cost	(Discussed in the text)	
3.	Post Consumer Solid Waste		
	A. Solid Waste Collection & Disposal Savings ($ Million)	207	221
	B. Litter		
	(1) Collection Cost Savings ($ Million)	200	200
	(2) Safety Consideration ($ Million)	10	10
	Net Collection & Safety Benefits	210	210
	(3) Litter Reduction	Total litter volume reduced 40%; total items by 20%	
4.	Other Industrial Sector Environmental Impact Benefits		
	A. Industrial Solid Waste Reduction (million cubic feet)	270	450
	B. Atomospheric Emission Reduction (million pounds)	750	1,200
	C. Waterborne Waste Reduction (million pounds)	140	210
5.	Natural Resource Conservation Benefits		
	A. Reduction in Bauxite Consumption (million tons)	1.0	1.5
	B. Reduction in Iron Ore Consumption (million tons)	1.3	2.4
	C. Energy Reduction (trillion Btu)	70	130

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* Assumes passage of legislation in 1978 which is effective in 1980.

** 40% refillable glass, 10% non-refillable glass, 10% non-refillable 40% cans.

*** 60% refillable glass, 5% non-refillable glass, 10% non-refillable plastic, and 25% cans.

Change in Consumer Costs

As shown in Table 3, container Mix I would bring about consumer savings in the range of $656 million, or 0.6 cent per 12-ounce serving. Container Mix II, with higher use of refillable bottles, would bring about consumer savings of $1,757 million or about 1.5 cents per serving. These values were calculated by first multiplying shelf prices of individual container types for beer and soft drinks by the beverage consumption for that container type, then summing the total expenditures for the baseline, for Mix I and for Mix II. Then the increased amount of forfeited deposits was added to the consumer cost of Mix I and Mix II. The net changes in consumer savings are a result of the combined effect of shelf price, mix, and forfeited deposit changes. The 1985 shelf prices for beverages by container are shown in Table VI.

Costs of Lost Consumer Choice and Convenience

There is general agreement that the principal advantage or benefit to the consumer of the present one-way container system is the convenience of not having to return containers to points of purchase or redemption. A separate but related issue is that of the free choice of the consumer to select the type of container (in terms of physical specifications) that best suits his personal wants or preferences. Thus, it is often argued that consumers could suffer two types of consumer welfare losses under a universal deposit system:

(1) The loss of choice among container types or brands if some brands or container types disappear from some market areas, and

(2) The inconvenience of returning containers in order to avoid forfeiting the deposit.

It seems clear that as long as metal cans remain on the market as a readily available alternative for those consumers with an inherent preference for metal over glass, there will be no consumer welfare loss on this account. The RCC staff believes that metal cans will retain 25% of the market at aminimum after the passage of national deposit legislation (as would not be the case under a more extreme "ban-the-can" law). This is not to say that there would be no switching by some local outlets or by some manufacturers from cans to bottles, but consumers would in general not lose their current container selection, and would, in fact, have a large-plastic-bottle packaging option as well.

It is possible that the increased administrative responsibilities for one-way containers would lead some brewers to limit their sales of malt beverages in areas where they have a very small market share,

and this could affect brand choice. It is also possible that the legislation would favor the growth of regional breweries, because they would be able to take advantage of lower transportation and handling costs for refillable bottles relative to centralized breweries.

Table VI

1985 Shelf-Price Estimates (Cents per 12 oz. Filling)

	Baseline	Mix I	% Change	Mix II	% Change
Malt Beverage					
Refillable Bottle	23.8	23.8	-	23.8	-
Non-refillable Bottle	25.8	25.6	-0.7	26.0	+0.8
Steel Can	25.8	25.6	-0.7	26.0	+0.8
Aluminum Can	25.8	25.0	-3.1	25.4	-1.5
Soft Drink					
Refillable Bottle	19.3	19.3	-	19.3	-
Non-refillable Bottle	22.8	22.6	-0.9	22.9	+0.4
Steel Can	25.1	24.9	-0.8	25.3	+0.8
Aluminum Can	25.1	24.3	-3.2	24.6	-2.0

Source: RTI beverage industry model results based on RCC staff assumptions used for the impact analysis.

Consumer Inconvenience

Aside from possible transition costs, the loss of consumer convenience emerges as the single major cost factor from an economic evaluation standpoint. It is the principal long-run cost against which long-run environmental and other benefits must be weighed. This paper does not attempt to make a quantified estimate of total inconvenience costs. However, the following points may help to provide a perspective:

(1) Sales data from the two States with universal deposits do not show decreases in beverage sales. This suggests that consumers themselves in these States do not perceive significant inconvenience from the system.

(2) At least two groups of consumers would benefit from increased convenience under universal deposits. The first is the 25 percent of consumers (measured by total sales) who presently purchase refillables. The second is the substantial number who currently deliver cans and no-deposit bottles to recycling centers. Their convenience would be increased by having a much greater number of return points. A third group -- those who would purchase refillables now if they were more widely available — would also presumably benefit from any combination of greater availability and increase in redemption points.

(3) The loss in convenience occurs to those consumers who presently do not buy beverages in refillable containers and would not buy them in the absence of mandatory deposits even if they were available everywhere. Beer is no longer widely available in refillable containers, but soft drink price data indicate that many consumers willingly pay more for the convenience of one-way containers when they have a choice.

(4) The additional inconvenience imposed on anyone by national mandatory deposit legislation could not be valued at more than 5 cents per container because that is the amount that would be forfeited by a consumer who did not return the container, and for the vast majority who would return containers for the deposit, the inconvenience cost per container would be less than the 5-cent refund value. The aggregate value of the loss in consumer convenience could theoretically exceed the direct consumer savings because the "savings" represent monies consumers could have been retaining without the legislation if they had wished to return beverage containers.

Capital and Labor Impacts

The shift to a greater reliance on refillable bottles would increase the capital and labor requirements of the packaged portion of the beverage industry and would decrease the energy and natural resource requirements. As explained in Staff Background Paper No. 4 on the adverse economic impacts of the legislation, capital requirements for metal can and bottles would fall, while the requirements for bottle-filling equipment would rise. Capital requirements would be manageable and premature obsolenscence of equipment as a result of the legislation would be quite limited due to the extended nature of the transition period.

Although a system based move extensively on refillable bottles would be more labor-intensive than the current system, the labor requirements would call for a different skill mix. The labor requirements that would support the malt beverage and soft drink packaging systems projected for 1985 are shown in Table VII. The impact of the mandatory deposit

Table VII

1985 Employment Requirements (Man-Years)*

	Baseline	Mix I	Mix II	Net Mix I	Net Mix II
Glass Container Producers	23,500	18,600	13,100	-4,900	-10,400
Metal Can Producers	50,700	36,500	22,700	-14,200	-28,000
Steel Producers	9,800	6,900	4,000	-2,900	-5,800
Aluminum Producers	9,800	7,100	4,700	-2,700	-5,100
Beverage Distribution	160,600	180,000	198,900	+19,500	+38,300
Retail Sector	27,900	87,100	92,200	+59,200	+64,300

* Includes only employment in each industry related to beverage container production and excludes plastic-bottle-related employment which should be relatively unaffected by mandatory deposit legislation.

** 40% refillable bottles, 10% non-refillable glass bottles, 10% plastic bottles, and 40% metal cans

*** 60% refillable bottles, 5% non-refillable glass bottles, 10% plastic bottles, and 25% metal cans

Source: RTI beverage industry model results based on RCC staff assumptions used for impact analysis and adjusted to account for sectors (e.g. non-refillable bottles) not in the model.

legislation would be to increase the demands for unskilled labor in the beverage distribution and retail sectors and to decrease the demand for skilled labor in the container production-related industries. The adverse impacts are examined in Staff Background Paper No. 4, but in the aggregate, total employment and wages would increase.

Benefits Associated with Reductions in Litter and Solid Waste

One of the principal aims of beverage container deposit legislation is to reduce litter. The deposit serves as a monetary disincentive to litter or discard the container. It also serves as an incentive for others to pick up littered containers to redeem them for the refund value.

The costs of litter are not well established. Based on existing data, the best estimate of current expenditures to control litter is $1 billion.4/ In spite of this expenditure, there is no evidence that littering habits are improving or that less litter is accumulating. Consequently, the aesthetic damage caused by litter cannot be measured by the $1 billion expenditure. This amount only represents the cost of collecting what is collected and the cost of anti-litter education. Collecting litter more frequently or more completely would increase litter control costs. Additionally, costs continue to be incurred due to injuries related to litter. The best estimate of the cost of such injuries, not including the value of work lost as a result, is $18 million.5/

4/ Powers, Roger W., President, Keep America Beautiful, Inc., Testimony before the California Senate Committee on Natural Resources. January 17, 1974.

5/ Syrék, Daniel B., California Litter, A Comprehensive Analysis and Plan for Abatement. Institute for Applied Research, May 1975.

Beverage container deposit legislation can be expected to reduce the number of beverage containers in litter by 80%, and the total number of items littered by 20%.6/ This is a reduction of nearly 40% of total litter volume. Total litter-related injuries could decline by 55%.7/ The cost savings associated with this decline in litter (assuming collection costs linearly related to item number) would be about $210 million per year. However, the aesthetic value of the decline may be much greater.

Another benefit associated with mandatory beverage container deposit legislation is the reduction of solid waste management costs due to the increased recycling and use of refillable bottles. The savings associated with the two scenarios evaluated are shown in Table VIII.

Industrial Environmental Impacts

The production of beverage containers, like all manufacturing processes, produces a certain amount of industrial pollution. This pollution can be measured in terms of industrial solid waste--process losses, ash from fuel combustion, mining wastes, atmospheric emissions and waterborne wastes. Additionally, mining causes ecological damage that cannot be measured in terms of wastes or emissions. Any change in packaging mix brought about by a beverage container deposit system will bring about a resultant change in industrial pollutants. Table IX shows that beverage container deposits, regardless of the resultant container mix, would bring about substantial reductions in industrial pollution.

Natural Resource Conservation Benefits

Table X shows estimate of savings resulting from deposit legislation in the consumption of bauxite, iron ore, and energy. The primary raw material used in the manufacture of aluminum cans is bauxite. The potential reduction in bauxite consumption from baseline projections is 1.5 million tons. About 90% of the bauxite used in the U.S. is imported.

The primary raw material used in the manufacture of steel cans is iron ore, though bauxite is used to make lids for bi-metal cans. The reduction in iron ore consumption from baseline projections would be up to 2.4 million tons. One-third of the iron ore consumed in the U.S. is now improted and domestic deposits being exploited are becoming lower in grade.

6/ RCC Staff estimate.
7/ Syrek, Daniel B., Op. cit., pp. 59-73.

Table VIII

Annual Solid Waste in 1985

		Mix I			Mix II		
	Baseline	Total	Reduction from Baseline	%	Total	Reduction from Baseline	%
Beverage Container Waste (million tons)	6.3	4.8	1.5	24%	3.1	3.2	51%
Total Solid Waste (million tons)	165**	163.5	1.5	1%	161.9	3.2	2%
Cost Savings from Reduced Collection and Disposal* ($ Million per year)			53			112	

* At $35 per ton collection and disposal cost.

** EPA, Fourth Report to Congress, Resource Recovery and Waste Reduction, 1977, p.20.

Source: Research Triangle Institute computations based on assumptions provided by the RCC staff.

Table IX

Industrial Pollution
Caused by Beverage Container Production in 1985

		Mix I		Mix II	
	Baseline	Total	Reduction from Baseline	Total	Reduction from Baseline
Industrial Solid Wastes (million cubic feet)	524	250	52%	71	86%
Atmospheric Emissions (million pounds)	1717	968	44%	521	70%
Waterborne Wastes (million pounds)	308	173	44%	94	69%

Source: RCC staff estimates

NOTE: The numbers in this table represent industrial effluents from the extraction, fabrication, and recycling sectors of beverage container production.

The energy figures in Table X represent "total systems" energy use, from extraction through delivery and final disposal. The projected reduction in consumption would be equal to approximately 0.1% of 1985 U.S. energy consumption. It should be noted, however, that possible increases in consumer expenditures for other consumer goods and services would cause increases in material and energy consumption which could significantly affect the projected savings.

Table X

1985 Materials and Energy Savings
Under Beverage Container Deposit System

	Baseline Consumption*	Mix I Quantity Saved	Mix I Percent of Baseline	Mix II Quantity Saved	Mix II Percent of Baseline
Bauxite (million tons)	2.0	1.0	50%	1.5	75%
Iron Ore (million tons)	2.9	1.3	45%	2.4	83%
Energy** (trillion Btu/ yr	334	72	21%	134	40%

* The baseline return rate includes both voluntary recycling and recovery of aluminum cans from municipal solid waste. The Mix I and Mix II rates do not include recovery from municipal solid waste.

** Used in beverage packaging

Note: Possible reductions in total consumer spending for beverages would be reflected in increased expenditures for other consumer goods and services. Such expenditures would cause increases in material and energy consumption which could significantly offset these projected savings.

Source: Research Triangle Institute data and Hunt, et. al., Resource and Environmental Profile Analysis of Nine Beverage Container Alternative, 1974.

Staff Background Paper No. 3
November 5, 1977

ISSUES REGARDING NATIONAL BEVERAGE CONTAINER DEPOSIT PROPOSALS

This paper presents an outline of issues relating to beverage container deposit legislation for consideration by the Senior Policy Advisory Group of the Resource Conservation Committee.

The purpose of this list is to get all major issues out on the table, in writing, for review by Committee members' agencies. A complete list of issues should be developed now while there is still time for the Staff or other Policy Group members to address them. Hopefully, by so doing we can begin to answer some of the following questions:

1. What are the essential areas of agreement or disageeement within the Committee?

2. Where disagreement is found:

   - Can the issue be resolved by practical research or analysis?

   - Can any other resolution be proposed? For instance, could the legislation be designed to include a mechanism for possible future adjustment if unexpected problems become evident?

This paper is divided into three major sections:

I. Design Issues: These include questions that should be addressed by an Administration proposal if a decision were made to proceed with national beverage container deposit legislation. This includes a list of specific options under each of the following major design questions:

   1. Which beverages (soda, beer, wine, milk, etc.) and containers should be included?

   2. What should be the size of the deposit and should it be the same for all sizes of containers?

   3. At what stage of the beverage industry production/ distribution chain should the deposit originate?

   4. Implementation issues: should beverage container deposit legislation be phased in? Should dislocated groups be compensated? How? Should the government do anything with unrefunded deposits?

II. Impact Evaluation: What effects and impacts should be estimated and understood in order to evaluate the desirability of such a policy?

III. Alternative Policies: This section is a list of other policy proposals that address one or more of the same problems. They are not necessarily mutually exclusive or non-compatible alternatives.

I. Design Issues

1. Which beverages and container materials should be included?

Most State deposit legislation and Federal bills have been directed only at beer and carbonated soft drink containers. This is primarily due to the heavy historical reliance of these products on returnable containers and their high incidence in litter. Most other types of beverages could, in principle, also be included in deposit legislation. Milk was once distributed in returnable glass containers, but this practice is rare today. Some European countries require deposits on containers for wine and mineral water. Wine and liquor bottles are visible in urban litter. Extending the coverage to other beverages may be justifiable on grounds of equity among beverage types, reduced litter, and/or resource conservation benefits.

A second closely related question is whether all types of container materials should be included. Today glass and carbonated soft drink industries. However, plastics have a significant potential, and paperboard is now widely used for milk and non-carbonated soft drinks. If the list of beverages is expanded, failure to include all materials could have potentially significant market-share repercussions.

The major options include:

a. Beverages

1. Beer and carbonated soft drinks only (Oregon and Vermont laws; Hatfield bill)

2. Mineral water, fruit juices, non-carbonated soft drinks (some European countries)

3. Milk (historical U.S.)

4. Wine (some European countries) and spirits

b. Container materials

1. Glass and metal only

2. All materials

3. Specific exceptions

2. What should be the deposit size structure?

Two different types of deposit structures have been proposed for beverage containers. One type would require a simple uniform deposit on all containers of a specific size or range of sizes (e.g., 5¢ for 16 oz. and under; and 10¢ for over 16 oz.). A more complex structure might allow a lower deposit (e.g., 2¢ as in Oregon) on containers that are refillable by more than one manufacturer.

The rationale for this type of two-tiered structure is that it creates an incentive to use standardized, refillable bottles. Standardized bottles would reduce transportation costs because a bottler could use other standard bottles that are located closer to his filling operation. Standardized bottles would also be more convenient for retailers because they would not have to sort returns by brand. In addition, consumers would experience less inconvenience since they could return standard bottles to stores other than those that stock their particular brand of beverage.

A second issue involves the acutal size of the deposit. Almost all U.S. proposals start with 5¢ or a 5¢ minimum. The size of deposit may be significant in terms of the incentive for returns and the total amount of financial resources tied up in the deposit system.

Summary of basic options:

a. Structure of deposit system

1. One uniform deposit (or minimum) for all types and sizes of containers.

. Different deposits by size of container

. Two-tier structure - standardized bottles carry a lower deposit.

b. Size of deposit

1. Do not specify deposit size in law.

2. 5¢ minimum on all containers.

3. 10¢ minimum on all containers.

4. 5¢ or 10¢ increments for each 16-oz. increase in container size.

3. At what stage of beverage production or distribution should the deposit originate?

Beverage container deposit legislation should specify where the deposit should originate: the beverage container manufacturer, the beverage producer-filler, the distributor-wholesaler, or the retailer. The point of deposit origin may affect the degree to which the objectives of such legislation will be met and the industry's administrative and other costs of implementation.

Effect on Objectives. The level of attainment of the objectives of deposit legislation is directly related to return rates and recycle rates. The possible effect of point of deposit origin on return and recyling rates stems from the fact that the originator of the deposit might possibly gain by retaining un unredeemed deposits from containers not returned to him. Since the retailer is the exchange link in the distribution chain most directly able to affect consumer behavior, it is argued that the incentive which results from unredeemed deposits might cause retailers to discourage consumers from returning containers. In addition, if the deposit were to originate at the retail level the accomulation of non-refillable containers might be too small to encourage recycling, and incentives would be generally weak. Finally, as the deposit origin is moved closer to the retailer, the probability increases that an uneven or inequitable distribution of returns might result. If true, these arguments suggest that the deposit should originate further back in the distribution chain.

Industry costs of administration and handling. The further back in the distribution chain towards the container manufacturer that the deposit originates, the higher will be the accounting and other transaction costs of administering the deposit transfer system. However, there may also be some scale economies in system planning, transportation, processing, and marketing the recyclable containers that would make it more efficient, overall, for the deposit to originate close to the container manufacturer.

Again, the basic design options are to begin the deposit at either:

a. Container manufacturer

b. Beverage producer-filler

c. Distributor-wholesaler

d. Retailer

4. Implementation

Three design issues have been identified relating to implementation and administration of a deposit system. The first two--phasing and compensation for windfall losses--are concerned with means of mitigating transitional and income distribution problems. The third is the question of whether the Federal government should concern itself with the unrefunded deposits.

a. Phasing. This is proposed as a means for mitigating the labor, capital, and regional economic impacts of the policy by providing for an extended adjustment period. Industry and container market shifts cannot take place instantaneously for many reasons (see Staff Background Paper No. 4). The question is whether the law itself should attempt to influence the length and pattern of the transition period. Options include:

1. No legislative phasing.

2. Specifying a time lag from passage of legislation to effective date, e.g., two years.

3. Specifying certain percentage of implementation of deposits for all companies by certain dates.

4. Various effective dates for different container sizes, beverage types, business sizes, or other variables.

b. Compensation for windfall losses. Few programs are designed with specific provision to compensate those adversely affected by government intervention, although it is a commonly suggested approach to minimize the distributive inequities of programs that appear otherwise sound. There are, of course, numerous Federal programs of a general nature that would tend to mitigate transitional costs and windfall losses, such as provisions for capital loss write-offs and new-capital tax credits in the tax code, unemployment compensation, job training programs, etc.

Introducing special compensation or other transitional programs could be costly and would significantly complicate the administrative aspects of implementing a Federal deposit law. However, such programs could be temporary and they could be funded out of a temporary tax on unredeemed deposits (which by some estimates may total several hundred million dollars per year). Targets for compensation or financial aid would include:

1. Disemployed workers.

2. Firms experiencing market losses or special transition costs.

3. Regional areas adversely impacted by plant closings or increased unemployment.

c. Should unrefunded deposits be taxed? This question is related to a possible windfall gain in the profits of firms at the stage at which deposits are initiated. Since deposits would not be refunded on the 10 percent or so of containers not returned, they would represent a substantial increase in gross revenue for the industry (on the order of $800 million per year in 1981 if 10 percent of containers are not returned). In a competitive industry this increase in revenue would not, in theory, result in a permanent increase in company profits. Rather, it would be reduced by price competition or be required to cover other cost increases. Legislative design options regarding such deposits might include:

1. Ignoring them (letting the "market" handle the problem).

2. Imposing a temporary or permanent tax to capture the windfall for the Federal Treasury (perhaps to finance litter or solid waste programs).

3. Requiring that the industry redistribute the net proceeds of their deposit accounts in some manner.

5. Other design issues for consideration.

a. Should the legislation include a ban on pull tabs? Most deposit legislation and proposed Federal bills have included provisions for banning pull tabs. Pull tabs have been singled out because they are littered often and can be safety hazards. Partially in response to efforts to ban pull tabs, industry has developed several types of self-opening devices that do not detach from the can, and which are currently in use in some parts of the country. The industry appears to be moving towards increased use of the non-detachable opener.

An outright ban on pull tabs is not consistent with utilization of the market principle preferred by the Committee. Such a ban might also be considered inequitable unless bottles were also required to have non-detachable closures, a requirement that may complicate a returnable/ refillable system.

b. Should there be deposits or other regulations on beverage container cartons or carriers? Deposit legislation is generally directed only at beverage containers. However, the same argument for placing deposits on beverage containers can be made for container carriers. In fact, the case carton for refillable beer bottles does normally carry a deposit. As an alternative to deposits, some State legislation has proposed banning certain types of carriers. High top plastic cone carriers for cans have been banned in Vermont since January.

Summary of options:

1. Do nothing regarding carriers.

2. Deposit on carriers.

3. Ban on some types of carriers.

c. Should State and local deposit laws be preempted by any Federal deposit law? In the case of deposit legislation, a uniform law would generally be beneficial for industry. However, several States currently have deposit legislation and the disruption to business appears minimal. Those States are primarily rural. If each State decides to have its own variation, the effect could be significant.

Summary of options:

1. Allow State and local governments to have a more stringent law.

2. Uniform national law.

3. Uniform national law with "grandfather clause" providing for current State and local laws.

II. Impacts

Following is a list of economic and environmental impacts and effects related to a national deposit law. Where practicable, these impacts have been subjected to some form of quantitative estimation in documents previously distributed or in Staff Background Paper No. 2, Costs and Benefits of National Beverage Container Deposit Legislation. Each Committee member should consider which of these are most important, and whether the available estimates are adequate for decision-making purposes. (See Staff Background Paper No. 2 for a description of the impacts.)

1. Impacts on the Environment and Natural Resources

   a. Post consumer municipal solid waste.

   b. Litter volumes and impacts.

   c. Industrial solid waste.

   d. National air and water pollution.

   e. National energy use.

   f. National industrial raw materials use.

   g. Disruption/destruction of natural environments.

2. Economic Impacts

   a. Total GNP and aggregate economic efficiency.

   b. Shelf prices of beverages.

   c. Total employment and labor incomes.

   d. Transitional impacts and dislocations.

   e. Redistributional impacts on households, industries, regions.

   f. Environmental protection and solid waste management costs and efficiencies.

   g. International trade.

   h. Federal government administration costs.

   i. Consumer inconvenience.

III. Alternatives to National Beverage Container Deposits

Other policy approaches exist for dealing with litter, solid waste, and resource conservation problems, although none has precisely the same focus or projected effects as the deposit system. These other policies may be either favored or objected to in terms of various evaluation criteria. Some of these alternatives are discussed in the Staff Background Paper No. 1, "Rationale for Beverage Container Deposit Legislation." A representative list would include:

1. No Federal action.
   a. State and local deposit laws, litter taxes, packaging regulations, recycling efforts, solid waste user fees.
   b. Voluntary industry programs.
   c. Public interest group activities.
2. Alternative Federal regulations
   a. "Ban the can" or other direct product regulations.
   b. Industry recycling regulations (mandated goals for return rates/recycling rates).
3. Alternative Federal fiscal and incentive measures.
   a. Litter taxes with earmarked distribution of funds.
   b. Recycling incentives (various subsidy and grant programs).
   c. Solid waste product charge (with or without litter subcharge).
   d. Federal severance taxes on primary raw material extraction.
4. Federally funded education programs, including technical assistance.
5. Federal research, development and demonstration programs.

STAFF BACKGROUND PAPER NO. 4
November 7, 1977
Revised December 20, 1977

TRANSITIONAL ADVERSE ECONOMIC IMPACTS OF NATIONAL BEVERAGE CONTAINER DEPOSIT LEGISLATION AN ANALYSIS OF THE WORST CASE

I. Summary

A Federal law requiring a minimum 5 cent beverage container deposit would cause a shift in the beverage container mix to a greater reliance on refillable bottles and a lesser reliance on the use of one-way bottles and metal cans. An analysis of the adverse economic impacts of such a law indicates that the transition period would be long enough to ameliorate many of the possible adverse impacts.

Even in the worst case after passage of deposit legislation, existing glass bottle and metal can production capacity would decline more quickly due to normal obsolescence than would the demand for glass bottles and metal cans. As a result, although those industries would lose volume and profits, there would not be significant premature obsolescence of capital equipment. Actual employment dislocations would probably occur only in the glass container and metal can production industries, because dislocations in other industries would be a small fraction of total employment and would occur over a long period.

Ten thousand glass plant workers (about 13% of the total) and up to 22,000 metal can production workers (about 37% of the total) could lose their jobs in the worst case as a result of mandatory deposit legislation. Since this is a worst case analysis and does not include the effects of attrition, the number of actual job dislocations should be much lower. These job losses would occur over a four-year period and would be partly ameliorated by normal attrition, but the structure of the container industries implies that reductions would occur partly in conjunction with the closure of small plants.

II. Introduction

The passage of Federal legislation requiring a 5¢ deposit on all beer and carbonated soft drink containers would bring about substantial changes in the existing beverage packaging, distribution, and handling system. There would be a net increase in capital investment and jobs as a result of the legislation, but industries involved in the production of beverage containers would be adversely impacted. During the transition period, the capital stock in those industries would be reduced and jobs would be lost.

The Resource Conservation Committee staff analyzed the long run costs and benefits of mandatory deposit legislation in Staff Background Paper #2. Questions have since been raised about the nature and the severity of the adverse economic impacts which would occur during the transition to a national deposit system. If the long-run changes are viewed as beneficial, but the short-run transitional adverse impacts are likely to be severe, then the legislation could possibly be modified to phase in the system over time or to compensate those most adversely affected.

This paper focuses only on the adverse economic impacts occurring during the transition period; consequently, mere mention is given the beverage distribution and retail sectors where investment and employment would increase substantially.

III. The Shift to a New Container Mix

The severity of the adverse economic impacts associated with mandatory deposit legislation is determined by the magnitude and the speed of the change in the container mix caused by the legislation. Given other economic information (e.g. capital base, technology, employment), the change in the mix will determine the impacts. In order to analyze the transitional economic impact of Federal mandatory deposit legislation, there are three key elements of the transition process which must be specified:

- Baseline conditions -- what will happen to the container mix in the absence of any Federal initiative.
- Long-run new "equilibrium" container mix -- the market share of different containers after the industry has adjusted to the new legislation.
- Speed (and duration) of the transition -- the characteristics and timing of the shift to a new container mix.

Baseline

In studies performed for government and industry groups, baseline projections have been made of the beverage container mix. The baseline used for this analysis is the U.S. General Accounting Office revision of the projection developed by the Resource Triangle Institute. Baseline beverage container mix data for 1977 is shown in Table I.

Table I

1977 Beverage Container Mix
(% of beverage volume)

	Malt Beverages	Soft Drinks	Total
Refillable Bottles	14	38	27
One-way Bottles	23	26	25
Metal Cans	66	36	48

Source: U.S. General Accounting Office, A National Mandatory Deposit: What would be the Effects? January 1977 draft.

A study performed by the Research Triangle Institute provides information on the composition of metal cans by beverage type. RTI projects a shift in can composition from 74% steel and 26% aluminum in 1973 to 56% steel and 44% aluminum in 1985.[1] At the present time, prices for the two types of cans are similar, and competition for market share is intense.

Conversations with Coca-Cola representatives indicate that the "PET" plastic bottle is already being marketed successfully in the larger container market, and a 10-15% penetration is projected in the soft drink market for the 1980-85 period.[2] The use of plastic bottles for beer is not anticipated during that period.

The RTI study projected a 3% growth rate for beer consumption and a 6% growth rate for soft drink consumption.[3] Since average container size for soft drinks is also increasing, an overall baseline container growth rate of 4% is assumed in this economic impact analysis. The projected 1985 baseline container mix used here is shown in Table II. The baseline projection includes a continuing increase in metal can market share and significant penetration of the large non-refillable plastic bottle into the soft drink packaging market.

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[1]Research Triangle Institute, Energy and Economic Impacts of Mandatory Deposits, Sept. 1976, NTIS PB-258-638, pp. B-19 and B-23.

[2]Conversation with John Parker, Coca-Cola - Atlanta on 9/29/77.

[3]RTI, Op. Cit. pp. A-6 and A-11.

Table II

1985 Baseline Container Mix Projection
(% of containers)

Container	Market Share
Refillable Glass Bottle	20
One-Way Glass Bottle	15
One-Way Plastic Bottle	10
Metal Cans	55
Steel -- 56%	
Aluminum -- 44%	

Source: GAO projection (update of RTI analysis) revised to account for plastic bottle market penetration.

Long-Run "Equilibrium" Container Mix

"Equilibrium" is a strange term because historically there has been constant flux in the packaging market share percentages within the beverage industry. Nevertheless, to estimate impact there must be a specified container share mix that will have evolved due to the legislation by the end of the transition period. This we have labeled "the long-run equilibrium container mix."

Previous government and industry studies have considered a wide range of possible mixes which could result due to deposit legislation. All of the studies assumed that no plastic containers would appear and that the one-way glass container would disappear. The scenarios most frequently considered have been bottle/can percentage mixes of 40/60, 60/40, 80/20, and 100/0. Each of these scenarios, of course, was associated with a different set of impacts.

The multiple scenario approach has been utilized as an alternative to predicting the most likely, ultimate container mix. The drawback of this approach is that decision-makers have little guidance with regard to the impacts most likely to occur after passage of legislation. The RCC staff and ICF, Inc., have developed a projection of the container mix likely to occur as a result of the national deposit requirement. The projected impact of the legislation is shown in Table III. The analysis upon which the projection is based is included in the Appendix to this paper.

Table III

Projected Impact of National Deposit on Beverage Container Mix
(% of package mix)

	1977	1985 Baseline	1985 Deposit
Refillable Bottles	27	20	40 - 60
One-way Glass Bottles	25	15	5 - 10
One-way Plastic Bottles	0	10	10
Metal Cans	48	55	25 - 40

Source: RCC staff estimates

In this paper, the "worst case" adverse economic impacts of mandatory deposit legislation are examined. The worst case is the most extreme shift possible to refillable bottles because this causes the largest reductions in the production of metal and glass containers. The worst case is defined by the following container mix:

Refillable Glass Bottles -- 60%

Non-refillable Glass Bottles -- 5%

Non-refillable Plastic Bottles 10%

Metal Cans -- 25%

The metal can mix could shift even more toward aluminum cans than indicated in the baseline, because returned aluminum containers are worth almost 1¢ more than steel cans in recycling markets. This shift would be limited by the very low new investment anticipated in aluminum can production during the transition period.

This is a worst case because evidence exists that the can share will not shift all the way to 25% and that the one-way glass bottle will not be reduced to a 5% market share. This evidence is presented in the Appendix to this paper. In either case, the adverse impacts on the can or the bottle manufacturers would be reduced because aggregate container production would decrease to a lesser degree.

Characteristics and Duration of Transition

The speed and duration of the transition to the new "equilibrium" container mix are the principal factors that determine the severity of the transitional impacts. Over time, capital equipment is depreciated, there is natural attrition in the labor force, and the 4% annual growth in sales of beer and soft drinks can absorb some of the decrease in container production caused by the deposit legislation.

The transition will occur during two time periods:

- Between the enactment of the law and the effective date
- After the effective date

For this analysis it is assumed that the law would pass in 1978 and would become effective two years later in 1980. Existing studies have postulated smooth three or five-year transitions, commencing at the time of enactment of the law. These scenarios are probably unrealistic. Experience with legislation regulating private industry behavior suggests that the period prior to the effective date would be a time of uncertainty while the law would probably be challenged in the courts and in the Congress. As a result the major portion of the transition would not occur until after the appeals have failed and the law is in effect.

After passage of the law, planned investments to increase bottle and can production capacity would be delayed, but other investment would continue and the minimum investment needed for continued operations under the law would be made. In the worst case there is ultimately a reduction in can production caused by the market shift and in bottle

production due to the replacement of one-way bottles by refillables. As a result, new can production and filling equipment investment would cease, except for the conversion of can tops to eliminate the pull-tab if required in the Federal law. Investment would continue in bottle filling, but not in bottle production equipment. Toward the end of the two-year period, the conversion to a largely refillable bottle system would begin.

Five factors would affect the speed of the transition after the effective data of the law:

- Availability and cost of new bottle-filling equipment (glass bottle market share increases from 52 to 65% in the extreme case)
- Availability of bottle washers (almost half of the existing bottle lines must be converted to handle refillables in the extreme case)
- Availability and cost of refillable bottles (more bottles needed initially until a "float" is built up)
- Speed of depreciation and obsolescence of can and bottle production equipment.
- Possible reduction in can and one-way bottle price to retain market share.

The immediate changes in beverage container mix which occurred in States where deposit legislation passed are not representative of what would happen if there were a national deposit requirement. Within the national system, small States like Oregon and Vermont can drastically change the composition of their container mix without placing any strain on the capacity of the nation to provide additional bottles and other necessary equipment. This would not be true if the whole nation tried to change at once.

IV. Impacts on Container Production

Availability and Cost of New Equipment and Refillable Bottles

It should be noted that the glass bottle market share would increase 25% in the extreme case, which would require substantial new investment in bottle-filling lines. Assuming a 4% growth in container sales, this would be equal to a 58% increase in bottles filled during a six-year period. The increased use of refillable bottles would require an addition to the supply of bottle washers which is greater than the existing stock. There would also be a short-term need for additional bottles to provide the refillable bottle float, but this demand would be only temporary and could not justify any increase in the stock of bottle-production equipment. Much of this new equipment and the additional bottles would therefore be produced through an

increase in overtime work, which would raise the cost and limit the short-term demand for refillable bottles and bottle-filling equipment.

Bottle-filling equipment has a 15-20 year life.[4] If industry equipment production capacity is sufficient to replace the equipment every 15 years, the yearly normal equipment production capacity would be equal to 7% of the existing stock plus excess capacity to handle higher short-term demand and annual growth. However, the baseline projects no growth for glass bottles due to the market penetration of the plastic bottle. Production at double the normal capacity rate would appear to be the maximum possible production output, which suggests a four-year transition period at a minimum before the new equilibrium would be reached.[5] This would make the whole transition period six years in the worst case, and the transition would not be complete until 1984. Over this time period, availability of bottle washers and refillable bottles should not be a constraint.

Impact on Metal Can Production

In the worst case, there would be a shift in market share from 48% to 25% for metal cans over the six-year period. However, little capital investment would be made in can production or filling lines during the two years prior to the effective date of the deposit legislation. Concurrently, there would be a 4% per year increase in demand for beverages. This would make the ultimate share after six years equivalent to 32% of beverage container production in the base year (1978). Production would be 50 billion cans in 1978 when the law is assumed to pass. Production would be reduced to 33 billion cans in 1984 in the worst case.

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[4]Conversations with industry representatives, 9/30/77.

[5]If 20% of the present stock is the maximum annual production rate and 7% is required for replacement, net capital stock increase would be 13% per year. With some increase in production capacity, it would take five years for the transition.

Using age data about the existing capital stock and assuming a 15 year life for can production and filling equipment, it is relatively easy to project normal production capacity of equipment existing in 1978 during the 1978-84 transition period.[6] The worst case supply and demand for metal cans is shown in Figure 1. When compared to the demand for cans during the transition period associated with the increase in bottle production and filling capacity, it is clear that there would be little adverse financial impact on can producers due to premature equipment obsolescence. The demand for cans would exceed the normal production capacity of the equipment existing in 1978 during almost the entire transition period. The principal impact would be orderly reduction in market share, which would allow a good economic return on a shrinking capital base, but ultimately would leave can producers and fillers with less total annual volume and profit.

The supply and demand analysis in Figure 1 indicates that the can production and filling industries would suffer from slight overcapacity only during the last year of the transition. However, equipment would be largely depreciated by this time, and, if necessary to retain market share, can prices could be reduced somewhat without eliminating profits.

Data developed by RTI indicates that average can prices could be reduced up to 3¢ per container before it would actually be worthwhile to close down a can line. When taking into account the increase in costs associated with rapid production of refillable bottles and other necessary equipment and the current price differential between small refillable bottles and metal cans of only 1¢-4¢ around the nation,[8] it does not appear that many can lines would be scrapped before they complete their useful life. Rather it appears that the transition period in the worst case might be stretched out slightly beyond six years.

Impact on Bottle Production

Assuming a trippage rate of ten and a six-year transition, annual bottle production directly related to comsumption in the worst case[9] would fall from 24 trillion bottles in 1978 to about 14 trillion in 1984. In addition to the bottle production required for annual beverage consumption in 1985, additional bottles would have to be produced to provide the refillable bottle float.

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[6]The decline in can production capacity was calculated using historical data on can production and assuming growth in each year was accompanied by increased production capacity from 1963-70. This is consistent with a 15-year life and almost negligible can production prior to 1955. Data taken from RTI, op.cit., pp. B-18 and B-22.

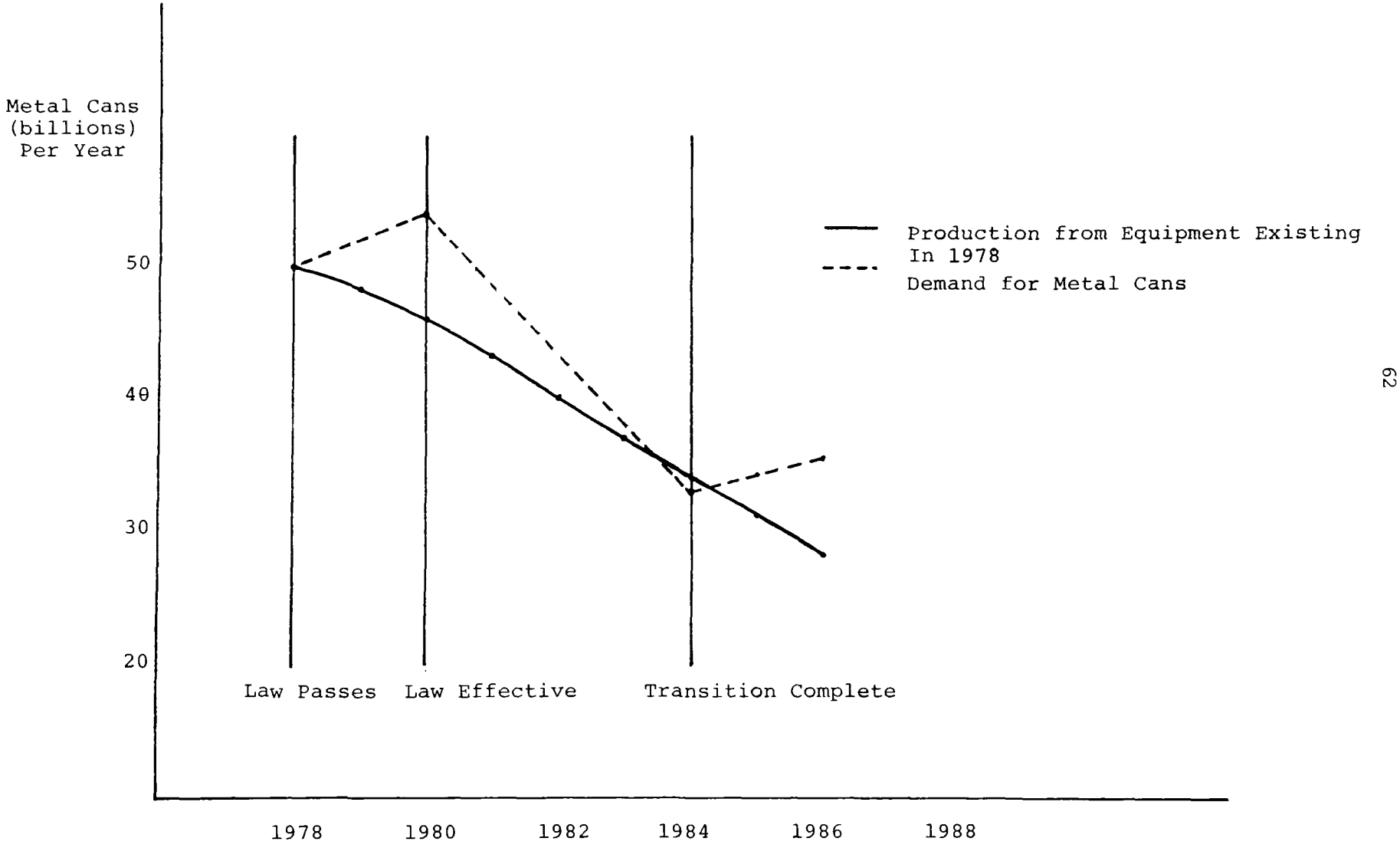
[7]Research Triangle Institute, Preliminary Estimates of the Transitional Price Impacts of Mandatory Beverage Deposit Legislation, June 1976, p. 17.

[8]1976 data on national soft drink consumer prices presented in Coca-Cola briefing of 9/28/77.

[9]Calculations based on 85 trillion containers sold in 1973, 4% demand growth rates, and market shares stated in Table III.

Figure 1

Worst Case -- Supply and Demand for Metal Cans During the Transition



The amount of bottles required for the float is higher for beer than for soft drinks because the beer distribution system contains an additional distribution stage. However, assuming that the average float is equal to two months' sales of beverages in refillable bottles, then 2 billion bottles would have to be produced each year during the four-year mix shift to provide the refillable bottle float.[10]

Using age data about the existing capital stock and assuming a 15-year life for bottle production equipment, normal production capacity from equipment existing in 1978 can be projected for the 1978-84 period.[11] The worst case supply and demand for bottles is shown in Figure 2.

Demand for bottles was projected at 4% until the effective date of the legislation and then a linear decline was projected during the remaining, four-year transition period. Subsequently, the demand for bottles to make up the refillable bottle float was added to the projection.

The adverse impacts on bottle production of the mandatory deposit legislation would be similar to the impacts on can production. In the worst case, there would be no overcapacity in the glass container industry during the transition with respect to the equipment existing in 1978. The impact of the legislation would be to reduce bottle production and profits for the industry, but the transition would be orderly. No equipment would be discarded prematurely, but much of the equipment would not be replaced when it became obsolete. In the early years the demand for bottles would rise temporarily above the longer term trend. Accordingly, some of the additional demand would probably be met through overtime work.

V. Impacts on Employment

The long run analysis performed to estimate the employment impacts of national deposit legislation in the worst case identified a gain of 103,000 jobs above the baseline in beverage distribution and the retail sector. The analysis also indicated a reduction from the baseline of about 49,000 jobs in the glass container, metal can, steel, and aluminum production industries in the worst case. These figures were developed by the RCC staff in conjunction with RTI, and they are broken down in Staff Background Paper #2, Table VII. The calculations indicate that the run net employment impact of container deposit legislation is positive.

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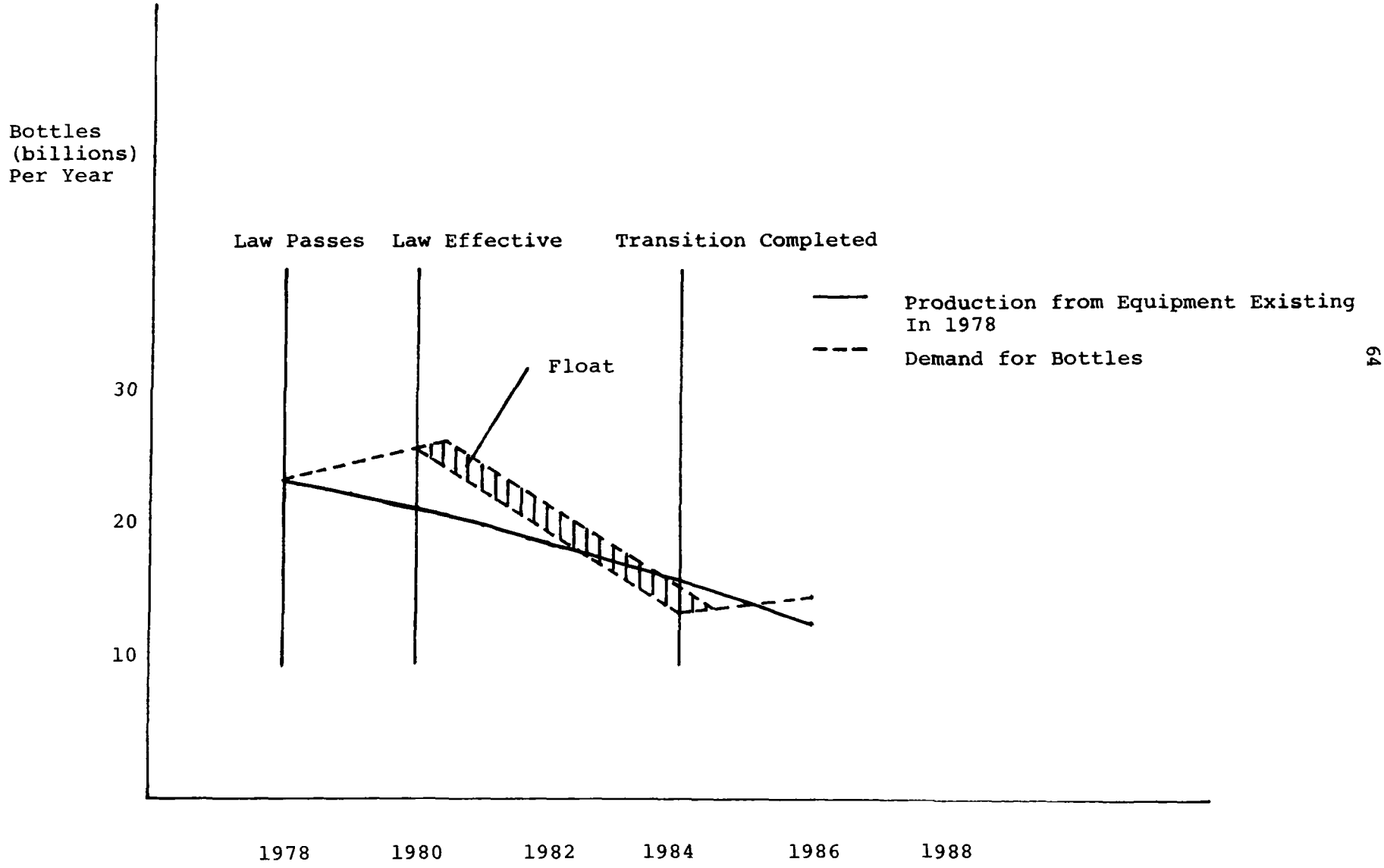
[10] 27 billion fillings in 1978 would be associated with a two-month float of 4.5 billion bottles. 79 billion fillings in 1984 would require a two-month float of 13 billion bottles or an increase of 8.5 billion bottles primarily during the 1980-84 period.

[11] Based on historical bottle production data from 1947-73 taken from RTI, op. cit., pp. B-18 and B-22.

Figure 2

Worst Case -- Supply and Demand for Bottles During the Transition



Employment changes occur continuously in all industries. Between 1958 and 1974, for example, 26,000 workers lost their jobs in the malt liquor industry as a result of industry centralization.[12] Consequently, this paper analyzes only the magnitude of the short-run employment impacts which could occur as a result of national deposit legislation.[13]

Net changes in 1985 employment in key industry sectors due to mandatory deposit legislation were examined in Staff Background Paper No. 2. Actual job dislocations in an industry due to the legislation would be lower than the net reduction in required employment due to normal attrition and any baseline employment growth which might occur during the transition period. The 1985 net change analysis looks at the reduction in employment levels from what might have been in 1985, which in a growth industry would be greater than the number of jobs actually lost since 1977.

The beverage container component of metal can production is a growth industry. The net reduction in 1985 employment in that industry due to deposit legislation in the worst case is projected to be 28,000, but the actual reduction in jobs from 1977 to 1985 would be 22,000. The latter figure is a better measure of actual job dislocations, but it still does not take normal attrition into account. Beverage container deposit employment impact data is shown in Table IV.

In a declining industry, job dislocations due to deposit legislation would be only part of the total dislocations occurring between 1977 and 1985. In this case the job dislocations due to legislation (ignoring attrition) would be the same as the net loss in jobs from the baseline in 1985. For the beverage container component of the glass container industry, the reduction in the worst case would be 10,400 jobs.

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[12] Environmental Action, Comments on the RTI Report, December 1975, p. 10.

[13] Job dislocations are defined as absolute employment reductions between 1977 and 1985 caused by Federal mandatory deposit legislation as distinguished from any dislocations occurring due to normal market changes in the baseline.

TABLE IV

Beverage Container Industry Sector
Employment Impacts

Industry Sector	1977 Employment*	1985 Baseline*	1985 Worst Case Legislation*	Net Change 1985	Maximum Job Dislocations**
Glass Container	33,500	23,500	13,100	10,400	10,400
Metal Can Production	44,700	50,700	22,700	28,000	22,000
Steel Production	10,900	9,800	4,000	5,800	5,800
Aluminum Production	8,600	9,800	4,700	5,100	3,900

* Employment related to beverage container production only.

** Does not take attrition into account.

Source: RCC staff estimates and RTI model based on RCC staff assumptions.

Table IV looks at only the beverage container employment assumptions of each industry. The importance of the impacts of beverage container legislation on employment in the industries as a whole is shown in Table V. For the industry-wide analysis, employment figures were taken from the Bureau of Census SIC codes corresponding to the adversely impacted industries.

TABLE V

Worst Case Impact of Legislation on Employment

Industry Sector	1977 Employment	Maximum Job Dislocations	Maximum Jobs Lost/Year** Number	Maximum Jobs Lost/Year** Percent of Total
Glass Container Production	79,000	10,400	2,600	3.3
Metal Can Production	60,000	22,000	5,500	9.2
Steel Production	461,000	5,800	1,500	0.3
Aluminum Production	114,000	3,900	1,000	0.9

* RCC staff estimate of 1977 employment based on unpublished 1976 BLS employment data and a projection of the 1972-76 employment trends for SIC codes 3221, 3411, 3312, 334, 3353, 3354, and 3355.

** Over the four-year period after the effective date of the legislation, excluding the effect of normal attrition.

Source: RCC staff estimates and RTI model results.

Since aluminum and steel plants serve numerous industries and labor attrition rates are over 2% per year, the aluminum and steel industries probably would not experience any actual job disolcations as a result of deposit legislation.

The situation in the glass container and metal can production industries would be very different. In 1972 there were 116 glass and 334 small-metal-container plants located all over the country.[14] The worst case impact of mandatory deposit legislation could reduce employment up to 13% in the glass container industry and up to 37% in the metal can industry between 1978 and 1985. (Since this is a worst case analysis, the number of actual job dislocations should be much lower.) The structure of

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[14]Glass Factory Directory, National Glass Budget, 1973 and County Business Patterns, Bureau of the Census, 1972--cited in an RTI unpublished paper dated April 10, 1974.

those industries implies that these reductions would occur partly through the closure of small plants, which would limit the degree to which these job losses could be handled through normal attrition. The determination of which plants would close would depend on the production costs of each plant and the regional change in demand for different types of containers. Although the employment losses over the six-year transition period would be significant in the worst case, they would be similar to what happens in the marketplace due to normal competition.

VI. Conclusions

This analysis of the transitional adverse economic impacts of a Federal mandatory beverage container deposit law indicates that the impacts are significant. In the worst case, the analysis indicates that the transition would occur over a six-year or longer period. As a result, there would be virtually no premature obsolescence of equipment, because the normal rate of obsolescence would reduce total capital stock as quickly as the demand for containers falls.

Actual job dislocations would probably occur only in the beverage container and metal can production industries. These dislocations would occur over a four-year period in conjunction with the closure of small plants and could eliminate up to 13% of the jobs in the glass container industry and up to 37% of the jobs in the metal can industry in the worst case. Since this is a worst case analysis and does not include the effects of attrition, actual job dislocations should be much lower.

Appendix to Staff Background Paper No. 4

The Impact of National Deposit Legislation on Beverage Container Packaging Mix

"Before and after" information on beverage container mix exists for two that instituted mandatory deposit legislation -- Oregon and Vermont. Neither of these States is typical, but placed within the reference framework of regional container mix data, their experience indicate the range of the likely change in the container mix due to national legislation.

The container mix in Oregon shifted heavily to refillable bottles after the State law went into effect. The results from a study undertaken in 1975 and more recent data are shown in Table A-I.

TABLE A-I

Impact of Deposit on Oregon Beverage Container Mix (per cent)

	Beer				Soft Drinks		Coke
	Before (1972)	After (1974)	1976*	1977*	Before (1972)	After (1974)	1977**
Refillable bottle	36	96	83	70	53	91	85
Non-refillable bottle	31	0	10	22	7	0	0
Metal Can	33	4	7	8	40	9	15

*1977 USBA survey of brewers in or shipping to Oregon (first six months of 1977).

**Conversation with John Parker, Coca-Cola-Atlanta on 9/29/77.

Source of Before and After data: Dan Waggoner, "Oregon's Bottle Bill Two Years Later," Oregon Environmental Council, May 1975.

A review of the pre-law beverage container mixes in Oregon and in the nation indicates that refillable bottles were far more popular in Oregon prior to passage of the Oregon bill than in the nation as a whole. The can container share in Oregon was similar to the national average for soft drinks, but was only half of the national average for beer. This suggests that the shift to refillable bottles in Oregon caused by the deposit was greater than it would be in the rest of the country.

The data in Table A-I also shows a growing market share for cans after 1975. The loss in can share was originally very severe because the Oregon law banned pull tabs at a time when cans were not available

without them. Current data is therefore more representative of the possible impact of a national law. Recently one-way bottles and cans have greatly increased their share of the beer market in Oregon. Out-of-state brewers have found the 2¢ standardized refillable containers to be uneconomic for them, so they have increased their use of one-way containers. It appears that the 2¢ refillables were being bought up by the in-state brewers, and their container cost was being subsidized by the out-of-state brewers.

No complete study of beverage container mix is available to measure the total impact of deposit legislation in Vermont, which became effective in September 1973. But data from two sources give a clear indication of what occurred. Table A-II presents data on the impact of the deposit on soft drink beverage containers. Table A-III shows the impact on beer container packaging.

TABLE A-II

Impact of Deposit on Soft Drink Container Mix in Vermont
(% of total package volume)

In Food Stores

	Before (1973)		After (1975)	
	Pepsi-Cola	Industry	Pepsi-Cola	Industry
Refillable bottles	0	0	65	73
One-way bottles	80	75	19	14
Metal cans	20	25	16	13

Pepsi Only -- Total Market

	Before (1973)	After (1975)
Refillable bottles	0	44
One-way bottles	65	28
Metal cans	35	28

Source: Comments of Pepsi-Cola Company to RTI Report, December 1975, p. 18.

TABLE A-III

Impact of Deposit on Beer Container Mix in Vermont
(% of beer volume in each container -- not container mix exactly)

	1970	1976
Refillable bottles	11	22
One-way bottles	48	41
Metal cans	41	36

Source: Conversation with Phil Katz, U.S. Brewers Association, Washington, D.C., 9/30/77.

Vermont is also atypical of the nation in that the refillable share of container packaging was much lower than the national average prior to the development of legislation. This suggests that the shift to refillables was much less in Vermont than it would be in the nation as a whole. The data in Tables A-II and A-III suggest that the overall post-law container mix in Vermont is probably around 38% refillables, 32% one-way bottles, and 30% metal cans. It is interesting to note that the one-way bottle is still very popular even with the 5¢ deposit requirement.

The Oregon and Vermont results are so different that in themselves they do not pinpoint the likely container mix resulting from a national deposit law. Table A-IV puts these two States in perspective by showing the regional mix for the home soft drink market as compared to the national beverage mix. Vermont is evidently fairly typical of the East in that refillables are not popular, but one-way glass bottles are quite popular. It is also clear that the one-way bottle is much less popular in the Northwest than in the nation as a whole. Based on this data and the projected baseline, the RCC staff has projected the likely container mix after the legislation. The likely shift by 1985 due to a national deposit bill is shown in Table A-V. The most severe economic impact on the container industry would be that associated with the following mix: 60% refillable bottles, 5% one-way glass bottles, 10% one-way plastic bottles, and 25% cans.

TABLE A-IV

1976 Soft Drink Container Mix, National and Regional Home Markets

	U.S.	East	Mid-East	Central	N.W.	S.E.	Mid-South	S.W.	West
Refillable bottle	44.6	7.9	53.9	63.1	46.4	48.5	60.7	56.8	43.1
One-way bottle	30.4	72.2	28.4	10.3	13.7	30.1	18.8	17.8	11.1
Metal cans	25.0	19.9	17.7	26.6	39.9	21.4	20.5	25.4	45.8

Source: Coca-Cola adjustment of figures taken from a proprietary Neilson Report - presented in a briefing to Resource Conservation Committee Chairperson, Barbara Blum, on 9/28/77.

TABLE A-V

Projected Impact of National Deposit on Beverage Container Mix
(% of package mix)

	1975	1985 Baseline*	1985 Deposit**
Refillable bottles	27	20	40-60
One-way glass bottles	25	15	5-10
One-way plastic bottles	0	10	10
Metal cans	48	55	25-40

*GAO projection (update of RTI analysis) revised to account for plastic bottle penetration.

Source: RCC staff

The impact of the national deposit legislation on metal can composition is impossible to quantify using State data, but the direction of the impact is clear. Aluminum and steel containers are currently similar in cost. A 1976 draft study for the U.S. Brewers' Association indicated that aluminum containers cost 6.6¢ and steel containers 6.9¢ each to produce.* This is consistent with RTI's projection that aluminum will increase its market share in the baseline.

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*U.S. General Accounting Office, A National Mandatory Deposit: What Would Be the Effects?, January 1977 draft, p. 66.

Recycling centers are currently paying around $300/ton for scrap aluminum and $30/ton for scrap steel. This gives aluminum cans a 0.7¢ price advantage over steel cans when returned to the retailer under a mandatory deposit system, which is 10% of the can's original value. This price effect would tend to accelerate the shift to aluminum cans already occurring in the baseline projections, but limited investment during the transition period would slow this shift.

Staff Background Paper No. 5
November 6, 1977

BEVERAGE CONTAINER RETURN RATES

I. Introduction

Whether beverage container deposit legislation achieves the benefits of litter and solid waste reduction and energy and materials conservation claimed by proponents is directly related to container return rates. Thus, assumptions regarding return rate are key variables in any projection of the impacts of such a system. If a significant percentage of the beverage containers sold are not returned, the costs of a returnable system might outweigh the benefits achieved. This is particularly true if refillable bottles acquire a major share (50 to 65 percent) of the beverage market, as expected.

Return rate* is generally defined as the percentage of containers sold that are returned for deposit refund. It does not account for shrinkage (those refillable bottles returned but not refilled) and it does not distinguish between containers returned by the original purchasers and those collected and returned by scavengers.

There is considerable uncertainty concerning the return rate that would exist under universal deposits, because a change from a predominantly throwaway system to a returnable system has never before been made in any major country. This paper presents and explains the data and facts that describe existing or past U.S. and foreign experience with deposit systems. This information is then synthesized and a most likely return rate is predicted.

II. Data From Return Systems

Historic trends in the rate at which refillable bottles have been returned in the United States may provide indications of future return rates. These trends are presented in Tables I and II for beer and soft drinks, respectively. In addition, a variety of other deposit or return systems have been implemented or have existed in the past. They are not national in scope, but are of some value in predicting a reasonable range of return rates. Table III presents return rate data for those systems.

*See Appendix I for a discussion of how "return rates" relate to "trippage".

TABLE I

U.S. AVERAGE RETURN RATE ESTIMATES FOR REFILLABLE BEER BOTTLES

YEAR	RETURN RATE (%)	REFILLABLES AS % OF TOTAL FILLINGS
1948	96.8	83.4
1950	96.6	73.3
1952	96.5	71.3
1954	96.4	64.8
1956	96.1	60.3
1958	96.1	57.4
1960	96.0	51.9
1962	95.7	48.3
1964	95.3	40.1
1966	94.8	35.0
1968	94.4	32.7
1970	94.1	26.4
1972	93.6	21.0
1973	93.1	20.5
1975*	92.7	15.2

Source: FEA Study, Table B-20
*1975 data added by GAO update of FEA model.

TABLE II
U.S. AVERAGE RETURN RATE ESTIMATES FOR REFILLABLE SOFT DRINK BOTTLES

YEAR	RETURN RATE (%)	REFILLABLES AS % OF TOTAL FILLINGS
1948	95.7	100
1950	95.4	99.9
1952	95.2	99.8
1954	95.1	98.1
1956	94.6	98.4
1958	94.7	98.0
1960	94.5	96.4
1962	94.1	93.2
1964	93.5	90.0
1966	92.6	79.8
1968	91.9	64.2
1970	91.4	54.6
1972	90.6	43.0
1973	89.8	43.2
1975*	90.5	37.9

Source: FEA Study, Table B-21

*1975 data added by GAO update of FEA model

TABLE III
OTHER RETURN RATE EXPERIENCES*

		RETURN RATE (%)			
YEAR	LOCATION	BEER	SOFT DRINKS	COMBINED	REFERENCE
1973	Oregon+	91	90		3
1976	Vermont+	--	--	95.0	4
1976	Yosemite Nat'l Park+	--	--	69.0	6
1974	Great Britain	92.5	88.9	--	7
1972	Ontario	95.5	92.3	--	7
--	Australia	84.6	95.2	--	7
--	Germany	96.0	88.9	--	7
--	Switzerland	98.6	97.8	--	7
1974	Denmark	--	--	96.7	7
1972	Sweden	--	--	94.1	7
1975	Finland	--	--	96.7	7

*There is also a test of a deposit system being conducted on several Department of Defense facilities. For a discussion of the early results of that test, see Appendix II.

+Return rate is weighted average for cans and refillable bottles.

III. Discussion

The data in Tables I, II, and III show that, with few exceptions, past return rates in the United States and in other industrialized countries have been about 90 percent. They also show that return rates in the United States have been declining. However, although the data on soft drinks is not complete, the rate in 1975 was apparently higher than in 1973, suggesting a possible bottoming out in the downward trend. These data and trends are helpful, but not conclusive, in drawing inferences as to the return rate following national deposit legislation. The experience of other countries is also suggestive but may not parallel that of the United States because of different life styles and economic conditions. The experiences of the States of Orgeon and Vermont and other relatively small areas in the United States with mandatory deposits are subject to outside influences that would not be felt under a uniform national system. Therefore, other theoretical factors must also be considered in attempts to predict what national return rates would be.

Effect of "Return Convenience"

Tables I and II show that there was, at least up to 1975, a downward trend in U.S. average return rates for refillable bottles. Opponents of deposit legislation argue that this trend is likely to continue and that consequently the projected future return rates used for calculating costs and benefits of deposit legislation should be lower than current return rates. However, from the data presented in those tables on the proportion of refillable bottles in the system, it is also possible to infer a relationship between return rates and the convenience of return. One might expect that the number of locations that will accept returned containers and the variety of brands accepted by those that have also fallen in relation to the decline in use of refillable bottles.* As the number of locations stocking and accepting returns of refillable bottles has declined, it has become more difficult for the consumer to return empty containers. It could be theorized that this decline in "return convenience" has caused return rates to decline.

It may be hypothesized then, that if all beverage retail outlets accepted returned containers, the return rate might increase from its present level. This hypothesis is supported by data obtained in Oregon by

*The League of Women Voters found[13] that most retail locations stock refillable soft drinks. However, the selection is limited, and consequently return locations are limited, because, in general, retailers will not accept empty refillable bottles in brands they do not sell.

Oregon State University and reported by Gudger and Bailes. This data is based on questionnaires sent to all malt beverage distributors and soft drink bottlers and to 400 retailers in the State.[3] It shows that return rates for refillable bottles in Oregon increased from 75 percent to over 90 percent for beer and from 80 percent to 92 percent for soft drinks after the deposit law went into effect and are now well above the national average. Vermont return rates after their law went into effect are approximately 95 percent; this is higher than the National average.[4] There is no good data on Vermont return rates prior to passage of there were so few refillable bottles available in the State at that time.

Bottle vs. Can (or "Marginal") Return Rates

On the average, return rates in the United States are slightly above 90 percent. Except for Oregon and Vermont, however, this is the return rate for refillable bottles only, and thus represents only 25 percent of all beverages purchased (Tables I and II). If all beverage containers were made returnable by deposit legislation, the other 75 percent (the marginal portion) would also be subject to return for refund. It might be unreasonable to expect this 75 percent to be returned at the same rate as the first 25 percent.

Because cans and one-way bottles are considered "convenience"containers and convenience is viewed by many as "not having to return," it has been argued that those consumers who now buy convenience containers would have a tendency to continue to throw them away under a deposit system. Thus, the return rate for cans and glass and plastic non-refillable bottles would be lower than the present rate for refillable bottles.

There are thirteen locations where marginal (non-refillable) container purchasers have become subject to refundable deposits: the States of Oregon and Vermont, Yosemite National Park, and the 10 Department of Defense facilities that are testing the EPA Beverage Container Guidelines. However, it is difficult to determine from the available data if the marginal purchaser does in fact return empty containers at a significantly lower rate than those who have purchased returnable containers in the past. As discussed in the following sections, the results from Oregon lead to one conclusion, those from Vermont to another; there is not enough data from DOD to warrant further discussion at this time; and the Yosemite results are subject to qualification.

Oregon. Prior to enactment of the Oregon Beverage Container Law, 32.1 percent of beer and 60 percent of soft drinks were sold in refillable containers. Beverage consumption in refillable bottles was significantly higher than the national average, but return rates were somewhat lower than the national average at 75 percent for beer and 80 percent for soft drinks. One year after the Oregon legislation went into effect, 95 percent of beer and 91 percent of soft drinks were being sold in refillable bottles. Return rates had increased to 95 percent for certified (standard) beer bottles, 90 percent for non-certified beer bottles, and 92 percent for refillable soft drink bottles.[10] So, with the addition of marginal purchasers to the returnable system and an increase in return convenience in Oregon, the refillable bottle return rate increased.

On the other hand, one year after the Oregon law went into effect, the can return rate was lower than that for bottles: 70 percent for both beer and soft drinks. (It has been reported,[3] but not confirmed by the staff, that return rates for cans in Oregon are now at 80 percent.) Note, however, that at that time, only 5 percent of beer and 9 percent of soft drinks were sold in cans,[10] and that it therefore might not be appropriate to draw inferences from this low can return rate because it represents such a small portion of the market. One could infer either of two extremes from Oregon data:

1. With national deposit legislation, can return rates will be high because the 1.5 percent (30 percent of 5 percent)* of total beer and 2.7 percent (30 percent of 9 percent)* of total soft drink containers that were not returned represent those marginal purchasers who will continue to buy in cans and discard them. The remaining 98.5 percent of beer consumers and 97.3 percent of soft drink consumers will purchase in both bottles and cans and return them at rates somewhat higher than 95 percent and 92 percent respectively. Or,

2. With national legislation, the return rate for cans, based on data from Oregon, will be only 70 percent (irrespective of the fraction of total purchasers represented).

A more reasonable inference from Oregon data is that return rates for cans will be somewhat lower than those for refillable bottles, but that, in general, average return rates will increase.

*A 70 percent return rate means that 30 percent were not returned. Five percent of beer and 9 percent of soft drinks were sold in cans.

Vermont. Using beverage distribution industry data on unredeemed deposits, Jeffords and Webster report that the return rate following passage of the Vermont beverage container legislation is over 95 percent.[4] Prior to enactment of this legislation, there were virtually no refillable containers available in the State.[11] The effects of the increase in availability of refillables plus some of the marginal purchasers shifting to refillable bottles have resulted in return rates that are reportedly higher than the current national average. The data also indicate that both bottles and cans are returned at the same rate in Vermont: over 95 percent.[4,12] Therefore, it would appear from the Vermont data that the addition of the marginal purchaser to a return system would not necessarily decrease, and, in the context of a universal deposit system, may even increase average return rates.

Yosemite National Park. In the summer of 1976, in a four-month test of a beverage container deposit system at Yosemite National Park, the average return rate was 69 percent.[6] Two major factors influenced this return rate. First, a visitor to Yosemite National Park stays an average of only 2 1/2 days. In this short time, consumers must be educated to change their beverage container disposal habits. For such a transient situation, a 69 percent return rate might even be considered high. The Park's education efforts may not have reached or may not have been effective on many of the park visitors. Second, because of the transience of park visitors, it may be assumed that some visitors have left the park with the unconsumed beverages they purchased in the park. Neither of these factors would affect return rates if beverage container deposit legislation were implemented nationwide.

A final significant point is that virtually all beverages sold in the Park are in cans. Therefore, based on the Yosemite experience it might be inferred that, under national deposit legislation, return rates for cans will be at least 69 percent.

IV. CONCLUSION

The discussion above presents the available data on return rates. It appears that for the purpose of impact assessments, can and bottle return rates should be dealt with separately instead of combined, as in Staff Background Paper No. 2. Return rates for refillable bottles should be assumed to be in the range of 90 to 95 percent

Appropriate return rates for cans are more difficult to determine. Oregon and Yosemite data suggest a minimum level of 70 percent. Vermont data suggests a maximum can return rate of 95 percent. Neither extreme seems to be a reasonable level for a national average return rate for cans. Consequently, the staff believes that it would be reasonable to use a mid-range assumption of 80 to 85 percent for the can return rate in estimating the impact of ational deposit legislation.

SENSITIVITY OF IMPACTS TO RETURN RATE ASSUMPTIONS

Staff Background Paper No. 2 (RCC 2) assumed a 90 percent average return rate for bottles and cans. For container Mix I (40 percent refillable bottles, 60 percent cans), with lower level return rate assumptions (80 percent can/ 90 percent refillable bottles), energy, material, solid waste, and litter benefits will be slightly lower than those shown in RCC 2. Employment, consumer cost and consumer inconvenience should not change appreciably. For container Mix II, where cans are only 20 percent of the market, there should be no appreciable difference in costs or benefits between the results of an 80 and 90 percent can return rate assumption. At the higher range of return rates assumed, the environmental and resource benefits would increase and employment dislocations would be slightly higher because fewer bottles would have to be produced.

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APPENDIX I, Background Paper No. 5

Return Rate vs. Trippage

Some writers refer to "trippage" instead of return rate. Trippage is the number of round trips the average refillable bottle makes between filler and consumer. This relationship is generally considered to be direct ($\text{Trippage} = \frac{1}{1 - \text{return rate}}$), although this ignores shrinkage, i.e., those refillable bottles returned but not refilled. Because trippage has no meaning when referring to nonrefillable bottles and cans, return rates are used in this paper. The table below shows the mathematical relationship between selected trippage and return rates.

RETURN RATE (%)	TRIPPAGE
98	50
95	20
93.3	15
90	10
85	6.67
80	5
70	3.3
60	2.5

APPENDIX II , Backgro und Paper No. 5

Department of Defense Test

The Department of Defense (DOD) is currently testing beverage container deposit systems on 10 military bases. The tests were begun at Ft. Knox, Kentucky in March 1977. At the other nine facilities, tests were started at varying times thereafter, the last test beginning in June 1977. All ten tests are scheduled to run for one year. Preliminary return rate data from those test facilities are presented in Table I. That data is presented for each month following commencement of the tests and in every case shows an upward trend.

It is evident from the data in Table I that return rates have not yet stabilized. Therefore, we have not attempted to determine a "final" return rate for the DOD test. It is clear, though, that the average return rate is now above 80 percent and will probably continue to rise as the facilities which have started more recently begin to gain experience and their consumers become more aware.

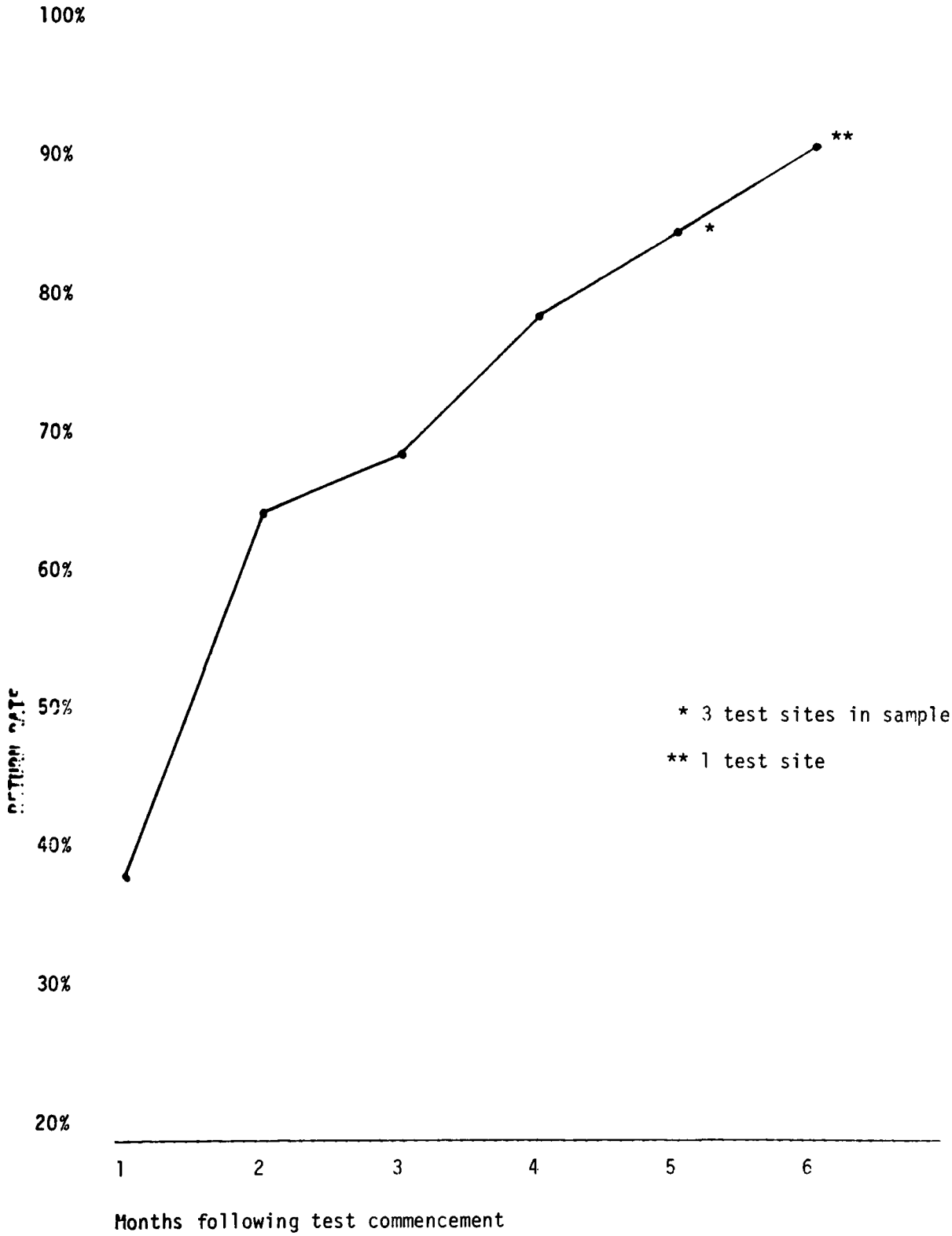
It should be noted that a number of facilities have noted a reduction in sales of beverages on-base and a corresponding increase in sales by merchants off-base. This should be expected where an easily accessible alternative to a deposit system exists since consumers can avoid the deposit at virtually no cost. Such a reduction in sales would be highly unlikely under a more extensive deposit requirement since the accessible alternatives would disappear.

Monthly Return Rates at DOD Test Facilities

	Return Rates for Succeeding Months					
Facility	1	2	3	4	5	6
Ft. Knox, KY	59.5	72.9	79.4	88.2	81.6	91.4
Philadelphia, PA	28.2	52.1	64.0	85.5		
Whidbey Is. NAS, WA	26.3	151.1	71.3	82.9		
Ft. Riley, KS	37.7	70.0	77.5	79.5		
Malmstrom AFB, MT	44.4	69.8	72.0	75.9		
Ft. Huachuca, AZ	40.3	76.0	58.8	73.7		
Laughlin AFB, TX	23.9	54.3	60.8	58.5		
Patrick AFB, FL	23.0	57.5	62.8	83.4	91.3	
Yuma MCAS, AZ	19.7	61.9	77.5	86.8	82.9	
China Lake NWC, CA	84.6	70.8	66.4			
Average	38.76	65.0*	69.05	79.4	85.3	91.4

*Average over 9 facilities - Whidbey Island deleted for month 2 only

AVERAGE MONTHLY RETURN RATE - COD TEST



Staff Background Paper No. 6
November 7, 1977
Revised December 20, 1977

LOCALIZED EMPLOYMENT IMPACTS, GLASS INDUSTRY

During our October 12, 1977, meeting, several advisory group members expressed concern regarding possible local employment impacts that might follow a reduction in glass demand. This paper reports on the subsequent of the potential for severe local impacts due to glass plant closings.

Similar concerns have been expressed regarding the metal beverage can industry. Currently, however, no published data is available that would allow a similar study for the beverage can industry. Consultants for the RCC staff were told by the Can Manufacturers Institute that they were themselves compiling that data, which should be available by the end of the year.

The purpose of this paper is to make the Committee members aware of areas where there is some potential for localized impact. It will also allow the Committee to put the potential impact into perspective. It is not an attempt to determine what the exact magnitude of the impact might be.

In order to put glass beverage container employment into perspective, it should be noted that total glass industry (SIC 3211, 3221, 3229, and 3231) employment is 173,000.* The glass container segment (SIC 3221), the 120 plants discussed in this paper, employs 73,000 persons* (42 per cent of the total industry). Approximately 50 percent of glass container production is for beer and soft drink containers.* Assuming that there is a direct relationship between employment and container production, glass beer and soft drink employment would be 50 percent of glass container employment - 36,500 jobs, or 21 percent of total glass industry employment.

There is no published data that shows which glass plants make beverage containers or what portion of their total output is beverage containers. Consequently, we had to start our investigation with plants that make glass containers and then attempt to narrow the field.

[1] U.S. Department of Commerce, Bureau of Census. Census of Manufacturers, 1972. Vol. II, Part 2.

Data on the 120 glass container plants* in the United States were analyzed (see attached map) using selected population and employment ratios. Plant closings are much more likely to have a significant effect on the community in cities and counties of low population density. Therefore, as an initial, somewhat arbitrary screening, glass plants located in or near cities with a maximum population of 50,000 and in counties with a maximum population of 85,000** were selected for further study. Forty glass plants fell into this category. Their locations are indicated on the attached map with x's.

Next, we developed additional criteria for selecting from this group of 40 plants the areas most likely to be severely affected by a reduction in the demand for glass bottles. Two factors appear to be relevant: the portion of total county employment devoted to glass container manufacturing; and the portion of total manufacturing employment in the county devoted to glass container manufacturing.***

The staff arbitrarily chose county glass industry employment that is 5 percent or more of the total county work force as an initial screening criterion. In order to put that arbitrary selection into perspective, it should be compared to the average national growth in employment, which is 2 percent per year. Thus, if all glass beverage container plants in a selected county were shut down and the workers, who constitute 5 percent more of the county work force, chose not to relocate, it would take an average of 2 1/2 years or more for all of the unemployed to find new jobs in the county. Total unemployment in the selected counties is shown in Table I. This should give some indication of the relative ease with which the displaced workers would be able to re-enter the work force. As a point of reference, the national average unemployment is 6.9 per cent, which is higher than in all but two of the counties listed.

* These data described plants that manufacture glass containers of all kinds, not just beverage containers.

** The city population cutoff of 50,000 was chosen arbitrarily. It was selected because the staff considered it to be large enough to encompass all communities that would be severely affected by a reduction in glass plant employment. A county population of 85,000 generally correlates to a city population of 50,000 persons.

*** The staff concentrated on glass plant employment as a portion of county employment instead of as a portion of city employment. Because many workers appear to commute into the city, county data was more relevant than city data. For example, employment in one plant was 466 percent of the total population of the city in which the plant was located.

We can make additional inferences about the ability of an unemploymed glass plant worker to find new employment by investigating the portion of the country workforce that is involved in manufacturing. The staff arbitrarily chose to highlight those glass plants where employment is 15 percent or more of total manufacturing labor in the county. Eighteen glass plants were identified by this final criterion.

We believe that using the criteria discussed above results in identifying a large number of areas that could potentially experience severe impacts. This will be a conservative estimate, in that it identifies all those areas, as well as others that probably will not be impacted severely.

As noted previously, no published data indicates which glass container plants manufacture beverage containers. At the request of the RCC staff, the Glass Packaging Institute (GPI) screened the glass plants identified by the criteria discussed above and found two plants that did not produce beverage containers and one that was no longer in operation. The GPI also provided the staff with actual employment data for the remaining plants. This showed that one plant had so many fewer employees than was indicated in County Business Patterns that it was dropped from the list. The remaining 14 plants, located in 10 counties, are listed in Table I.

These ten counties, out of a national total of 3,141 counties, might be severely impacted if the 14 glass plants located in those counties were completely shut down. The reader is cautioned to keep the following in mind before drawing conclusions from Table I:

- This paper has only dealt with the primary effect that a plant closing might have on a community. This understates the total effect on the community. A number of service-related jobs as well as retail sales might also be affected.

- Any deposit legislation that is enacted is likely to have a phase-in period. This would allow displaced workers some time to find other suitable employment. However, it is possible that there might be few job opportunities for skilled glass workers and few alternative jobs at a comparable skill and wage level available in the county. Also note that plants might not reduce employment in a phased manner, but rather might do so in a single step.

- During the transition to a new packaging mix, there will probably be an increase in bottle production to build up a float of refillable bottles. However, much of this increased production will probably be handled on overtime, not through increased employment.

Many glass container plants make several types of containers for products other than beverages. A reduction in beverage container production would more likely cause cutbacks, not plant closings, depending upon the portion of production that is beverage containers.

Beverage container legislation is expected to reduce glass container employment by approximately 17%.* Therefore, on average, only 17 percent of the employees of the plants listed would be affected. However, it is possible that older or less efficient plants would be phased out entirely.

* There were 24 billion glass beverage containers manufactured in 1973. After deposit legislation, 16 billion would be manufactured annually. (See Staff Background Paper No. 4.) This represents a 33.3 percent reduction in output, which could be assumed to cause a 33.3 percent reduction in employment. Because beverage containers represent approximately 50 percent of all glass container output (Census of Manufacturers, 1972. Vol. II, Part 2), the reduction in glass container employment would be approximately 17 percent.

++ Table I

COUNTIES WHERE GLASS PLANT EMPLOYMENT IS GREATER THAN 5 PERCENT OF EMPLOYED PERSONS OR 15 PERCENT OF PERSONS EMPLOYED IN MANUFACTURING

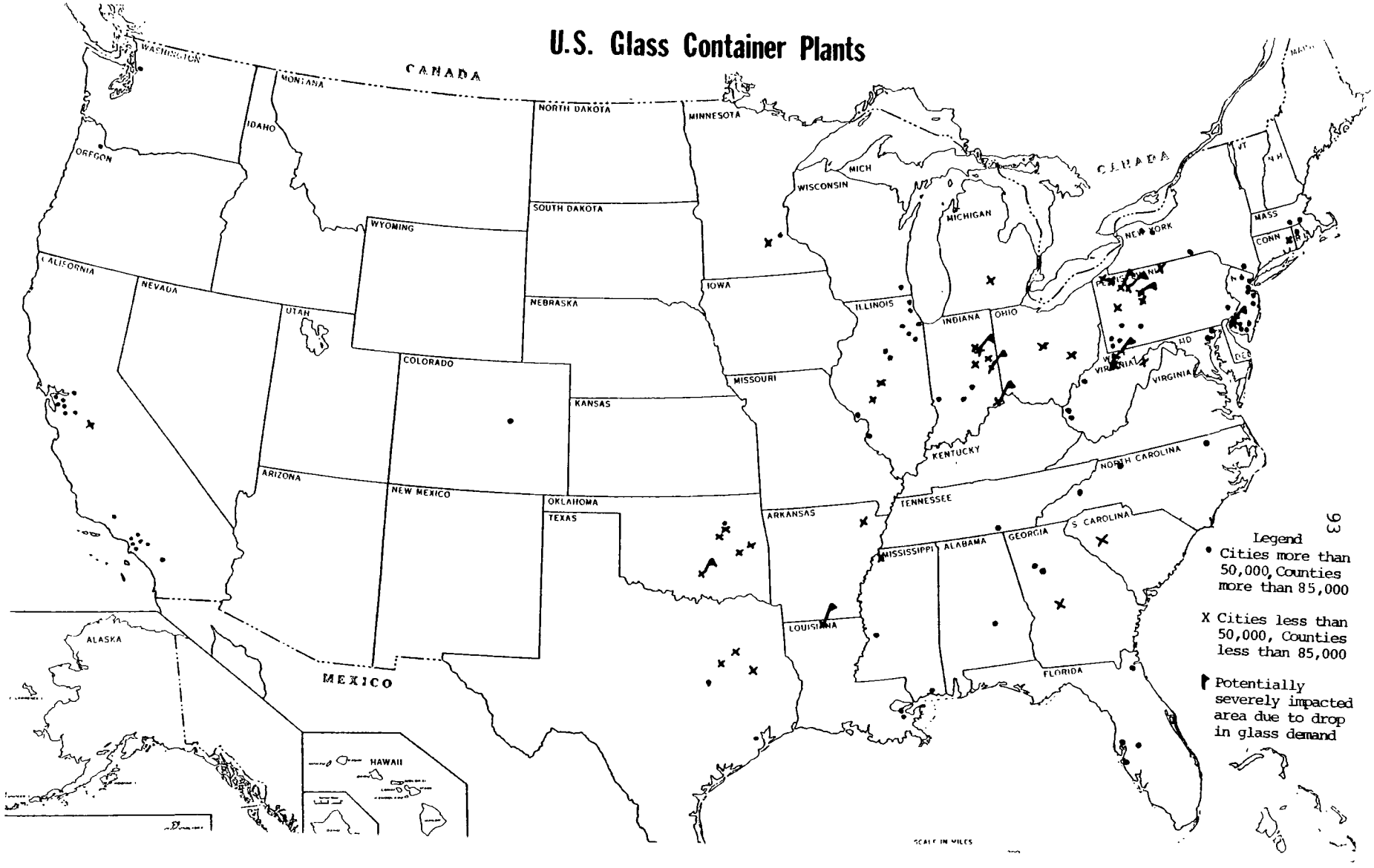
County Name	Total Glass Container Industry Employment in County (1970) (1)	Glass Container (2,3) Employees as a Fraction of Employed Persons in the County (%)	Glass Container (2,3) Employees as a Fraction of Persons Employed in Manufacturing Industry in the County (%)	County Unemployment Percent Sept 1977 (4)
**Grant, Indiana	2,824	8.8	19.7	5.4
Dearborn, Indiana	559	5.4	12.6	9.3
Randolph, Indiana	1,133	9.9	20.7	2.5
Lincoln, Louisiana	445	3.9	35.6	3.6
Marion, West Virginia	973	4.6	17.4	5.9
*Jefferson, Pennsylvania	1,559	10.1	29.7	5.1
*Clarion, Pennsylvania	1,652	13.0	43.6	4.1
Forest, Pennsylvania	357	22.2	55.5	3.7
Pontotoc, Oklahoma	416	4.2	33.0	4.7
Salem, New Jersey	3,375	14.5	32.5	7.9

* Totals for two glass container plants in the county.
** Totals for three glass container plants in the county.

++ Plants where a portion of production is beverage containers.

1 Employment data supplied by Glass Packaging Institute
2 County Business Patterns, 1974, U.S. Department of Commerce, Bureau of Census - by State
3 County and City Data Book, U.S. Department of Commerce, 1972.
4 Statistics supplied by Silvia Small, Bureau of Labor Statistics, Office of Local Area Statistics.

U.S. Glass Container Plants



Legend

- Cities more than 50,000, Counties more than 85,000
- X Cities less than 50,000, Counties less than 85,000
- Potentially severely impacted area due to drop in glass demand

RESOURCE CONSERVATION COMMITTEE

Staff Background Paper No. 7

June 1, 1978

THE SENSITIVITY OF THE BENEFIT IMPACTS OF BEVERAGE CONTAINER DEPOSITS TO VARIATIONS IN CONTAINER RETURN RATE ASSUMPTIONS

I. INTRODUCTION

This paper presents the results of a further test of our computer model for a national beverage container deposit law. In this experiment we wanted to see what the impact would be if consumers did not return containers at the rates we expect once such a deposit law goes into effect. We lowered the return rate before programming our model to measure the effect on solid waste generation, virgin steel and virgin aluminum consumption, energy consumption and consumer expenditures for beverages. This analysis represents a case in which the assumptions regarding return rates are lowered beyond the staffs' best estimates of the lowest likely rates.

For more details on the model and the methodology see Staff Background Paper No. 2, Costs and Benefits of a National Beverage Container Deposit System. Staff Background Paper No. 2 presented estimates for a number of expected cost and benefit outcomes of a nationwide beverage container deposit proposal. The results were developed in the form of "high" and "low" expected values, based on two alternative sets of assumptions or "scenarios". These assumptions reflected high and low possible responses to the deposit system of the container and beverage industries and their consumers. The "high response scenario" assumed: (1) a relatively extreme shift in the industry's mix of containers towards refillable glass bottles, (2) a high return rate for all types of containers by consumers, and (3) high material recycling rates for nonrefillable containers returned for deposit refund. In contrast, the "low response scenario" was designed to use lower-bound estimates for all of these important variables.*

This paper extends the previous staff analysis by evaluating the relationship between certain of the key benefit categories and container return rates, to assess

*Staff Background Paper No. 2, January, 1978, pages 28-31.

whether unexpectedly low return rates might seriously diminish the benefits of a national deposit system. Specifically, it addresses the question of how sensitive to return rates the previously estimated benefits might be, especially if the return rates were lower than those assumed in the "low-response scenario."

The approach used in this analysis has been to recalculate the major benefit categories, retaining all of the assumptions and input values of the low response scenario, but imposing substantially lower return rates for containers. The benefit categories evaluated include solid waste generation, virgin steel and aluminum consumption, energy consumption, and consumer expenditures for beverages. The method, assumptions, and scope of the analysis are explained further in Section III below, and Section IV provides the detailed results.

II. Summary of Results

The results of the analysis indicate that, with changes in the return rate, the principal benefits of a national beverage container deposit policy should be expected to change at a constant rate rather than at an accelerating rate. In addition, the estimates show that for most of the benefit categories analyzed, benefits change at a slower rate than do nonrefillable container return rates (Table 1).

Thus, for a point (70 percent return rate) that is 12.5 percent* below the assumed return rate (the 80% "low response" base), the solid waste reduction, steel consumption, and energy consumption benefits are reduced by amounts varying between 6.8 and 10.0 percent of their respective base values. Aluminum consumption savings are reduced slightly more. In contrast, consumer savings on beverage purchases are actually slightly greater at a lower return rate.

Similar levels of sensitivity are registered for benefits when nonrefillable container return rates are above 80 percent and below the 70 percent level. The full ranges are shown graphically in Section IV.

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*It should be noted that a 12.5 percent decrease (from 80% to 70%) in return rate is a substantial change. In fact, it is equivalent to a 50 percent increase (from 20% to 30%) in the number of containers thrown away.

Table 1
Effect of a 12.5 Percent Reduction in Non-Refillable Container Return Rate on National Benefit Estimates for "Low Response" Scenario

National Benefit Category	Non-Refillable Return Rate 80% (Base)	70%	Percent Change in Benefit Category
Reductions in:			
Solid Waste Generation (thousand tons)	1,487	1,385	-6.8%
Steel Consumption (thousand tons)	1,614	1,472	-8.8%
Aluminum Consumption (thousand tons)	354	305	-13.7%
Energy Consumption (trillion Btu)	70	63	-10.0%
Consumer Savings on Beverages (million dollars)	656	683	+ 4.0%

The general conclusion from this sensitivity analysis is that the major benefit categories are relatively insensitive to assumptions regarding return rates falling below those postulated as lower-bound values for the low-response scenario analysis. A value 12.5 percent less than the minimum expected return rate should cause three of the five benefit estimates to decrease by less than 9%, one to decrease by slightly more than 12%, and the fifth (consumer savings) possibly to increase. The sixth major category (litter reduction), should be expected to shift to an extent approximately proportional to a change in nonrefillable return rates, although this was not specifically estimated.

II. METHOD AND SCOPE

General Approach

The impact estimates presented here were derived by applying different return rate assumptions to a computer model of the beverage industry developed by Research Triangle Institute (RTI). The same model was used to estimate impacts for Staff Background Paper No. 2. We used the more conservative, or low-response (Mix I), scenario from Staff Paper No. 2 as the starting point because the principal purpose of this analysis is to evaluate the reduction in benefits that would result from further reductions in the return rate. The very conservative return rate, recycling rate, and container market share assumptions of Mix I constitute a "worst case" scenario that would produce the minimum likely benefits from national deposit legislation.

The RTI model was used to calculate a series of impact estimates based on the "Mix I" assumptions, varying only the nonrefillable container return rate. Therefore, any variations that result are attributable only to changes in the assumed return rate. The resulting estimates (of such data as total consumer expenditures, system energy consumed, or number of containers required) were then used as the basis for calculating alternative impact levels for a series of major impacts. The impacts calculated are: reduction of solid waste generation; steel consumption, aluminum consumption; energy savings; and consumer savings.

Review of Scenario Assumptions

A detailed discussion of the assumptions behind the RTI baseline projections is available in Staff Background Paper No. 2, "Costs and Benefits of a National Beverage Container Deposit System". In general, RTI projected historical trends in sales volume, container market share, refillable bottle return rates, recycling rates, and manufacturing efficiency to 1985 in order to develop a baseline for comparison purposes. The 1985 projected container market share, return rate, and recycling rate are detailed in Table 2 for both the baseline and the low response (Mix I) scenario.

New Return Rates Analyzed

The specific nonrefillable container return rates analyzed ranged from 90 percent to 60 percent in 10 percentage point increments. In the "Mix I" analysis, 20 percent of nonrefillable containers are assumed to be discarded (that is, 80 percent are returned). In this analysis, the 60 percent return rate level implies that 40 percent are discarded.

The refillable bottle return rate was held constant at 90 percent for the analysis. Both the previous staff analysis of this subject (see Staff Background Paper No. 5) and historical trends strongly suggest that this is the minimum return rate for refillable bottles that is acceptable to the beverage industry.* Actual experience in Oregon and Vermont confirms this expectation.

Impact Areas

We have limited this analysis to those impacts that are most significant and likely to illustrate the greatest sensitivity to changes in return rate. Those areas are:

- Reduction in Solid Waste -

  As in Staff Background Paper No. 2, the predicted 1985 beverage container component of the municipal waste stream forms the baseline for the calculations of changes in waste generation.

*See Appendix I.

Table 2

Comparative Model Input Assumptions for Baseline and Low Response Deposit Scenario Analysis

Model Inputs	Baseline	Low Response Scenario
Container Market Share (Percent of Volume)		
Refillable bottles	20%	40%
Nonrefillable bottles	15%	10%
Plastic Bottles	10%	10%
Metal Cans	55%	40%
Container Return Rates		
Nonrefillable Bottles	91%	90%
Nonrefillable Containers	--	80%
Recycling Rates		
Steel Cans	10%	40%
Aluminum Cans	40%	80%
Glass Containers	5%	20%

These calculations are based on the number and weight of containers used and the return and recycle rates developed for Staff Paper No. 5. It is assumed that all container materials that are not reused or recycled become a part of the waste stream.

- Reduction in Steel Consumption -

  Beverage industry steel consumption predicted for 1985 by RTI is the baseline. Changes in consumption levels at various return rates have been compared to that baseline to determine changes. Savings are dependent both on the return rate and the rate at which returned containers are recycled.

- Reduction in Aluminum Consumption -

  Beverage industry aluminum consumption predicted by RTI provides a baseline. This baseline includes an expected industry recycling rate for aluminum containers of 40 percent in 1985. Savings calculated (as changes from the baseline with different return rates) are attributable only to deposit law effects.

  Savings depend, as with steel cans, on both return and recycling rates, as well as a modest shift in container market share.

- Reduction in Energy Consumption -

  Energy savings are calculated as changes from the RTI baseline projection for 1985. The baseline estimates include energy savings resulting from increased operating efficiencies. Any consumption due to extraction, transportation, refining of raw materials, container filling, distribution, and final discard is included in these calculations.

- Change in Consumer Expenditures -

  Baseline consumer expenditures on beer and soft drinks were developed using historical trend analyses of beverage consumption for 1985 and adjusted final retail prices. In calculating changes in consumer costs from

the baseline, lower costs result from any increased share of (lower priced) refillable bottles. However, increased handling costs at 1.0¢ per container for returned but non-refillable containers increase overall net expenditure. Recycling revenues for aluminum at 0.75 cents per container have also been factored in, but due to market uncertainties, the conservative assumption has been made that glass and steel have no net recycle value.

IV. Results of Sensitivity Analysis

Reduction in Solid Waste

Figure 1 shows that the solid waste reduction would be lower at return rates of less than 80%, than at the predicted 80 percent minimum for nonrefillable containers. The relationship between nonrefillable container return rates and solid waste reduction is linear; but the percentage decrease in solid waste reduction is less than the percentage change in return rate. For example, a 12.5 percent change in return rate (from 80 to 70 percent) results in a 6.8 percent change (from 1.5 to 1.4 million tons) in solid waste reduction.

Change in Steel Consumption

Figure 2 presents the reduction in beverage industry virgin steel consumption at various assumed return rates for non-refillable containers. Steel savings would obviously be lower at lower steel can return rates due to the decrease in steel container recycling. Again, however, benefits are relatively insensitive to variations in return rate. For example, a 12.5 percent reduction in return rate (from 80% to 70 percent) results in an 8.8 percent reduction in steel savings (from 1.6 million tons to 1.5 million tons).

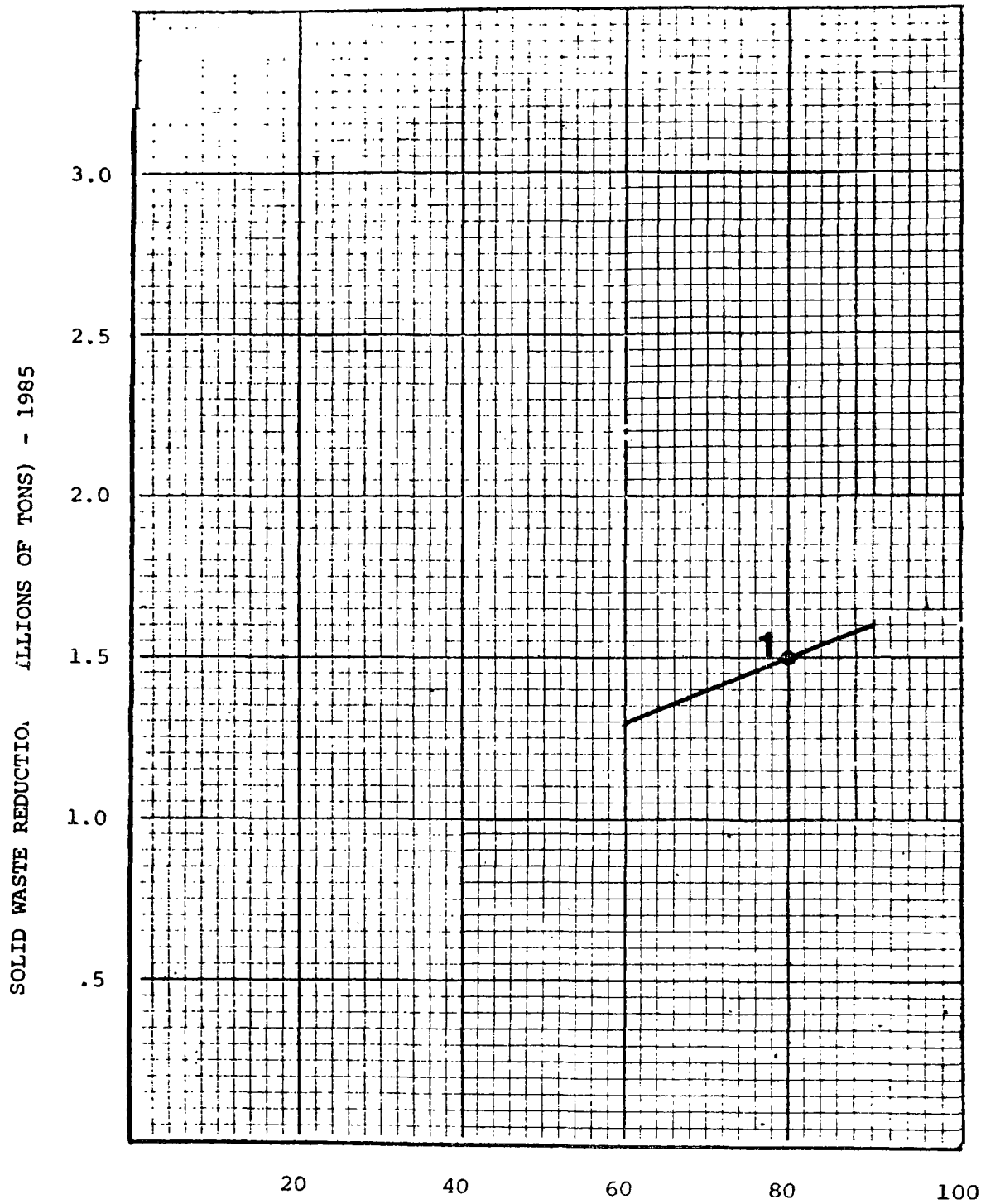
Viewed another way, a 50 percent increase in the assumed discard rate (a decrease in recycling) in this example reduces the savings in steel consumption by about 9 percent or 100,000 tons.

Change in Aluminum Savings

Figure 3 presents the reduction in beverage industry virgin aluminum consumption at various assumed nonrefillable container return rates. Savings are predicted under the low response scenario for a national deposit law as the

Figure 1

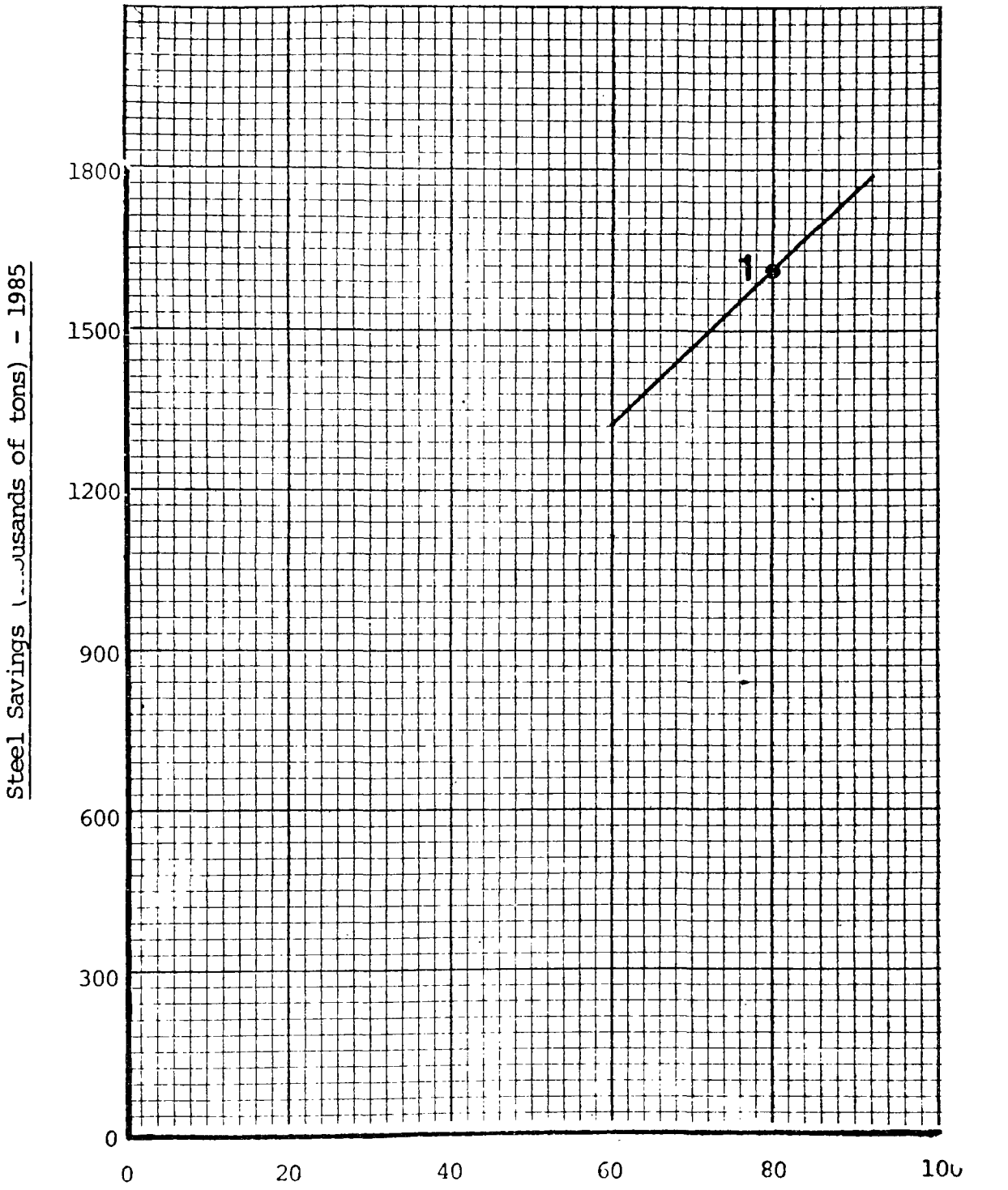
SOLID WASTE REDUCTION



1 = MIX I - PREDICTED IN RCC STAFF BACKGROUND PAPER #2

FIGURE 2

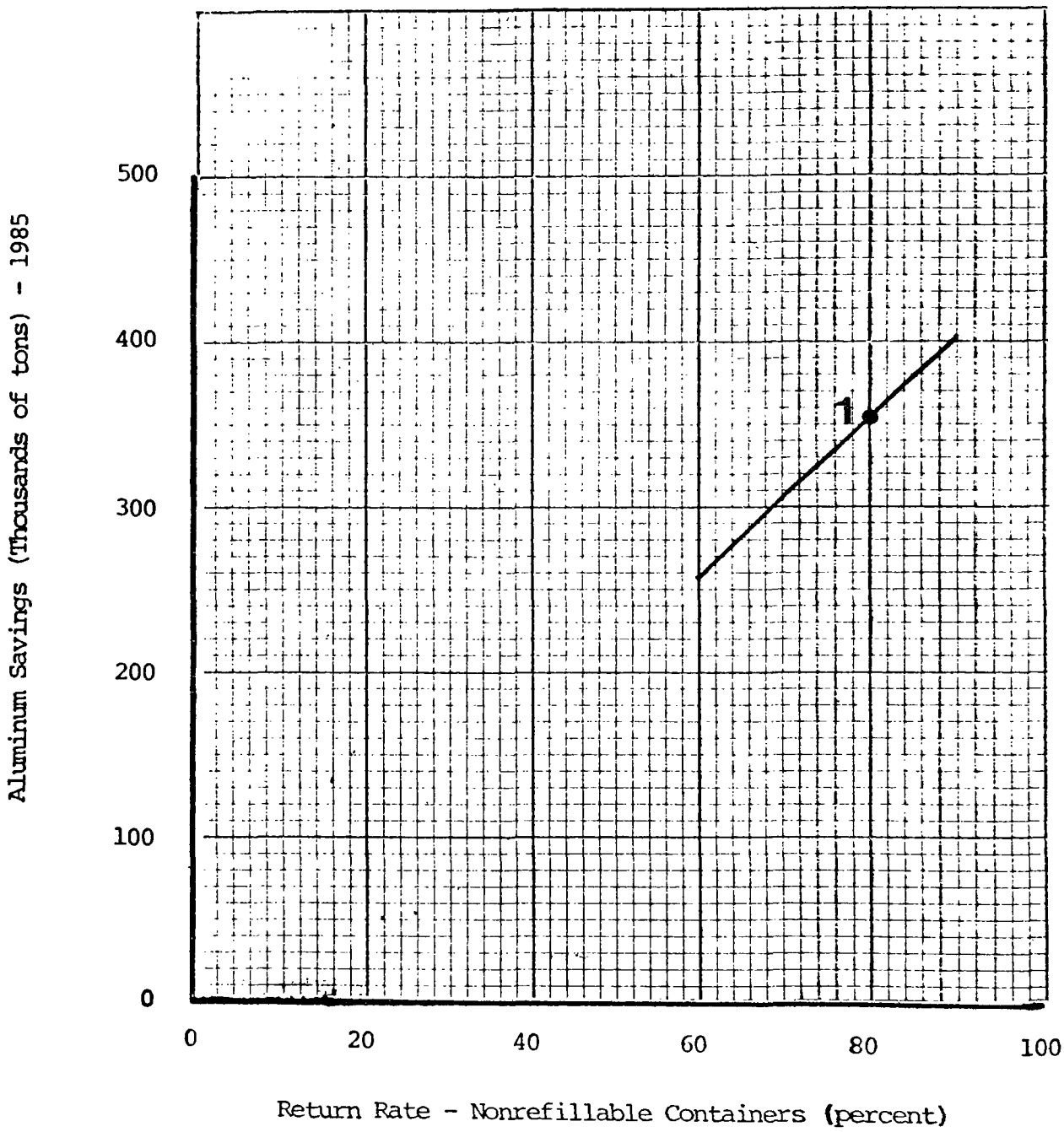
STEEL SAVINGS



1 = Mix I - Predicted in RCC Staff Background Paper #2

FIGURE 3

Aluminum Savings



1 = Mix I - Predicted in RCC Staff Background Paper #2

difference between the baseline and the reduction in consumption calculated for the various return rates. Aluminum savings would be lower at lower return rates. Using the previous example, a 12.5 percent reduction in return rate (from 80 to 70 percent) results in a 13.7 percent reduction in aluminum savings (from 354 thousand tons to 305 thousand tons). Aluminum savings are thus somewhat more sensitive to nonrefillable container return rates than were steel savings, due to the higher projected recycle rate for aluminum (see Table 1). However, even here the effect is approximately proportional.

Reduction in Energy Consumption

Figure 4 illustrates that energy savings would be lower at nonrefillable return rates lower than the minimum estimated for the original low-response scenario. The relationship between nonrefillable container return rate and energy savings is less than directly proportional. A 12.5 percent reduction in the return rate (from 80 to 70 percent) leads to a 10 percent reduction in energy savings (from 70 to 63 trillion Btu).

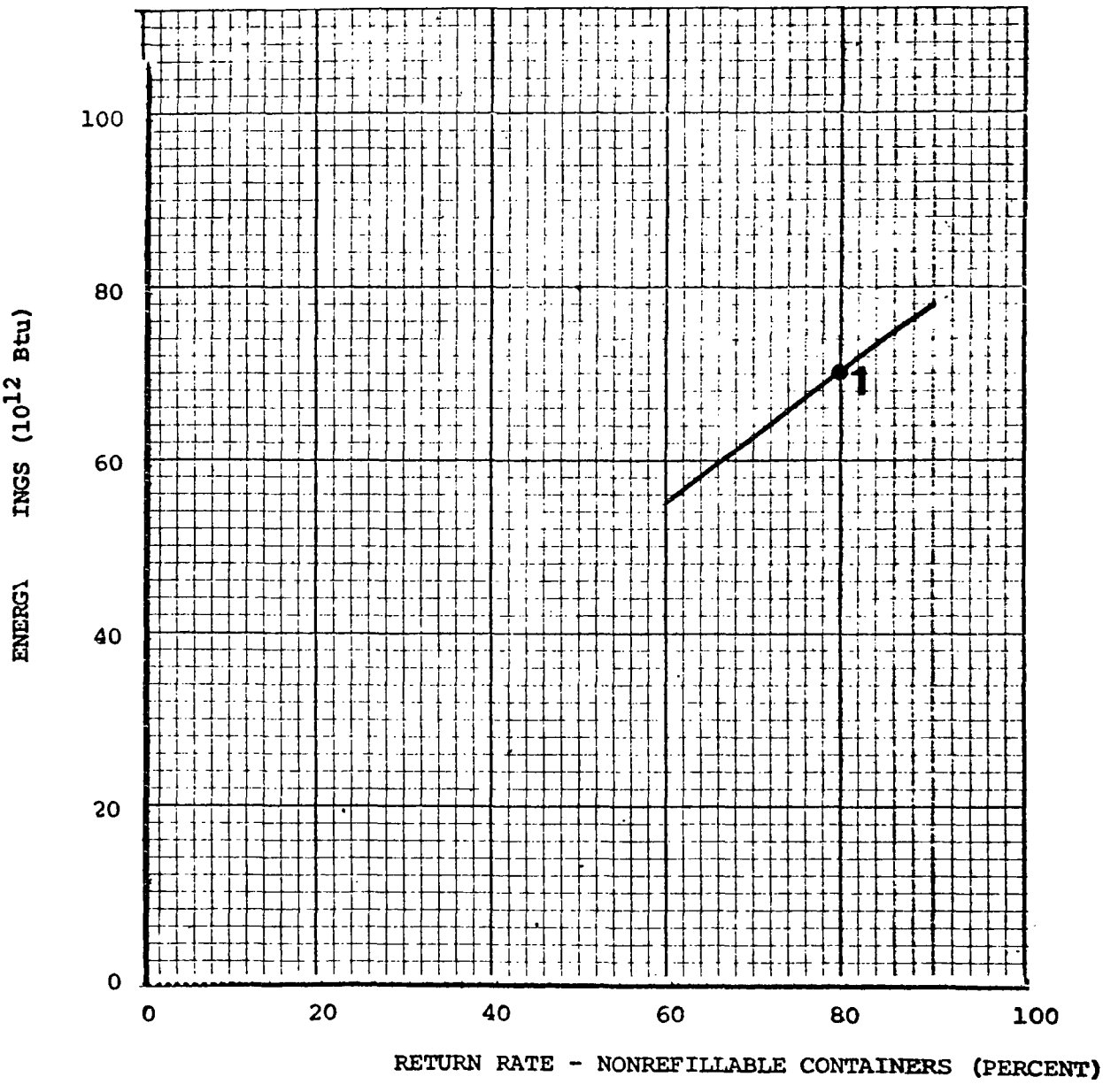
Consumer Savings

A 12.5 percent reduction in return rate (from 80 to 70 percent) results in a 4 percent increase in consumer savings (from 656 to 683 million dollars).

Figure 5 shows consumer savings to be slightly lower as nonrefillable container return rates increase. This may be explained by the fact that at increased return rates, more steel cans and nonrefillable bottles are returned, incurring increased handling costs. Associated recycling revenues are insufficient in this model to compensate completely for those costs because of the zero net scrap value of steel and glass assumed in the analysis. Recycling aluminum cans, on the other hand, results in revenues that are generally sufficient to cover increased handling costs.

Figure 4

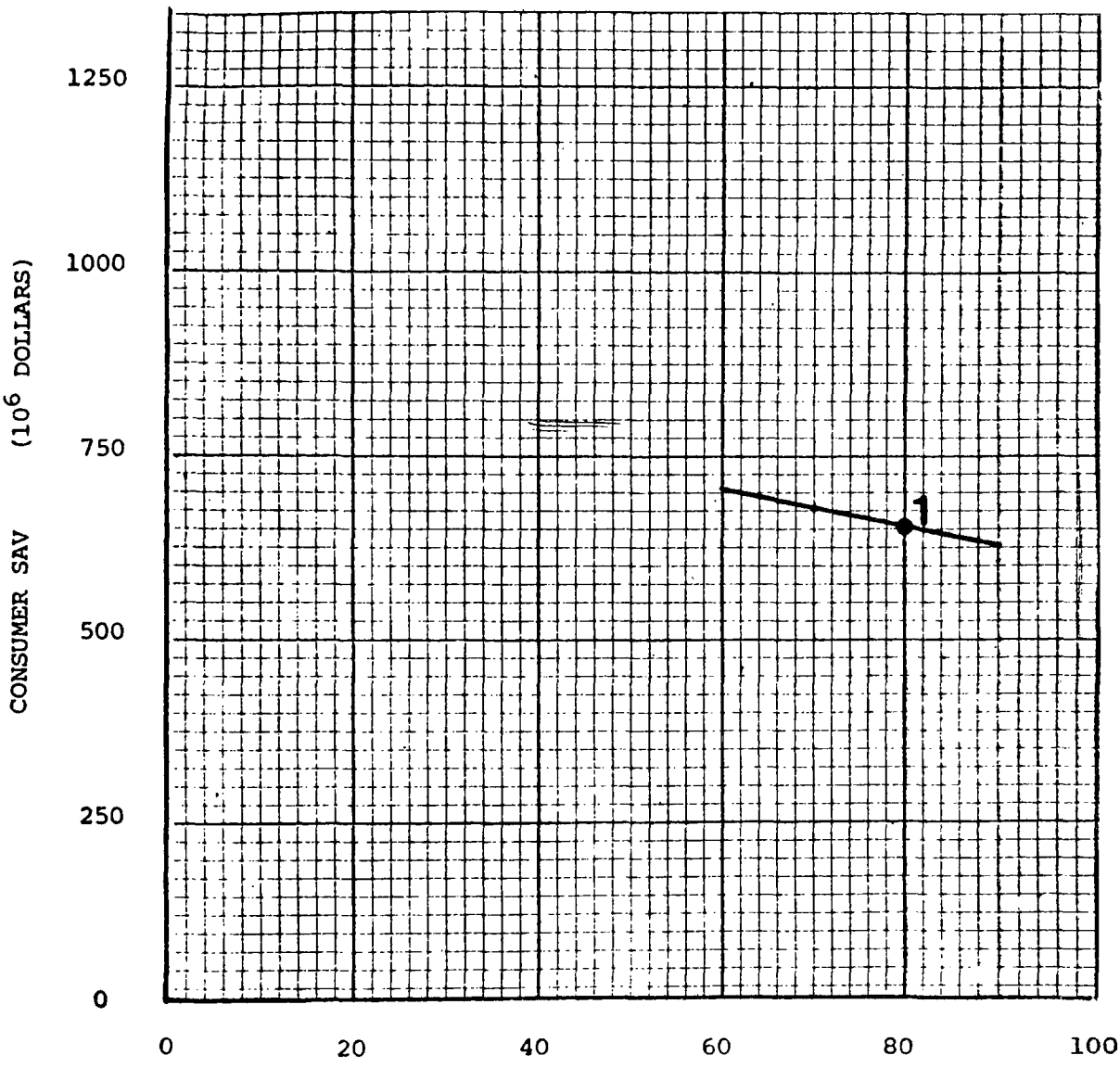
ENERGY SAVINGS



1 = MIX I - PREDICTED IN STAFF PAPER #5

Figure 5

CONSUMER SAVINGS



RETURN RATE - NONREFILLABLE CONTAINERS (PERCENT)

1 = MIX I - PREDICTED IN RCC STAFF BACKGROUND PAPER #2

Appendix I

Refillable Bottle Return Rate

The return rate for refillable bottles is assumed to remain at 90 percent. There are two reasons for this assumption. First, the National average return rate for refillable bottles has never fallen below 90 percent and it is well over 90 percent in both Oregon and Vermont.

Second, the economics of refillable bottles will operate to either maintain high return rates or eliminate refillable bottles from the market. Refillable bottles are initially more costly for the filler than are equivalent nonrefillable bottles. Refillable bottles gain economic advantage only through reuse, which distributes the higher purchase price over several fillings. The beverage industry, particularly in soft drinks, has always recognized the necessity of maintaining return rates for refillable bottles at a level that provides that economic advantage. If, for some reason, increasing numbers of consumers fail to return refillable bottles, distributors increase the deposit on those bottles. This does three things: 1) the increased revenues from forfeited deposits help defray the increased cost associated with lower reuse rates for the bottles; 2) the higher deposit provides an increased incentive to consumers (and scavengers) to return the bottles for reuse; and 3) the higher deposit further discourages those consumers who do not return containers from buying refillable containers.

If, under the deposit law, fillers had to raise deposits above the minimum level to encourage higher return rates, a point would eventually be reached at which nonrefillable bottles were competitive with refillable bottles. That is, the deposit on refillable bottles would eventually become high enough that, for a consumer who intends to discard his empty containers and forfeit his deposit, cans or nonrefillable bottles would be less expensive. Thus, an equilibrium would be reached in which the number of consumers who throw away refillable bottles would be small enough to ensure an economically adequate return rate. If at a later date the return rate again became unacceptable to the filler, he would again raise the deposit and the adjustment cycle would be repeated.

RESOURCE CONSERVATION COMMITTEE
Staff Background Paper No. 20
January 25,1979

SUMMARY OF PROJECTED LABOR IMPACTS OF A NATIONWIDE BEVERAGE CONTAINER SYSTEM

This Appendix provides a more extended RCC Staff Summary of projected labor market impacts of mandatory deposits. Three topics are treated:

1) Changes in the general pattern of employment

2) Location aspects

3) Job skills or earning power of jobs affected

Most of the basic projections in the RCC staff studies of beverage container deposit impacts were derived using a computerized model previously developed by the Research Triangle Institute (RTI) for the (then) Federal Energy Administration and updated for the RCC purposes. As described in Staff Background Paper No. 2, two broad container scenarios were exogenously developed by the RCC staff pertaining to a high ("mix 2") and low ("mix 1") beverage industry market responses in terms of container market shares, consumer return rates, and material recycling for nonrefillable containers (Table 1). These two broad scenarios were then used in conjunction with baseline projections in the model to project alternative possible shifts in 1985 material and energy requirements, shelf prices for beverages, consumer expenditures including forfeited deposits, and other relevant outcomes including broad employment changes in the affected industrial sectors.

The information in this Appendix is drawn primarily from Staff Background Papers No. 2, "Costs and Benefits," No. 4, "Transitional Adverse Impacts," and No. 6, "Localized Employment Impacts, Glass Industry." Limited additional attention has also been given to the question of relative job skills.

1. Changes in the General Employment Pattern

Based on unit labor requirements previously researched by RTI, the RTI model projected annual labor requirements for all principle industries directly affected by changes in container requirements, as shown in Table 2. These figures pertain to changes in total numbers of jobs attributable to the deposit policy after allowing a transition period for the industry to adjust to an equilibrium trend.

Table 1

Comparative Model Input Assumptions for Baseline and Deposit Scenario Analysis

Model Inputs	1977 (Estimated)	1985 Projections		
		Baseline	Low Change Scenario (Mix 1)	High Change Scenario (Mix 2)
Container Market Share (Percent of Volume)				
Refillable bottles	27%	20%	40%	60%
Nonrefillable bottles	25%	15%	10%	5%
Plastic bottles	0	10%	10%	10%
Metal cans	48%	55%	40%	25%
Container Return Rates				
Refillable bottles	91%	91%	90%	92%
Nonrefillable containers	--	--	80%	86%
All containers average	25%	18%	85%	90%
Recycling Rates				
Steel cans		10%	40%	80%
Aluminum cans		40%	80%	95%
Glass containers		5%	20%	50%

Source: 1977 estimate by RTI and RCC Staff. Baseline projection for 1985 and scenario estimates by RCC Staff, based in part on General Accounting Office projected trends.

TABLE 2

1985 Employment Requirements (Man-Years)*

	Baseline	Mix I**	Mix II***	Net Mix I	Net Mix II
Glass Container Producers	23,500	18,600	13,100	-4,900	-10,400
Metal Can Producers	50,700	36,500	22,700	-14,200	-28,000
Steel Producers	9,800	6,900	4,000	-2,900	-5,800
Aluminum Producers	9,800	7,100	4,700	-2,700	-5,100
Beverage Distribution	160,600	180,000	198,900	+19,500	+38,300
Retail Sector	27,900	87,100	92,200	+59,200	+64,300

* Includes only employment in each industry related to beverage container production and excludes plastic-bottle-related employment which should be relatively unaffected by mandatory deposit legislation.

** 40% refillable bottles, 10% non-refillable glass bottles, 10% plastic bottles, and 40% metal cans

*** 60% refillable bottles, 5% non-refillable glass bottles, 10% plastic bottles, and 25% metal cans

Source: RTI beverage industry model results based on RCC staff assumptions used for impact analysis and adjusted to account for sectors (e.g. non-refillable bottles) not in the model.

In general the changes in employment requirements are of two kinds:

(1) Decreases in sectors producing containers and supplying container materials. These decreases are primarily caused by the projected increase in market share of refillable bottles (with an average trippage of 10 to 12.5) at the expense of nonrefillable, single-use glass and metal containers. The total decrease in employment requirements across these sectors was projected in the two scenarios to be on the order of 25 to 50 thousand.

(2) Increases in sectors involved in the handling of returned containers. These involve retail and wholesale distribution activities, and the increases are primarily a function of both the refillable bottle share (involving the bottle washing and reuse cycle) and the return rates for all container types affecting handling, transporting, storage and material recycling. Total projected increased requirements for these sectors was about 80 to 100 thousand jobs.

Regarding the projected decrease in material and container sector's 1985 employment requirements, the 25 to 50 thousand decrease is substantially higher than the number of presently existing jobs that would be lost or the number of actual worker lay-offs that would be incurred. To some extent, the projected job change represents foregone industry growth that would be made unnecessary, rather than an absolute decline from present levels. To some degree, current beverage container capacity can be shifted to other expanding product lines over time. And in some instances, capacity can be phased out over a long enough period so that normal retirement and other voluntary attrition can substantially mitigate the need for actual lay-offs.

A rough estimate by RCC Staff concluded that in the worst case (high impact scenario) the maximum number of job losses would be 42,000 (compared to the 1985 change in employment requirement of just over 49,000), occurring over a 4 year transition period, or at a rate of about 10,000 per year (see Staff Background Paper No. 4). This estimate did not take account of possibilities for shifting capacity into new product lines or the offsetting impact of normal attrition (retirements, etc.). Capacity shifts into new product lines could be expected particularly in the primary

product (steel and aluminum can stock) sector comprising about 25 percent of the total jobs, and actual lay-offs in those very large sectors would probably be negligible. Normal attrition should reduce the actual number of lay-offs by an additional 2 to 5 percent per year.

2. Location Aspects

For the most part, the job gains in the retail and distribution (wholesale and bottler-to-retail) sectors should be geographically distributed rather evenly according to general population densities since they are consumer market oriented. Job losses in container manufacture and material supply, on the other hand, are expected to be relatively more concentrated at a far smaller number of manufacturing sites.

There are no published data on the numbers of establishments, their employment, or locations for plants specifically producing beverage containers. The glass container industry as a whole (SIC)--3211), of which beverage containers is about 50 percent of the total product, included about 117 plants in 27 States in 1972. Eighty of these plants were concentrated in eight States, and four States accounted for 55, or almost half the total number.

The metal can industry (SIC--3411), which includes beverage cans as a major product, has over 480 plants in 40 States, but substantially less than half the total are thought to produce beverage containers. Can plant capacity appears to be much less geographically concentrated than glass containers.

It has not been possible to project how any given pattern of change in beverage container markets would impact on specific plants. Presumably, the marginal (high cost) plants in a given region would bear the bulk of the production cutbacks. In addition, plants in some geographic regions might undergo much smaller relative reductions in demand than others, due to lesser shift in container market and the offsetting effect of higher than average population growth.

3. Job Skills or Earning Power of Employment Shifts

It is generally accepted that national beverage container deposits would result in a net increase in total beverage-related employment (compare RCC projections in Table 2). It is often assumed further that the jobs lost in the primary metals, glass, and metal can industries are "high-skilled" and that the jobs gained by other sectors are "low-skilled."

While there is little comprehensive evidence bearing directly on the question of comparative skills, data on average earnings in the affected sectors suggests that this latter conclusion on job skills is only partly true, and that taken literally without qualification it can be quite misleading.

The sectors projected to experience the major decreases in future employment - glass containers, metal cans, and primary metals - were projected in the RTI/RCC model to have a combined (1985) decrease of about 25,000 to 50,000 jobs below their baseline trend. These are also considered relatively high-skilled labor sectors, and production workers in these sectors received average annual earnings in 1976 ranging from $12,000 in glass containers to $15,600 in metal cans.

At the other extreme, the retail trades were projected to gain on the order of 60 to 65 thousand total jobs, and these can be expected to be primarily low-skilled and low paid clerk and stock-room employees. Average annual earnings in relevant retail sectors in 1976 (including part-time jobs) averaged $4,300 to $7,400. Comparisons between these two broad groupings of container producers and retail outlets generally appear to confirm the proposition that the jobs lost are in fact high-paying relative to jobs gained.

However, a third group of affected sectors - including soft drink and beer production and filling plants and wholesale distribution activities - would also be expected to gain significant numbers of employees. In the two RCC scenarios, these industries were estimated to gain about 20,000 to 38,000 jobs, or roughly equivalent to 80 percent of the number of jobs lost in container and metal supply. Production worker annual earnings in these industries in 1976 ranged from $9,100 in soft-drink bottling to $17,100 in brewery establishments. Wholesale distribution of malt beverages (a largely independent sector with no direct counterpart in soft drinks), involving primarily storage, handling, and trucking employment, had average earnings in 1976 of $11,600. While it is not safe to assume that the average new positions in these sectors would be at industry-average pay scales, it is nevertheless true that substantial numbers of new jobs (for example, refillable bottle washing and filling line operators and truck drivers) would be at or above their industry averages. By the same token, it may be that in some sectors the reduction in labor requirements might not be at the industry average wage scales.

Thus, while it is true that the employment decreases in the metal and glass sectors are relatively highly paid, it must also be recognized that a substantial number of high-

paid positions should also be expected to arise in the beverage filling and distribution sectors. Though the latter may not equal the former numerically, they do provide an important qualifier in discussions of the job-skills trade-offs.

APPENDIX TO THE SECOND REPORT

The Resource Conservation Committee is committed to involving the public in its decision-making. As a part of this commitment, the Committee sought both oral and written comments from the public. A copy of the letter from the Committee announcing the October 19, 1977, public meeting and inviting public input is attached. Following this letter is the formal record of the input received. Volume I of the record is the transcript of the oral presentations made at the October 19 meeting. Volume II is a compilation of the written statements presented by the speakers at the October 19 meeting. The distinction between Volumes I and II is that many speakers submitted lengthy statements (Volume II), and summarized that statement in their oral testimony (Volume I). Volume III is a compilation of the statements received from the public for inclusion in the record. The person or organization submitting the statement is listed in the index in alphabetical order. Volume IV is the documentation submitted by the public in support of their statements.

RESOURCE CONSERVATION COMMITTEE

THE FEDERAL INTERAGENCY COMMITTEE ESTABLISHED UNDER PUBLIC LAW 94-580
401 M Street, S.W., Washington, D.C. 20460

September 27, 1977

Dear Participant:

The Resource Conservation Committee is the cabinet level interagency committee set up under Section 8002(j) of the Resource Conservation and Recovery Act. The Committee is responsible for studying and making recommendations on a wide range of resource conservation policies.

This committee is attempting to gather public comments and input on the issue of Federal legislation for beverage container deposits. It is charged with the responsibility of reporting to the President and the Congress late this year on the subject. Your input is solicited to assist and guide this committee in reaching a position on beverage container deposit legislation. As one method of gathering pertinent information, we are scheduling a public meeting on October 19, 1977, 9:00 a.m. at the Department of Commerce, 14th and Constitution Avenue, N.W., Main Auditorium.

This meeting will provide an opportunity for a brief oral presentation. The questions in the enclosed list highlight the issues for which we seek public input. We request that your comments address these questions and any issues you feel should be brought to the Committee's attention.

However, if you are unable to attend or wish to make more extended comment, we encourage you to submit written comments, with the assurance that it will receive equally complete consideration by the Committee.

To assist us in planning this meeting, please let us know if you plan to attend. Your response, in addition to any comments and questions should be directed to: Susan B. Mann, Public Participation Liaison, Resource Conservation Committee, (WH-463), 401 M Street, S.W., Washington, D.C. 20460, (202) 755-9145.

Sincerely yours,

Barbara Blum
Chairman
Senior Advisory Group

Enclosure

A-3

RESOURCE CONSERVATION COMMITTEE

BEVERAGE CONTAINER DEPOSIT LEGISLATION

September 27, 1977

1. What should the Resource Conservation Committee recommend regarding the development of Federal beverage container legislation? Should the Federal Government set general guidelines or develop specific container legislation?

2. What alternatives to beverage container deposit legislation will accomplish similar results and what are their relative impacts on pollution and energy and materials consumption?

3. Should there be more guidelines for the States to develop their own respective legislation? If Federal legislation were developed, should it supersede State and local laws?

4. What are the social aspects and consequences of beverage container legislation? What sectors of society will be affected? Can you identify specific impacts of experiences pertaining to beverage container legislation?

5. What are the economic consequences, both positive and negative, of resource conservation as it relates to beverage container legislation or guidelines? Should there be compensation for economic losses and, if so, how should this be accomplished? Should any requirements be levied on unrefunded deposits?

6. What are the environmental impacts, both positive and negative, which may occur as a result of beverage container legislation or guidelines?

7. Is additional research on this subject necessary prior to a legislative proposal or the promulgation of guidelines? What should such research focus upon?

8. What are the key elements that should appear in beverage container guidelines or legislation?

9. To what extent should this committee consider the type of beverage container charge? Should charges be focused upon the type of beverages or should they be focused on the type of container? Should the Committee consider containers other than beverage containers?

10. What should be the limits on the deposits considered? Should they focus upon the size, the value of the container, the solid waste management costs, including litter pickup, the incentive necessary to assure high rates of return, or other factors? To what degree should container guidelines or legislation develop requirements on issues such as pull-top containers, or the standardization of containers? Where in the distribution chain is the best point for a deposit to originate?

11. If beverage container deposit legislation is to be considered by the committee, how should its implementation be developed? To what extent are cost data available for the variety of State and local programs addressing beverage container legislation?

PUBLIC MEETING ON BEVERAGE CONTAINER DEPOSIT ISSUE

OCTOBER 19, 1977

WASHINGTON, D.C.

FORMAL RECORD

Sponsored By

The Resource Conservation Committee,
The Federal Interagency Committee Established Under
Public Law 94-580

Volume I - Official Transcript

Volume II - Written Statements Submitted by Speakers at October 19, 1977, Public Meeting

Volume III - Statements Received for Inclusion in the Record

Volume IV - Supporting Documentation Submitted

VOLUME II

Written Statements Submitted By Speakers At
October 19, 1977, Public Meeting

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19. Senator Patrick J. Leahy

20. Loudoun County (VA)

21. Minnesota Pollution Control Agency

22. April D. Moore

23. National Soft Drink Association
William M. Landes
Richard A. Posner
Sidney P. Mudd
Robert F. Testin,
Reynolds Metals Company

25. Rhode Island Solid Waste

26. Mary Jo Salmon

27. Sierra Club

28. Society of American Travel Writers

29. Stone, Glass and Clay Coordinating Committee, AFL-CIO

30. Technical Information Project, Inc.

31. United Steelworkers of America

32. Ellis Yochelson

33. Judy Zuckerman

VOLUME III

Statements Received for Inclusion in the Record

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A. Private Citizens (Statements received from approximately 500 private citizens are in alphabetical order in Volume II. In order to conserve space, their names are not indixed here.)

B. Non-Governmental Organizations

League Against Waste (Howard County, MD)
League of Women Voters of Arkansas
League of Women Voters of Delaware
League of Women Voters of Illinois
League of Women Voters of Maryland
League of Women Voters of Oregon
Maine Audubon Society
Maplewood Environmental Action Group, Inc.
Massachusetts Audubon Society
Petition - Menke Municipal Services for West Orange, New Jersey (2,000)
Michigan United Conservation Clubs
Minnesota Public Interest Research Group
Monmouth County Environmental Council
Montana Outdoors Magazine
Moscow Recycling Center
Murfreesboro City Beautification Commission
National Beer Wholesalers Association
New Hartford Environmental Action Committee
Northern Arizona Audubon Society
Northern California Grocers Association
North Carolina Association - Soil and Water Conservation Districts
Oklahoma Health Department
Passaic River Coalition
Peninsula Conservation Center
Pennsylvania State University, Cooperative Extension Service
Portland Recycling Team
Sangamon State University, Springfield, Illinois
St. Cloud Area Environmental Council
Sierra Club - Los Angeles
Sierra Club - Connecticut
Sierra Club - N.E. Regional Conservation Committee
Sierra Club - Delta Chapter
Society of American Travel Writers
Society of the Plastics Industry
Solid Waste Recovery Co.
Somerville Environmental Commission
South Carolina Environmental Coalition
South Dakota Environmental Coalition
Stephenson County Audubon Society
Students for Environmental Concerns
Texas Committee on Natural Resources
Topsfield Recycling Group
Urban Aggregates, Inc.
Vermont Natural Resources Council
Vermont Public Interest Research Group, Inc.
Wawarsing - Environmental Conservation Commission

C. Government Organizations

Alabama, City of Huntsville, Department of Public Works
California, City of Berkeley, Department of Public Works
California, Napa County, Board of Supervisors
California, San Bernardino, Public Works Agency
California, San Francisco, Bureau of Engineering
California, City of Santa Clara, Director of Public Works
Connecticut, State House of Representatives, Representative Russell Lee Post, Jr.
Department of the Army
Department of State
District of Columbia, Department of Environmental Services
Florida, Department of Environmental Regulation
Maryland, Howard County, Virginia M. Thomas, Chairperson, County Council
Maryland, Governors Task Force to Study Beverage Container Legislation
North Carolina, Macon County, Soil and Water Conservation District
South Carolina, City of North Myrtle Beach, Street and Sanitation Department

VOLUME IV

Supporting Documentation Submitted

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21. National Soft Drink Association

22. National Wildlife Federation

23. A Study of the Beverage Container Problem and the Impacts of Proposed Minimum Deposit Legislation for North Carolina by William MacDowell

24. Office of Appropriate Technology, Oregon

25. Plaid Pantry Markets, Oregon

26. Reynolds Metals Company

27. The Society of the Plastics Industry, Inc.

28. Vermont -- 5¢ Deposit -- Congressman James M. Jeffords and Donald W. Webster

29. Wheelabrator - Frye, Inc., Energy Systems Division

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