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MARKET INCENTIVES FOR RECYCLING — THE TAX CREDIT AND PRODUCT CHARGE COMPARED

*Kevin C. Devine**

I. INTRODUCTION

Federal assistance to state and municipal solid waste management agencies is a phenomenon of recent origin. Traditionally the task of waste management fell squarely within local and state jurisdiction. During the last several decades, however, the disastrous results of an historically *laissez-faire* approach to waste management have become apparent. Today, one need only consider the sprawl of the town dump and the rapid depletion of national resource reserves to appreciate the waste and mismanagement that occurs. The disjointed, and often shortsighted efforts of local agencies have failed to effect a waste policy upon which the nation can rely. Yet the need for a reliable waste policy is clear.

The Solid Waste Disposal Act of 1965¹ was the initial federal response to the solid waste problem. The Act recognized the necessity of stimulating additional materials recycling² and established a framework for both financial and technical assistance to local and state agencies for development of resource recovery and solid waste disposal programs.³ A federal recycling policy had come of age.

This article will explore recent congressional proposals in two closely related areas: materials recycling and waste reduction ef-

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¹ Solid Waste Disposal Act of 1965, Pub. L. No. 89-272, 79 Stat. 997 (codified at 42 U.S.C. §§ 3251-54(f), 3256-59 (1965)), as amended, Resource Conservation and Recovery Act of 1976, Pub. L. No. 94-580, 90 Stat. 2795.

² See 42 U.S.C. § 3251(a)(5) (1965).

³ Resource recovery refers to the recovery of energy and materials from the solid waste stream. OFFICE OF SOLID WASTE MANAGEMENT PROGRAMS, ENVIRONMENTAL PROTECTION AGENCY, THIRD REPORT TO CONGRESS - RESOURCE RECOVERY AND WASTE REDUCTION 1 (1975) [hereinafter cited as EPA, THIRD REPORT].

forts. As used in this article, "recycling" means "the recovery of specific reprocessed secondary materials."⁴ Thus, for example, the reuse of a returnable beverage container does not constitute recycling unless that container has been broken down and remade. Waste reduction, on the other hand, refers to "prevention of waste at its source,"⁵ and is generally accomplished through extended product lives or less materials-intensive product designs.⁶ Reuse of a returnable bottle would, therefore, constitute waste reduction.

The first section of this article reviews the seriousness of the solid waste problem. Following is a brief discussion of federal action to date, and a comparison of two recent recycling proposals: the Senate Finance Committee's tax credit for recycling,⁷ and the House Commerce Committee's national product charge.⁸

II. THE SOLID WASTE PROBLEM AND FEDERAL RESPONSES

A. *The Solid Waste Problem*

The United States is supported by an industrial economy hungry for raw materials. During 1971, this nation consumed upwards of 5 billion tons of virgin materials.⁹ Estimates vary, but it appears that total domestic solid waste production for the same year reached well over 4 billion tons.¹⁰ This article focuses on those solid wastes that comprise the bulk of the secondary materials market,¹¹ *i.e.*, post-consumer municipal solid wastes, and industrial "home" and "prompt" scraps. Post-consumer wastes are those solid wastes dis-

⁴ *Id.*

⁵ *Id.* at 4.

⁶ *See id.* The phrase 'materials-intensive' refers to the quantity of basic materials consumed during manufacture.

⁷ H.R. 10612, 94th Cong., 2d Sess. § 2006 (1976) (unenacted draft) [hereinafter cited as § 2006], reprinted in TAX REFORM ACT OF 1976, AS REPORTED BY SENATE FINANCE, JUNE 10, 1976, 27 FED. TAXES (P-H) EXTRA ISSUE, Supp. LVII, 184-86 [hereinafter cited as SENATE FINANCE § 2006]; see also REPORT OF THE SENATE COMM. ON FINANCE ON H.R. 10612, [1976] 28 FED. TAXES (P-H) Supp. LVII § 2 at 575-78 [hereinafter cited as REPORT, § 2006].

⁸ H.R. 14496, 94th Cong., 2d Sess. § 306 (1976) (unenacted House Commerce Comm. draft of the Solid Waste Utilization Act, § 306) (on file in offices of ENVIRONMENTAL AFFAIRS) [hereinafter cited as Draft § 306].

⁹ OFFICE OF SOLID WASTE MANAGEMENT PROGRAMS, ENVIRONMENTAL PROTECTION AGENCY, FIRST REPORT TO CONGRESS - RESOURCE RECOVERY AND SOURCE REDUCTION (1973) reprinted in EPA LEGAL COMPILATION, SOLID WASTE, Supp. II 43 (1974) [hereinafter cited as EPA, FIRST REPORT].

¹⁰ *Id.* at 44. Solid waste is a term of general application, and includes solid materials discarded during industrial, commercial, agricultural, and residential activities.

¹¹ The secondary materials market is the market wherein recycled materials are traded.

carded by ultimate consumers, either residential or commercial.¹² Industrial home scraps are created during processing activities and typically consist of defective, but reusable batches of basic materials.¹³ Prompt scraps, on the other hand, result during fabrication activities and generally consist of excess trimmings or shavings.¹⁴

Specific measurements of home and prompt scraps produced and consumed by domestic industry are difficult to gather, and once found are subject to gross misinterpretation. Indeed, many industries only retain records of the scrap they consume and make no distinction between materials purchased from a municipal source and those acquired from a prompt or home scrap reserve.¹⁵ However, both home and prompt scraps are currently recycled at close to 90% of total production.¹⁶ Thus, absent any federal incentive,¹⁶ industry has found it quite profitable to consume nearly all of its own solid wastes.

Unfortunately this is not the case with post-consumer municipal wastes. To date, the recycling of these materials has not proven economically attractive to domestic industry. As a result, post-consumer wastes represent the major weakness in the secondary materials market. The Environmental Protection Agency (EPA) estimates that during 1973 domestic production of post-consumer wastes exceeded 144 million tons.¹⁷ Only 7% of that total reached the market to be recycled.¹⁸ The remainder was disposed of at a cost to local government of approximately \$3.5 billion.¹⁹ Recent updates suggest that no significant change in total post-consumer waste creation occurred between 1973 and 1975.²⁰ Nevertheless, this stagnation is probably temporary in nature and is likely the result of the

¹² EPA, THIRD REPORT, *supra* note 3, at 1.

¹³ Anderson & Spiegelman, *Tax Policy and Secondary Material Use* 10 (1976) (manuscript to be published in J. ENV'TL ECON. & MANAG'T, 1977) [hereinafter cited as Anderson & Spiegelman].

¹⁴ *Id.* at 10-11.

¹⁵ Phone conversation with Jerry Scharf, Assistant Executive Vice-President, National Association of Recycling Industries (Oct. 29, 1976).

¹⁶ This is the generally quoted figure, though perhaps premised upon logic rather than empirical study. Phone conversation with Frank Smith, Economist, Resource Recovery Division, EPA, Wash., D.C. (Oct. 5, 1976).

¹⁷ EPA, THIRD REPORT, *supra* note 3, at 9. Note that this figure fails to include auto hulks or demolition wastes. *Id.* at 8.

¹⁸ *Id.*

¹⁹ *Id.* at 11.

²⁰ Phone conversation with Frank Smith, Economist, Resource Recovery Division, EPA, Wash., D.C. (Oct. 5, 1976).

recent economic recession.²¹ Although current economic uncertainties make accurate prediction of future trends difficult, the EPA estimates that by 1990 domestic output of post-consumer wastes will increase to 225 million tons per year.²²

Though the recycling rates for industrial wastes remain high, the recovery rates of the major components of the post-consumer municipal waste stream are declining. Senator Gravel, estimates current recycling rates of 16.5% for paper, 1.6% for metals, 2.1% for glass, and 0% for both plastics and textiles.²³ The question to be asked, then, is why the recovery rates are so poor?

Study of the secondary materials market indicates that the major problem is one of economics. In particular, many secondary materials are not competitively priced with their counterpart virgin materials.²⁴ A variety of factors create wide pricing variances through the inflation of secondary materials' prices and the artificial deflation of virgin materials' costs. In other words, these factors tend to keep the cost of recycled materials too high, and the cost of virgin materials too low.

Two classes of factors contribute to this problem. First, there are certain economic realities; *i.e.*, plant siting and technology, procurement costs, and present day recycling technologies. Second, are certain historical and political policy factors, such as freight rate scheduling, current tax incentives for the consumption of virgin materials, and the municipal financing of solid waste management costs through the general tax system.

Plant siting and procurement costs are interdependent and call for simultaneous examination. Traditionally both plant siting and technology were aimed at the exploitation of virgin material sources.²⁵ Clearly, where the industry site is close to an available source of raw material, the cost of those materials need not reflect the same high costs of collection, separation, processing, and long distance transportation which inflate secondary materials prices. It

²¹ *Id.*

²² EPA, THIRD REPORT, *supra* note 3, at 10.

²³ 122 CONG. REC. S13413 (daily ed. Aug. 4, 1976) (remarks of Sen. Gravel).

²⁴ "It is very difficult to generalize about the degree to which competition between secondary and virgin materials exists. . . . [Nevertheless], there are certain situations in which secondary and virgin materials openly compete at the process level or in the final product marketplace." OFFICE OF SOLID WASTE MANAGEMENT PROGRAMS, ENVIRONMENTAL PROTECTION AGENCY, SECOND REPORT TO CONGRESS - RESOURCE RECOVERY AND SOURCE REDUCTION 23 (1974) [hereinafter cited as EPA, SECOND REPORT].

²⁵ EPA, FIRST REPORT, *supra* note 9, at 47.

is estimated, for example, that transportation costs alone contribute in excess of 30% to the delivered price of scrap iron.²⁶ In the steel industry, where scrap iron is generally an acceptable substitute for raw pig iron, procurement costs for the scrap substitute typically run \$6.50 per ton greater than that for the raw pig.²⁷ Thus, to the extent that plant siting amplifies waste transportation costs, it acts to frustrate increased recycling efforts.

The economics of recycling is further determined by the availability of recycling technology to municipalities.²⁸ To the municipality, costs are of prime importance, and technology governs costs.²⁹ As recycling technology is still in its infancy, many municipalities will avoid risking large capital expenditures until experience offers preferred methods and techniques.³⁰ Despite these risks, resource recovery systems are being built. In 1976, seven or eight cities in the United States had operational plants; eight or nine plants were in construction; and thirty more facilities were in either the late planning or design stage.³¹ Nevertheless, the EPA indicates that, "[a]t the current implementation rate recovery efforts probably will fall considerably short of what could be achieved."³²

Historical and political factors also tend to constrain additional recycling efforts. Freight rates, for example, can significantly increase the delivered price of secondary materials. Despite frequent denials by the Interstate Commerce Commission (ICC),³³ allegations of freight rate discrimination against secondary materials persist.³⁴ In 1974, the EPA reported to Congress that certain second-

²⁶ EPA, SECOND REPORT, *supra* note 24, at 24.

²⁷ EPA, FIRST REPORT, *supra* note 9, at 54.

²⁸ See EPA, THIRD REPORT, *supra* note 3, at 63-74 (comparison of five resource recovery techniques).

²⁹ "Economic cost is a key factor in local government decisions to implement large-scale resource recovery plants." *Id.* at 63.

³⁰ EPA, THIRD REPORT, *supra* note 3, at xvi.

³¹ *Environmental Protection Agency Transition Papers To Incoming Carter Administration on Areas of Agency Jurisdiction*, [1976] 7 ENVIR. REP. (BNA) 1288, 1307.

³² *Id.*

³³ In August, 1976, the ICC submitted a draft environmental impact statement, alleging no significant impact of freight rates on the volume of materials recycling. [1976] 7 ENVIR. REP. (BNA) 643.

³⁴ Perhaps best known in this regard is *Students Challenging Regulatory Agency Procedure (SCRAP) v. United States*, 371 F. Supp. 1291 (D.D.C. 1974). In *SCRAP*, plaintiff law students and professors claimed that the ICC failed adequately to address the potential effects of rate increases on the recycling of solid wastes. The Court agreed with the plaintiffs, finding the ICC's environmental impact statement wanting, and required a moratorium on rate increases pending further investigation by the agency. See generally *The Relationship*

ary materials contribute in greater proportion to railroad profits than their counterpart virgin materials.³⁵ Although no consistent pattern of freight discrimination was alleged, the report cited evidence of rate discrimination in the cases of scrap iron and steel, glass cullet, and reclaimed rubber.³⁶ The Institute of Scrap Iron and Steel (ISIS) has made the same charges. The ISIS estimates that "an additional 144 million tons of ferrous scrap would have been recycled during the past ten years if the ICC had corrected the discriminatory rate structure."³⁷ The ICC contends, however, that freight rates have no significant impact on materials recycling and cites supply and demand inelasticity as the controlling factors of recycling volume.³⁸ Although market analysis supports the ICC's premise that supply and demand are inelastic for many recyclables,³⁹ such a premise does not rebut the evidence of rate discrimination. Clearly further study of the problem is warranted; perhaps on an inter-agency basis rather than by the ICC alone.

Present tax subsidies allowed for virgin materials use also contribute to price differences between virgin and secondary materials.⁴⁰ The Internal Revenue Code provides depletion allowances for the exploitation of natural resources,⁴¹ and capital gains treatment for profits realized from standing timber sales.⁴² As the combined sav-

Between Substantive and Procedural Review under NEPA: A Case Study of SCRAP v. U.S., 4 ENV. AFF. 157 (1975).

³⁵ See EPA, SECOND REPORT, *supra* note 24, at 19-24.

³⁶ *Id.* Ocean freight rates are also suspect, with studies showing up to 95% greater revenue contribution per ton by wastepaper over virgin pulpwood. *Id.* at 23.

³⁷ PHOENIX QUARTERLY, Fall, 1976, at 1 (publication of the Institute of Scrap Iron and Steel, Inc.).

³⁸ [1976] ENVIR. REP. (BNA) 643. In February, 1977, the ICC reaffirmed its finding of no significant impact, yet concluded that certain freight rates were "unjust and unreasonable." Consequently, the ICC ordered railroads to cut freight rates for copper matte, zinc dross, aluminum residues, certain nonferrous metal scraps, cullet, and ashes. [1977] ENVIR. REP. (BNA) 1543.

³⁹ See text at note 94, *infra*.

⁴⁰ See *Federal Tax Policy Has Only Modest Impact on Recycling, Environmental Law Institute Study Concludes*, 6 E.L.R. 10041 (1976) [hereinafter cited as *E.L.I. Study*]; EPA, FIRST REPORT, *supra* note 9, at 48; 122 CONG. REC. S13411 (daily ed., Aug. 4, 1976) (remarks of Sen. Gravel).

⁴¹ I.R.C. § 613. Percentage depletion allowances are business related deductions allowed against gross income from natural resource development. Unlike many deductions, the depletion deduction is taken as a percentage of gross income, thus the taxpayer could foreseeably deduct more than his actual basis in the property. Percentage depletion is available only for those materials listed in § 613.

⁴² *Id.* §§ 631(a), 1231(a). Section 631(a) allows timber owners the option to elect capital gains treatment for their cut timber. Thus, the taxpayer may elect preferential tax treatment

ings by virgin materials producers from these provisions is in excess of \$1 billion per year,⁴³ a substantial incentive for the exploitation of virgin materials is maintained, possibly to the detriment of the secondary materials market. "To the degree that these benefits reduce virgin material prices, they could result in overconsumption of virgin resources and act to inhibit the use of recycled materials."⁴⁴

Another factor influencing cost differences between potentially competitive virgin and secondary materials is the practice of financing municipal waste management through the general tax system.⁴⁵ This method of cost distribution disregards the actual materials consumption of the consumer and forces each taxpayer to pay an equal percentage of the hidden costs of waste collection, separation and disposal. In other words, this policy fails to internalize these costs into the price of the product containing the virgin materials.⁴⁶ It is, in effect, an indirect subsidy for virgin materials use,⁴⁷ artificially depressing virgin materials prices. Because secondary materials necessarily reflect these collection and disposal costs, existing price differences are further exaggerated. Again, to the extent virgin material prices are held artificially low, recycling efforts are thwarted.

In sum, several economic and policy factors tend to discourage increased recycling efforts. Their reevaluation should prove a valuable tool to legislators concerned with stimulating the secondary materials market. As evidenced by the spate of recently proposed⁴⁸

for gains or losses incurred. In general, capital gains taxes are lower than taxes levied on ordinary income.

⁴³ TESTIMONY BEFORE THE SENATE COMM. ON FINANCE ON H.R. 10612, 94th CONG., 2d Sess. 19 (Comm. Print, July 20, 1976) (statement of Sen. G. Hart) [hereinafter cited as FINANCE COMM. TESTIMONY]. See BUDGET OF THE U.S. GOV'T, FISCAL YEAR 1978, SPECIAL ANALYSES, Special Analysis F. 128 (fiscal 1977 cost estimated to be \$1.7 billion).

⁴⁴ EPA, SECOND REPORT, *supra* note 24, at xi.

⁴⁵ See Anderson, *Public Policies Toward The Use of Scrap Materials 2* (1976) (manuscript to be published in AM. ECON. REV., 1977) [hereinafter cited as Anderson, *Public Policies*]; Skinner *Recommends Tax Subsidies, Tightening Environmental Regulations*, [1976] ENVIR. REP. (BNA) 79 [hereinafter cited as Skinner]; 122 CONG. REC. S13412 (daily ed. Aug. 4, 1976) (letter from Russell Train, Administrator, EPA, read by Sen. Gravel).

⁴⁶ In this context, cost internalization refers to the forced inclusion of external costs into the ultimate price of the product.

⁴⁷ See letter from Russell Train, Administrator, EPA, in 122 CONG. REC. S13412 (daily ed. Aug. 4, 1976).

⁴⁸ See, e.g., H.R. 12536, 93d Cong., 2d Sess., 120 CONG. REC. H467 (daily ed. Feb. 4, 1974) (freight rate discrimination and secondary materials); H.R. 12537, 93d Cong., 2d Sess., 120 CONG. REC. H467 (daily ed. Feb. 4, 1974) (regulation of non-recyclables); H.R. 4451, 94th Cong., 1st Sess., 121 CONG. REC. H1463 (daily ed. March 6, 1975) (tax free bonds for resource recovery facilities); H.R. 404, 94th Cong., 1st Sess., 121 CONG. REC. H180 (daily ed., Jan. 16,

and enacted recycling incentives,⁴⁹ Congress has begun to respond.

B. Review of Federal Response to Date

Federal responses to the growing solid waste problem take a variety of forms. For analytical purposes, four general, yet overlapping categories of legislation will be discussed.

1) *Financial assistance to state and local agencies:*

The Solid Waste Disposal Act of 1965,⁵⁰ and its most recent amendment, The Resource Conservation and Recovery Act of 1976,⁵¹ are the mainstays of this first category. These statutes provide financial and technical assistance to eligible solid waste management agencies,⁵² "for the demonstration of resource recovery systems or for the construction of new or improved solid waste disposal facilities."⁵³ Other congressional proposals in this category differ mostly as to form and amount of assistance,⁵⁴ but generally recognize the inability of local governments to finance large-scale projects on their own. The principal limitation on the effectiveness of these efforts is that they focus only upon local, state, and interstate recovery systems, and thus their impact is solely upon the supply-side, as opposed to the demand-side, of the secondary materials market. The EPA has suggested that "[t]he most efficient incentive for materials recovery would be one which results in the creation of new demand by industry for secondary materials."⁵⁵ Therefore, until both supply and demand are stimulated, the benefits of federal expenditures for supply-side technology improvement may not be fully realized.

1975) (printing of the Congressional Record on recycled paper); S. 1593, 93d Cong., 1st Sess., 119 CONG. REC. 12411 (1973) (tax incentives for recycling and materials regulation).

⁴⁹ See generally text at notes 49-68, *infra*.

⁵⁰ 42 U.S.C. §§ 3251-54(f), 3256-59 (1965), as amended, Resource Conservation and Recovery Act of 1976, Pub. L. No. 94-580, 90 Stat. 2795.

⁵¹ Pub. L. No. 94-580, 90 Stat. 2795 (1976), amending 42 U.S.C. §§ 3251-54(f), 3256-59 (1965).

⁵² Note that private profit-making organizations are ineligible for assistance. 42 U.S.C. § 3258(b) (1965).

⁵³ *Id.* § 3254(b).

⁵⁴ For example, whether to provide grants on a percentage of cost basis, as in the Solid Waste Disposal Act, 42 U.S.C. §§ 3251 *et seq.* (1965); or to provide below market interest rate loans, as proposed by Sen. Moss in S. 1593, 93d Cong., 1st Sess., 119 CONG. REC. 12411 (1973).

⁵⁵ EPA, FIRST REPORT, *supra* note 9, at 63.

2) *Reevaluation of federal regulatory schemes:*

Progress is apparent in this second category of federal response. Section 204 of the Railroad Revitalization and Regulatory Reform Act of 1976⁵⁶ directed the ICC to investigate the possible effects of its freight rate policies on the volume of materials recycling. As previously mentioned, the ICC has denied any significant impact.⁵⁷ The Federal Trade Commission's (FTC) labeling regulations have also been subjected to congressional scrutiny for discrimination against secondary materials. Section 383 of the Energy Policy and Conservation Act prohibits the FTC from requiring "any container of recycled oil to also bear a label. . . which connotes less than substantial equivalence of such recycled oil with new oil."⁵⁸

In another area of concern, the EPA recently published new regulations governing the sale of returnable beverage containers on federal facilities.⁵⁹ These guidelines, though mandatory for federal departments and agencies, may also serve as recommendations to state and local governments. In addition, guidelines have been issued for the establishment of resource recovery facilities on many federal installations.⁶⁰ Several agencies are currently experimenting with these guidelines to determine the feasibility of full compliance.⁶¹

3) *Waste reduction proposals:*

Waste reduction techniques seek to alter societal consumption patterns by establishing either product design or material content standards.⁶² The most widely recognized product design technique is the so called "bottle bill," or mandatory deposit legislation.⁶³ During the 94th Congress, Senator Hatfield introduced a national mandatory deposit bill as an amendment to the Solid Waste Utilization Act.⁶⁴ Although the proposal suffered a resounding defeat,

⁵⁶ Pub. L. No. 94-210, 90 Stat. 40 (1976) (to be codified at 49 U.S.C. § 1).

⁵⁷ See notes 33, 38, *supra*.

⁵⁸ Pub. L. No. 94-163, 89 Stat. 941 (1975) (to be codified at 42 U.S.C. § 6363(e)(2)).

⁵⁹ 41 Fed. Reg. 41203 (1976) (to be codified in 40 C.F.R. § 244).

⁶⁰ 41 Fed. Reg. 41209 (1976) (to be codified in 40 C.F.R. § 245).

⁶¹ [1976] 7 ENVIR. REP. (BNA) 1026.

⁶² EPA, THIRD REPORT, *supra* note 3, at 4.

⁶³ *E.g.*, VT. STAT. ANN. tit. 10, §§ 1521 *et seq.* (Cum. Supp. 1976).

⁶⁴ S. 2150, 94th Cong., 2d Sess. (1976). The Solid Waste Utilization Act is the precursor of the Resource Conservation and Recovery Act of 1976, Pub. L. No. 94-580, 90 Stat. 2795 (1976), amending 42 U.S.C. §§ 3251-54(f), 3256-59 (1965).

due primarily to the lobbying efforts of the bottling industry,⁶⁵ there are plans to reintroduce the bill during the 95th Congress.⁶⁶ At the state level, bottle bill legislation receives continued exposure: since 1971, mandatory deposit bills have been introduced in 50 state legislatures.⁶⁷ Seven states currently enjoy laws partially or fully regulating the manufacture of beverage containers.⁶⁸

Another proposed waste reduction technique is the "product charge" concept.⁶⁹ The product charge will be fully discussed in Part IV of this article.

4) *Market incentives for recycling:*

Market incentives for recycling are designed to stimulate increased economic competition between secondary and virgin materials. Some market incentives, like the proposed tax credit to recyclers,⁷⁰ focus only on demand for secondary materials. Others, like the product charge,⁷¹ focus upon both demand and supply. Regardless of the approach taken, the result is increased cash flow within the secondary materials market. The question remains, however, whether the tax credit or the product charge will result in increased materials recycling. The two approaches discussed below are both typical and timely, thus providing an attractive framework for analysis of market incentives in general.

III. THE TAX CREDIT: SECTION 2006

Section 2006 of the Senate Finance Committee's draft of the Tax Reform Act of 1976 proposed a tax credit to recyclers, "for purchases of recyclable solid waste materials."⁷² In offering the measure, the Committee's express intent was the stimulation of "a steadily in-

⁶⁵ As reported in Serrin, *Judgment on No>Returns*, N.Y. Times, Oct. 31, 1976, § 3, at 1, col. 5.

⁶⁶ *Id.*

⁶⁷ U.S. COUNCIL ON ENVIRONMENTAL QUALITY, SIXTH ANNUAL REPORT 96 (1975).

⁶⁸ Five states have laws currently codified: OR. REV. STAT. §§ 459.810 *et seq.* (1975); VT. STAT. ANN. tit. 10, §§ 1521 *et seq.* (Cum. Supp. 1976); S.D. COMPILED LAWS ANN. §§ 34-16C-1 *et seq.* (Supp. 1976); MINN. STAT. ANN. § 116F.06 (West Supp. 1977); CAL. HEALTH & SAFETY CODE §§ 24380 *et seq.* (West Supp. 1976). Two states, Maine and Michigan, recently adopted mandatory deposit legislation after ballot referenda. [1976] 7 ENVIR. REP. (BNA) 980.

⁶⁹ A product charge resembles a special excise tax, "designed to provide an incentive for decreased material and product use." EPA, THIRD REPORT, *supra* note 3, at xii. For a discussion of product charges, see text PART IV, *infra*.

⁷⁰ SENATE FINANCE § 2006, *supra* note 7.

⁷¹ Draft § 306, *supra* note 8.

⁷² REPORT, § 2006, *supra* note 7, at 576.

creasing amount of recycling,"⁷³ and a concomitant reduction in the amount of municipal waste requiring final disposal. Thus, the tax credit was advanced as a "tax incentive" for increased consumption of recyclable solid waste materials.⁷⁴

The tax credit a recycler would receive under § 2006 is a function of both the type and the amount of material being recycled. Different materials yield different credits to the purchaser. Purchasers of ferrous and nonferrous scrap⁷⁵ receive a credit equal to one half the percentage depletion allowed those materials by the Internal Revenue Code.⁷⁶ Purchasers of wastepaper and textile scrap are allowed a ten percent credit, and scrap glass and plastic purchasers, a five percent credit.⁷⁷ In an attempt to assure actual increases in recycling efforts, the Finance Committee limited the credit's availability to recycling purchases "in excess of the [recycler's] *base period amount*."⁷⁸

A recycler's base period amount is calculated as 75 percent of average annual purchases over the preceding three year period.⁷⁹ The basis of the credit formula is, therefore, a three-year moving average, and the recycler is entitled to a credit for purchases in excess of an historical average.⁸⁰ To avoid unnecessary disruption and a tax windfall⁸¹ the credit was to be phased in over a three year period, that is, the credit would be limited to 25% of the calculated amount in the first year, and to 50% in the second.⁸²

An example should clarify the calculation of the credit formula. Assume a glass recycler in operation since 1974. If purchases were as follows: 100 tons in 1974, 120 tons in 1975, and 140 tons in 1976; then the 1977 base period amount would be 90 tons (75% of 120).⁸³ If 1977 purchases also equalled 140 tons, the recycler would be eligi-

⁷³ *Id.*

⁷⁴ See text at note 87, *infra*.

⁷⁵ Gold, silver, platinum, and other precious metals are not included. SENATE FINANCE § 2006, *supra* note 7, at § 2006(g)(3)(A).

⁷⁶ I.R.C. § 613.

⁷⁷ SENATE FINANCE § 2006, *supra* note 7, at § 2006(g)(2)(A).

⁷⁸ *Id.* § 2006(g)(1) (emphasis added).

⁷⁹ "(B) Permanent base period. — For taxable years beginning after December 31, 1980, the base period amount of a taxpayer is 75 percent of the average annual amount of recycling purchases of the taxpayer for the three preceding taxable years." *Id.* § 2006(g)(4)(B).

⁸⁰ REPORT, § 2006, *supra* note 7, at 576.

⁸¹ In this context, windfall refers to an undesired subsidy for an activity already profitably pursued.

⁸² SENATE FINANCE § 2006, *supra* note 7, at § 2006(g)(6).

⁸³ In calculating the 1978 base period amount, 1974 purchases would be ignored.

ble for a credit of 5% of his cost for 50 (140-90) tons of glass cullet. The phase in provision limits the recycler's credit in this first year to 25% of the calculated amount, or 12.5 tons.

The Finance Committee's report on § 2006 defines eligible solid waste materials as "materials which must have been used by an ultimate consumer and have no significant value or utility except as waste."⁸⁴ In addition, manufacturers are included in the definition of ultimate consumers, and "fabrication wastes" (prompt scraps) are defined as post-consumer solid wastes.⁸⁵ Prompt scraps are not eligible if reused by the initial fabricator; only the purchasing recycler of the prompt scrap is entitled to the credit.⁸⁶

The Treasury estimates that § 2006 would have resulted in a loss of approximately \$345 million in revenue per year by 1981, revenue which otherwise would have been collected by the Internal Revenue Service.⁸⁷ In contrast to direct congressional expenditures which create an outflow of treasury funds, a tax credit results in an inability to collect revenue otherwise due.⁸⁸ In either instance the consequences are the same: a reduction in treasury funds.⁸⁹ Thus, tax credits are a type of "tax expenditure."⁹⁰ More precisely, the tax credit for recycling is a "tax incentive," a subcategory of tax expenditures, because its very purpose is to induce a behavioral response within the recycling market.⁹¹ For analytical purposes, therefore, the tax credit is simply a government assistance program administered through the federal income tax system.⁹² For this reason,

⁸⁴ REPORT, § 2006, *supra* note 7, at 577.

⁸⁵ *Id.* Thus, prompt scraps are eligible for the credit, while home scraps remain ineligible. *Id.* For definitions see text at notes 12-14, *supra*.

⁸⁶ Report, § 2006, *supra* note 7, at 577. Clearly, the monitoring of this distinction would present administrative problems.

⁸⁷ *Id.* at 578.

⁸⁸ See Surrey, *Tax Incentives As A Device For Implementing Government Policy: A Comparison With Direct Government Expenditures*, 83 HARV. L. REV. 705, 726 (1970) [hereinafter cited as Surrey].

⁸⁹ "If we choose government provision or assistance, then dollars must be spent, and whether they are dollars forgone through lost tax revenues or dollars spent directly through direct expenditures, the effect on tax rates will be the same." *Id.*

⁹⁰ Tax expenditures are defined as the "special provisions of the federal income tax system which represent government expenditure made through that system to achieve various social and economic objectives." *Id.* at 706.

⁹¹ By definition, the only tax expenditures not properly labeled tax incentives are those "related to involuntary activities." *Id.* at 712. Thus, I.R.C. § 151(d), the additional exemption for the blind, is not a tax incentive.

⁹² See Surrey, *supra* note 88, at 713; McDaniel & Kaplinsky, *The Use of The Federal Income Tax System To Combat Air And Water Pollution: A Case Study In Tax Expenditures*,

§ 2006 must be examined not only as a direct recycling incentive, but also as an income tax expenditure provision. Only in such a manner can the efficacy of the measure be fully evaluated and its effects within the tax system properly discussed.⁹³

Section 2006 must be examined with three inquiries. First, will the tax credit stimulate appreciable increases in materials recycling? Second, will it effectively offset market inequities caused by existing tax subsidies allowed for virgin materials use? Finally, in light of the infirmities of § 2006, are its costs reasonable?

A. *Will the Tax Credit Stimulate an Appreciable Increase in Recycling?*

Because tax credits effect a reduction in tax liability, their immediate result is additional cash flow in the hands of the taxpayer. Thus, implicit in the offering of § 2006 is the Finance Committee's assumption that increased cash flow means increased recycling. A presumed reasoning appears: the tax credit will create increased cash flow for the taxpayer-recycler; increased cash flow, in turn, means increased demand for secondary materials; and finally, increased demand means increased recycling. Notwithstanding this logic, additional cash flow does not guarantee increased recycling.

A fundamental defect in § 2006 results from a failure to account for the supply and demand elasticities of the secondary materials market. During testimony before the Finance Committee, Senator Hart, an opponent of the measure, pointed out the long-run supply and demand price inelasticity of many recyclable materials.⁹⁴ Recent econometric studies of the secondary materials market support this conclusion; estimating, for example, a long-run supply and demand elasticity for wastepaper of only 0.16.⁹⁵ In other words, nei-

1 ENV. AFF. 1, 17-18 (1972) [hereinafter cited as McDaniel & Kaplinsky]; McDaniel, *Alternatives To Utilization of The Federal Income Tax System To Meet Social Problems*, 11 B.C. INDUS. & COM. L. REV. 867, 870 (1970) [hereinafter cited as McDaniel, *Alternatives*].

⁹³ For a similar analytical approach see McDaniel & Kaplinsky, *supra* note 92; McDaniel, *Alternatives*, *supra* note 92.

⁹⁴ FINANCE COMM. TESTIMONY, *supra* note 43, at 18 (statement of Sen. G. Hart). *Accord*, Anderson & Spiegelman, *supra* note 13, at 19-22.

Elasticity of demand, "is the ratio of the percentage reduction in quantity purchased to the percentage price increase that induced it." SURTS, *PRINCIPLES OF ECONOMICS* 278 (1970). Elasticity of supply, on the other hand, is "the ratio of a percentage increase in quantity to the percentage increase in price that induced it." *Id.* at 317.

⁹⁵ Anderson & Spiegelman, *supra* note 13, at 19-20. Econometric analysis is a computerized method of inductive economic forecasting. SURTS, *PRINCIPLES OF ECONOMICS* 206 (1970).

ther the long-run supply of, nor the long-run demand for these materials will be appreciably increased by simply raising or lowering the price offered or demanded for the scrap.⁹⁶ Senator Hart suggested that this inelasticity results from the high, fixed costs of municipal waste management which "often far exceed the market price" offered for the materials by industry.⁹⁷ Moreover, public demand for products manufactured from secondary materials could be limited by traditional preferences for new and unused consumer goods.⁹⁸ Consequently, industrial demand for secondary materials might likewise be reduced.

Although the extent to which market inelasticities would lessen the effect of § 2006 is uncertain, two recent studies indicate that the tax credit's impact on recycling activities would be minimal. A Treasury study predicted increased wastepaper, scrap iron, and scrap copper recycling of less than 1% while aluminum recycling would increase by just over that amount.⁹⁹ A second study anticipated slightly larger increments: wastepaper recycling up by 1.6%; scrap iron and steel recycling up by 3%; and scrap copper recycling up by just over 3%.¹⁰⁰ Thus, § 2006 is not expected to substantially increase recycling efforts.

Members of the Senate were opposed to the tax credit for three reasons. Senate spokesmen expressed concern for the high cost¹⁰¹ and the predicted minimal benefit of § 2006.¹⁰² Yet, the most prominent criticism scored the probability of a tax windfall to recyclers.¹⁰³

Several factors justified the senators' fear of a windfall to the recycling industry. Industry itself criticized § 2006 as "an unwarranted drain upon the United States Treasury without commensur-

⁹⁶ This is not the case for all recyclable materials, however. For example, the long-run supply price elasticity of scrap steel is estimated at 1.12. Anderson & Spiegelman, *supra* note 13, at 21.

⁹⁷ FINANCE COMM. TESTIMONY, *supra* note 43, at 18. (statement of Sen. G. Hart).

⁹⁸ Cf. [1976] 7 ENVIR. REP. (BNA) 895 (discussing the need for greater public confidence in wastewater reuse).

⁹⁹ See 122 CONG. REC. S13410 (daily ed. Aug. 4, 1976) (remarks of Sen. G. Hart).

¹⁰⁰ See Anderson, *Public Policies*, *supra* note 45, at 8. Note, however, that Anderson's study assumed profit margins, "large enough to support the full deduction. To the extent profit margins fall short of that. . . , the estimated impact on recycling would be reduced." *Id.*

¹⁰¹ See 122 CONG. REC. S13409 (daily ed. Aug. 4, 1976) (remarks of Sen. G. Hart); *id.* at S13412 (remarks of Sen. Durkin); *id.* at S13413 (remarks of Sen. Dole).

¹⁰² See *id.* at S13410 (remarks of Sen. G. Hart); *id.* at S13412 (remarks of Sen. Durkin); *id.* at S13413 (remarks of Sen. Dole).

¹⁰³ See *id.* at S13409-10 (remarks of Sen. G. Hart); *id.* at S13412 (remarks of Sen. Durkin). It has been suggested that the fear of a tax windfall to recyclers led to the defeat of the measure. See [1976] 7 ENVIR. REP. (BNA) 894.

ate benefits and an unwanted windfall to . . . industry.”¹⁰⁴ Industry further argued that the tax credit would effect a misallocation of revenue without increasing recycling because it would “result only in increased prices for scrap.”¹⁰⁵ That is, rather than stimulating increased scrap purchasing, the additional cash flow within the market would simply inflate the price demanded by the suppliers of scrap. Thus, § 2006 suffers an inherent infirmity in its lack of control over, and regulation of the supply-side of the market equation.¹⁰⁶ While this absence of supply-side regulation is characteristic of demand-side tax credits as a whole, two additional objections were cited which relate solely to drafting deficiencies of this particular bill.

Senator Humphrey, in opposing the measure, emphasized a major drafting defect in the § 2006 credit formula.¹⁰⁷ The credit formula actually permits a tax benefit even if the taxpayer-recycler fails to increase secondary materials consumption. For example, a plastics recycler would be allowed a 5% credit against all purchases above the applicable base period amount.¹⁰⁸ If, in year four the recycler purchases only 80% of the base period amount, that is, he purchases *less* than the past three-year average, the credit nevertheless applies to 5% of his year four purchases. Consequently, there is no guarantee of any increased recycling. Only if the credit is limited to purchases in excess of 100% of past average purchases will the benefit be concentrated on additional recycling efforts.

Another defect in § 2006 results from the provision's definition of eligible solid waste materials.¹⁰⁹ As previously noted, industrial fabrication wastes are included within this definition;¹¹⁰ yet, these wastes currently enjoy a recycling rate of nearly 90%.¹¹¹ Again the potential for a windfall is tremendous. Senator Hart criticized this anomaly, arguing that prompt scraps would receive a major benefit, while post-consumer wastes “will continue to be so prohibitively

¹⁰⁴ 122 CONG. REC. S13412 (daily ed. Aug. 4, 1976) (Sen. Durkin quoting the Aluminum Recyclers Association).

¹⁰⁵ FINANCE COMM. TESTIMONY, *supra* note 43, at 159 (statement of Daniel M. Moenich, President, Aluminum Recyclers Association).

¹⁰⁶ Note the approach of the product charge to this problem in text at notes 173-84, *infra*.

¹⁰⁷ 122 CONG. REC. S13410 (daily ed. Aug. 4, 1976) (remarks of Sen. Humphrey).

¹⁰⁸ SENATE FINANCE § 2006, *supra* note 7, at § 2006(g)(2)(C).

¹⁰⁹ See text at note 84, *supra*; 122 CONG. REC. S13410 (daily ed. Aug. 4, 1976) (remarks of Sen. G. Hart).

¹¹⁰ See note 85, *supra*.

¹¹¹ See text at note 16, *supra*.

expensive that little increased recycling will result.”¹¹² If the goal of the tax credit is to increase recycling then only those materials not now economically recycled should be included. A narrowing of § 2006’s scope would ensure maximum impact upon the real target of post-consumer municipal wastes.

As a market incentive, tax credits suffer a further defect unrelated to the windfall problem, yet bearing on their efficiency as recycling stimulants. Because tax credits represent substantive federal assistance programs administered through the income tax system, their scope is necessarily limited to that of the tax system. The tax credit, therefore, cannot stimulate the desired result outside of that system. For example, § 2006 would offer no incentive to the recycler just starting out and suffering initial losses.¹¹³ In such a case, the recycler would not owe federal income taxes; thus a tax credit would be of no benefit to him. A commentator has termed this the “upside down effect” of tax incentives, as those most in need of assistance usually receive the least benefit.¹¹⁴ To remedy this problem Congress could remove the substantive program from the framework of the tax system and convert it into a direct recycling subsidy program.¹¹⁵

While critics argued the probable inefficiency of § 2006 as a market incentive, proponents of the measure answered that the credit would offset the market inequities caused by current tax subsidies allowed virgin materials.

B. Will the Tax Credit Offset Market Inequities Caused by Present Tax Subsidies for Virgin Material Use?

In support of § 2006, Senator Gravel argued that existing tax subsidies allowed for virgin material use tend to hold the recycling industry “behind the power curve.”¹¹⁶ That is, these tax provisions¹¹⁷ actually prevent recycling efforts that might otherwise be pursued. Recent econometric studies support this proposition.¹¹⁸ Analysis indicates, for example, that the capital gains treatment of standing

¹¹² FINANCE COMM. TESTIMONY, *supra* note 43, at 19. (statement of Sen. G. Hart).

¹¹³ *Cf. McDaniel & Kaplinsky, supra* note 92, at 19 (similar criticism of I.R.C. § 169 - rapid amortization of pollution control facilities).

¹¹⁴ *Id.*

¹¹⁵ An extended discussion of potential direct assistance programs is beyond the scope of this work.

¹¹⁶ 122 CONG. REC. S13411 (daily ed. Aug. 4, 1976) (remarks of Sen. Gravel).

¹¹⁷ Herein, percentage depletion allowances and capital gains treatment of standing timber profits. See notes 41-42, *supra*.

¹¹⁸ *E.L.I. Study, supra* note 40, at 10042.

timber profits has decreased the price of pulpwood by 1% to 4%.¹¹⁹ Percentage depletion allowances are estimated to have reduced the prices of raw copper and lead by 6% to 7%, steel prices by 3%, and aluminum prices by 1% to 2%.¹²⁰ By reducing the industrial consumption cost of virgin materials, these tax subsidies limit the quantity of secondary materials that might otherwise be consumed. Research indicates that these subsidies have resulted in a long-run reduction in wastepaper recycling of 1.5%, aluminum recycling of 1.7%, and steel recycling of 3% to 6%.¹²¹ Thus, to the extent that the policy of subsidizing the exploitation of virgin resources acts as an incentive for the consumption of virgin materials, it is also a disincentive to increased recycling efforts by industry.

The dilemma submits to two solutions: either current tax incentives for virgin materials use should be eliminated, or a separate set of incentives should be added. Section 2006 takes the latter resolve. Proponents of the tax credit, however, offered little evidence of the degree of offset to be expected. In fact, quantitative analysis of the hypothesis is not available. Nevertheless, a speculated correlation of the predicted increases in recycling¹²² with the estimated hold-back percentages¹²³ suggests that some offset, or balancing, might occur.¹²⁴ A tax credit to recyclers, then, could partially offset market distortions caused by the current tax subsidies for virgin materials consumption, but the extent of the offset is uncertain.

On the other hand, there is strong support for the abolition of both depletion allowances¹²⁵ and capital gains treatment of standing timber profits.¹²⁶ Indeed, from the viewpoint of either resource conservation or tax reform, such abolition is long overdue.¹²⁷ Depletion allow-

¹¹⁹ *Id.* at 10041.

¹²⁰ *Id.* at 10041-42.

¹²¹ *Id.* at 10042.

¹²² See text at note 99, *supra*.

¹²³ See text at note 121, *supra*.

¹²⁴ In the case of wastepaper, the Anderson study forecast resultant recycling up by 1.6%, while the Treasury study predicted a less than 1% increase. See text at notes 111-14, *supra*. If the hold-back due to capital gains treatment is 1.5%, then there could be a partial offset. See text at note 121, *supra*. A similar correlation for scrap steel indicates a lesser setoff.

¹²⁵ "Rather than extend income tax subsidies to recyclers the existing tax subsidies for virgin material production should be eliminated if one is interested in promoting efficiency in the allocation of factors of production." Anderson, *Public Policies*, *supra* note 45, at 3.

¹²⁶ See Skinner, *supra* note 45; Crown, *Percentage Depletion Still An Issue*, [1975] TAX NOTES No. 111, 30 [hereinafter cited as Crown].

¹²⁷ See Skinner, *supra* note 45; cf. McDaniel, *Alternatives*, *supra* note 92 (reviewing the various infirmities of tax expenditures generally).

ances and capital gains treatment of standing timber profits are generally criticized for their inability to effect a desired result equitably among the selected group of taxpayers.¹²⁸ These preferences contribute needless complexity to the tax system. In sum, opposition to these tax subsidies is vehement and the cure lies in their elimination rather than in the adoption of a new and opposing set of subsidies for secondary materials.

C. *Are the Costs of the Tax Credit Reasonable?*

The Treasury prediction that § 2006 would increase materials recycling approximately 1%,¹²⁹ prompts a cost-benefit consideration. What is the reasonable social cost of a 1% increase in recycling? The Senate opposition declared that the projected cost of \$345 million per year was clearly excessive.¹³⁰ This conclusion, coupled with the likelihood of a tax windfall to recyclers, justified the defeat of § 2006.¹³¹ The substantive problem remains, however. Millions of tons of recoverable post-consumer wastes are unrecovered because of financial and marketing constraints. The product charge is an alternative approach to the problem. Unlike § 2006, the product charge considers the necessary roles of waste reduction as well as recycling in a national materials policy.

IV. THE PRODUCT CHARGE: SECTION 306

In December of 1975, the House Commerce Committee submitted for comment its draft of proposed § 306 of the Solid Waste Utilization Act.¹³² Implicit in the measure was the Committee's resolution to establish both an incentive for recycling and waste reduction and a disincentive for virgin materials consumption.¹³³ Section 306

¹²⁸ See Crown, *supra* note 126. For similar criticism of other tax expenditures, see generally Surrey, *supra* note 88; McDaniel & Kaplinsky, *supra* note 92; McDaniel, *Alternatives*, *supra* note 92; [1977] 7 ENVIR. REP. (BNA) 1351-53. A detailed discussion of the many criticisms of tax incentives is beyond the scope of the present work.

¹²⁹ See text at note 99, *supra*.

¹³⁰ See 122 CONG. REC. S13409 (daily ed. Aug. 4, 1976) (remarks of Sen. G. Hart); *id.* at S13412 (remarks of Sen. Durkin).

¹³¹ [1976] 7 ENVIR. REP. (BNA) 894. By a vote of 36 to 34, § 2006 was amended to demand additional study of tax credits for recycling. 122 CONG. REC. S13414 (daily ed. Aug. 4, 1976) (voice vote).

¹³² Draft § 306, *supra* note 8.

¹³³ "The objective of such [product] charges is to provide incentives at the producer level to redesign products to reduce solid waste management costs (e.g., use less material or lighter material) and to provide incentives at the consumer level to reduce consumption." EPA, SECOND REPORT, *supra* note 24, at 109.

would have levied "a charge on the sale or transfer at the bulk production level of rigid consumer containers, flexible consumer packaging, and paper."¹³⁴ This charge would then be reduced "by a percentage equal to the percentage of secondary materials contained in the product."¹³⁵ Thus the product charge resembles an excise tax on consumer packaging and paper products administered at the point of bulk manufacture or sale.¹³⁶ Although neither hearings nor a floor vote were allowed on § 306, congressional interest in the product charge generally remains strong.¹³⁷ Pursuant to the mandate of the recently enacted Resource Conservation and Recovery Act of 1976, an eighteen month study of the approach is now under way.¹³⁸

The charge levied on a manufacturer depends on the type and quantity of materials integrated into his product.¹³⁹ Paper and flexible consumer packaging manufacturers are charged on a weight basis (\$26 per ton), while manufacturers of rigid consumer containers are charged on a unit basis (\$5 per thousand).¹⁴⁰ These charge bases are intended to approximate the current costs of waste collection and disposal for each product category¹⁴¹ and are subject to congressional revision whenever deemed necessary.¹⁴²

Once the charge basis is calculated, the reduction formula is applied. Thus, manufacturers can reduce charge liability to the extent of secondary materials substitution. Further, and only in the case of flexible consumer packaging and paper products, charge liability

¹³⁴ Draft § 306, *supra* note 8, at § 306(b)(1)(B)(i).

¹³⁵ *Id.* § 306(b)(1)(B)(iii).

¹³⁶ OFFICE OF SOLID WASTE MANAGEMENT PROGRAMS, ENVIRONMENTAL PROTECTION AGENCY, FOURTH REPORT TO CONGRESS - RESOURCE RECOVERY AND WASTE REDUCTION, 7-1 (draft, Aug., 1976) [hereinafter cited as EPA, FOURTH REPORT].

¹³⁷ See *Hearing Before the Panel on Materials Policy of the Subcomm. on Env't Pollution of the Senate Comm. on Public Works: To Consider the Effects of Product Disposal Charges on Municipal Waste Recovery and Reuse*, 94th Cong., 2d Sess. (Comm. Print, May 20, 1976) (hearings on proposed product charge modeled on § 306) [hereinafter cited as *Hearings*].

¹³⁸ Resource Conservation and Recovery Act of 1976, Pub. L. No. 94-580, § 8002(j)(1)(D), 90 Stat. 2833 (1976) (to be codified at 42 U.S.C. § 6982(j)(1)(D)).

¹³⁹ Section 306 deals only with consumer packaging and paper products; hence, food wastes, auto scraps, industrial, and agricultural wastes are excluded. EPA estimates that the included products constitute nearly 80% of all product-type wastes and about 1/2 of the total municipal waste stream. EPA, FOURTH REPORT, *supra* note 136, at 7-9.

¹⁴⁰ Draft § 306, *supra* note 8, at § 306(b)(1)(B)(i).

¹⁴¹ In 1974, "direct costs of collecting, processing, and landfilling averaged about \$26 per ton." EPA, FOURTH REPORT, *supra* note 136, at 7-9. Rigid containers, because of differing weight to volume ratios are better charged on a volume basis. See *id.* at 7-10 to 7-11.

¹⁴² Draft § 306, *supra* note 8, at § 306(b)(1)(D).

is lessened to the extent that product design modification results in less weight.¹⁴³ In an attempt to minimize economic disruption § 306 was to be phased in over a ten year period:¹⁴⁴ no charge would be imposed during the initial year of enactment, and thereafter the charge would be implemented in 10% per year increments.¹⁴⁵

Section 306 also included a temporary recycling subsidy calculated, like the charge reduction formula, on the percentage of post consumer "secondary material utilized as a constituent in [the] product."¹⁴⁶ Unlike the charge mechanism, however, the recycling subsidy was to be phased out over the initial ten year period.¹⁴⁷ The subsidy was to proceed as a direct grant to manufacturers and was intended to further reduce the initial economic disruption caused by the charge.

An illustration will clarify the operation of § 306. Assume a manufacturer of aluminum beverage containers with an output of 1000 cans per year in years one and two. Further, assume no recycling in year one, but a switch to 25% secondary material in year two. The charge for either year is \$5 (\$5 per thousand), but in year two the charge is reduced by 25% because of the switch. The phase in provision reduces the year one charge to \$0, and the year two charge to 38 cents (10% of \$3.75). Further, in year two the manufacturer is allowed a recycling subsidy of \$1.13 (90% of \$1.25).¹⁴⁸ Note, however, that the phase in provision and the recycling subsidy are in effect only during the first ten years of § 306's implementation.

Another innovation of § 306 was the establishment of an "Environmental Quality Assistance Fund,"¹⁴⁹ which was to act as a repository for revenue collected through the charge, thus providing a source of funds for both administrative costs and recycling subsidy payments to manufacturers.¹⁵⁰ Excess revenue was to be transferred to municipalities on a quasi-per capita basis.¹⁵¹ In addition, the Administrator was to establish "guidelines for municipalities re-

¹⁴³ See *id.* § 306(b)(1)(B)(i),(iii).

¹⁴⁴ *Id.* § 306(b)(1)(B)(ii).

¹⁴⁵ *Id.*

¹⁴⁶ *Id.* § 306(d)(1).

¹⁴⁷ *Id.*

¹⁴⁸ As a result, the manufacturer has a year two net payment of 75 cents. At some time in the future, however, the charge liability will exceed the recycling subsidy granted due to the phase out provision.

¹⁴⁹ Draft § 306, *supra* note 8, at § 306(e)(1).

¹⁵⁰ *Id.* § 306(e)(2)-(4).

¹⁵¹ *Id.* § 306(e)(5).

ceiving funds under this section that . . . [would] insure efficient and environmentally sound solid waste management practices."¹⁵²

The EPA has cited two primary functions served by the product charge. First, the charge should significantly stimulate recycling and waste reduction efforts because it provides a strong incentive for manufacturers and consumers to modify their "market decisions affecting solid waste."¹⁵³ Second, the charge should offer needed financial assistance to local waste management agencies for their solid waste problems.¹⁵⁴ The following discussion will analyze these assertions, and evaluate the efficacy of the product charge in light of its administrative and consumer costs.

A. *Will the Product Charge Stimulate a Substantial Increase in Recycling and Waste Reduction Efforts?*

The fundamental premise of the product charge assumes that virgin material prices "do not reflect the full cost of environmental degradation the materials create."¹⁵⁵ Due to the widespread policy of financing municipal waste management through the general tax system,¹⁵⁶ virgin material prices fail to account for the future costs of waste collection and disposal attending their consumption.¹⁵⁷ As a cost allocation technique, the product charge simulates these costs and forces them into the price of the consumer commodity.¹⁵⁸ Hence, the cost of financing municipal waste management effectively shifts to those whose market decisions determine the volume of the municipal waste stream.¹⁵⁹ In theory, manufacturers and consumers would minimize price inflation by altering their respective market transactions.¹⁶⁰ Manufacturers can modify product design and composition choices, and consumers can alter their selection of products.¹⁶¹

But will § 306 actually cause industry to increase recycling and

¹⁵² *Id.* § 306(e)(6).

¹⁵³ EPA, *FOURTH REPORT*, *supra* note 136, at 7-1.

¹⁵⁴ *Id.*

¹⁵⁵ EPA, *FIRST REPORT*, *supra* note 9, at 55.

¹⁵⁶ *See text* at note 45, *supra*.

¹⁵⁷ *Id.*

¹⁵⁸ EPA, *SECOND REPORT*, *supra* note 24, at 109.

¹⁵⁹ *See* EPA, *FOURTH REPORT*, *supra* note 136, at 7-3; Fred Smith, Jr., Policy Analyst, Resource Recovery Div., EPA, Wash., D.C., *National Solid Waste Disposal Charges* (Design Draft 2), at 1 (1975) (unpublished manuscript) [hereinafter cited as Smith, *Disposal Charges*].

¹⁶⁰ EPA, *SECOND REPORT*, *supra* note 24, at 109.

¹⁶¹ *Id.*

waste reduction? The deficiencies of the tax credit approach teach that to be effective, a measure designed to stimulate the secondary materials market must affect the entire market equation; to be successful, the product charge must stimulate both demand and supply.

Three features of § 306 promise increased demand for secondary materials: the base charge provision, the charge reduction formula, and the temporary recycling subsidy. Under this scheme, the manufacturer has two means of reducing charge liability: either reduce materials content altogether (a waste reduction effort) or substitute recycled materials during fabrication (a recycling effort). Current studies predict impressive recycling increases in response to the adoption of a product charge.¹⁶² Preliminary results from these EPA studies estimate that a product charge levied on paper and consumer packaging products would reduce virgin packaging material consumption by approximately 8.6 million tons per year, with increased recycling accounting for nearly 92% of that total, and greater waste reduction for the remainder.¹⁶³

If these predictions are correct, the § 306 product charge would result in dramatic increases in secondary materials use.¹⁶⁴ Because the charge effectively increases the cost of virgin materials, the relative cost of secondary materials decreases.¹⁶⁵

Moreover, there are reasons why these [EPA] estimates may even understate the recycling increase. First, no consideration was given to the supply-side stimulus that the transfer of revenues to local governments for waste management purposes would undoubtedly trigger. Second, no consideration was given to the induced technological changes. . . that would result from the increased profitability of recycling.¹⁶⁶

Unlike the product charge studied by the EPA, § 306 includes a temporary recycling subsidy.¹⁶⁷ To the manufacturer who must readjust supply and production technologies, this subsidy is an ad-

¹⁶² EPA, FOURTH REPORT, *supra* note 136, at 7-23. Note that the charge studied by the EPA is similar to that proposed in § 306, but does not include a temporary recycling subsidy.

¹⁶³ *Id.* These results are derived from works in progress, and should therefore be viewed as preliminary.

¹⁶⁴ "A major effect of this adjustment procedure will be the creation of a strong recycling incentive; each ton of input materials supplied from secondary sources would save the establishment \$26." Smith, *Disposal Charges*, *supra* note 159, at 3.

¹⁶⁵ EPA, FOURTH REPORT, *supra* note 136, at 7-21.

¹⁶⁶ *Id.* at 7-27.

¹⁶⁷ Draft § 306, *supra* note 8, at § 306(d); EPA, FOURTH REPORT, *supra* note 136, at 7-14, 7-17.

ditional stimulus to recycle, and should further increase demand for secondary materials.¹⁶⁸ Nevertheless, certain proponents of the product charge question the necessity of the temporary subsidy.¹⁶⁹ At least two environmental groups argue that the subsidy could even discourage waste reduction efforts.¹⁷⁰ Thus, the dispute centers not on the efficacy of the product charge, but rather on the proper balance to be struck between recycling and waste reduction incentives.¹⁷¹

Section 306, in sum, contains several secondary material demand incentives. The following discussion will focus on the supply incentives of the product charge.

B. Will the Product Charge Prove Effective in Assisting Local Waste Management Agencies?

Under the § 306 product charge all funds in excess of amounts necessary for administration and subsidy costs were to be transferred to municipalities on a quasi-per capita basis from the Environmental Quality Assistance Fund.¹⁷² After the ten year transitional period, most, if not all, of the revenue raised through the product charge would be directed to municipal government.¹⁷³ Thus, by the late 1980's, § 306 could provide local government with nearly "half of all solid waste management costs," or up to \$1 million annually for a city of 100,000.¹⁷⁴ On the other hand, § 306 does not expressly require that this revenue be used solely for waste management. Federal "guidelines" could specify such a restriction, but they may not be binding on local decision making.¹⁷⁵

¹⁶⁸ Cf. *Hearings, supra* note 137, at 65 (statement of purpose of proposed product charge modeled on § 306).

¹⁶⁹ See *Hearings, supra* note 137, at 55 (testimony of Brock Evans, Director, The Sierra Club, Wash., D.C. Office); *id.* at 57 (testimony of Blakeman Early, Spokesperson, Environmental Action).

¹⁷⁰ *Id.* at 55, 57.

¹⁷¹ For example, the reuse of all glass beverage containers could reduce domestic energy consumption by approximately 218 trillion BTU of energy per year. EPA, *THIRD REPORT, supra* note 3, at 23. Actual glass recycling, however, could not hope to attain such large energy savings.

¹⁷² Draft § 306, *supra* note 8, at § 306(e)(5).

¹⁷³ Note, by this time the subsidy program will no longer be in effect.

¹⁷⁴ EPA, *FOURTH REPORT, supra* note 136, at 7-34.

¹⁷⁵ Even if local government chooses to channel funds into other social programs, the municipal tax base could still be lightened to the extent of revenues received. "Moreover every individual is a member of some local jurisdiction and would benefit from the revenue transfer, either through a reduced tax burden or through continued or even increased governmental services." *Id.* at 7-13.

If the product charge proposes to stimulate supply-side activity, municipal receipt of the transferred revenue should be conditioned on application of the funds to waste management programs.¹⁷⁶ Should this revenue remain earmarked for solid waste purposes, then § 306 would “trigger” a stronger supply technology response.¹⁷⁷

Nor will supply activity be limited by inadequate capacity. The National Association of Recycling Industries reports that “production of secondary materials could be doubled.”¹⁷⁸ Further, increased competition between virgin and secondary materials will give rise to even greater income to municipal waste management agencies through additional industrial purchasing.¹⁷⁹ Thus, as long as the municipality’s receipt of transfer revenue is conditioned upon its improving waste management practices, § 306 will prove effective in assisting local waste management.

In comparison with the tax credit, § 306 shows greater promise as a recycling stimulant primarily because it focuses on both supply and demand, and once fully implemented, it functions as a self-supporting system. Further, § 306 promises greater fiscal regulation of the secondary materials market, provided that municipalities receiving the funds follow the federal guidelines.¹⁸⁰ While the tax credit would require large federal expenditures, § 306 creates its own funding without recourse to the Treasury. The product charge, however, does not offer a free ride to society; both industry and the consuming public must bear its substantial cost.

C. Are the Administrative and Consumer Costs of the Product Charge Reasonable?

As previously noted, § 306 resembles certain special excise taxes levied at the point of bulk sale or transfer.¹⁸¹ If it is to be effective as a market incentive, the product charge must be relatively simple to administer. Because § 306 is imposed upon only a select group of products,¹⁸² the number of manufacturers requiring supervision is small.¹⁸³ Comparative evaluations suggest that the product charge

¹⁷⁶ *Id.* at 7-18.

¹⁷⁷ See text at note 166, *supra*.

¹⁷⁸ EPA, *FOURTH REPORT*, *supra* note 136, at 7-21 to 7-22.

¹⁷⁹ See text at note 164, *supra*.

¹⁸⁰ See text at note 175, *supra*.

¹⁸¹ See note 136, *supra*.

¹⁸² See note 139, *supra*.

¹⁸³ EPA, *FOURTH REPORT*, *supra* note 136, at 7-19. The EPA estimates that only 9,240 establishments need to be monitored for the successful administration of a product charge

is neither more complex nor more difficult to collect than present excise taxes.¹⁸⁴ Indeed, collection costs are projected as “moderate — certainly not in excess of 1 percent of gross yield,” and probably half that amount.¹⁸⁵ Thus, in comparison to other federal programs of similar structure, § 306 is relatively simple to administer.

Consumer groups may be concerned with the eventual consumer price inflation that would attend the adoption of a product charge. Undoubtedly a materials charge levied at any point of product manufacture will increase the ultimate product price.¹⁸⁶ Yet, the increased product price reflects the true costs of the product's consumption and supports a major goal of the product charge approach, which is to alter societal consumption patterns.¹⁸⁷ To the extent that manufacturing costs are reduced by recycling, consumer prices can be lowered, and consumer market decisions can be adjusted.

The EPA anticipates a “uniformly small” increase in consumer expenses resulting from a product charge on consumer packaging and paper products.¹⁸⁸ On a per capita basis the predicted increase is estimated to average only \$5 to \$6 per year.¹⁸⁹ The per family effect should vary from approximately \$5 to \$30 per year, depending on family income before taxes.¹⁹⁰ Consumer product prices are predicted to increase an average of 0.3%, with heavily packaged products, such as most canned goods, experiencing the largest increases, and fresh foods, the smallest increases.¹⁹¹

Although the overall price impact is minimal, the charge itself will be regressive.¹⁹² Thus, it will place a greater burden on lower income groups, as is the case with most pollution control programs, “since pollution is highly correlated with material consumption which is also regressive.”¹⁹³ Notwithstanding the regressive effect of

on consumer packaging and paper products. *Id.* at 7-20.

¹⁸⁴ These are: (1) I.R.C. §§ 4081, 91, gasoline and oil taxes for highway maintenance; (2) I.R.C. § 4161, sporting goods taxes for fish and wildlife conservation; and (3) I.R.C. § 4041(c), airplane fuel taxes for airport maintenance. EPA, Fourth Report, *supra* note 136, at 7-18.

¹⁸⁵ *Id.* at 7-21, quoting Slitor, Administrative Aspects of a Dedicated Manufacturer's Excise Tax on Solid Waste Creating Products (contract study for EPA).

¹⁸⁶ See EPA, FOURTH REPORT, *supra* note 136, at 7-17; Fred Smith, Jr., Economist, Resource Recovery Division, EPA, Wash., D.C., *Product Charge: Concept and Comments 2* (undated). (unpublished manuscript) [hereinafter cited as Smith].

¹⁸⁷ See text at note 61, *supra*.

¹⁸⁸ EPA, FOURTH REPORT, *supra* note 136, at 7-27.

¹⁸⁹ Smith, *supra* note 186, at 5.

¹⁹⁰ EPA, FOURTH REPORT, *supra* note 136, at 7-30.

¹⁹¹ *Id.* at 7-28.

¹⁹² Smith, *supra* note 186, at 6-7; EPA, FOURTH REPORT, *supra* note 136, at 7-33.

¹⁹³ EPA, FOURTH REPORT, *supra* note 136, at 7-33 (unnumbered footnote).

§ 306, the EPA suggests that as long as transferred revenues “are used to reduce taxes or to increase or maintain services,” the undue burden on lower income groups may be mitigated.¹⁹⁴ Thus, regressivity must be considered not only in the design of a product charge, but also in the promulgation of regulations or guidelines pursuant to a transfer of funds provision.¹⁹⁵

D. Is the Product Charge an Efficient Market Incentive for Recycling?

As a market incentive § 306 offers several advantages over the tax credit approach. First, the product charge channels cash flow to both the supply- and demand-sides of the materials market. Second, the product charge forces an early recognition of the waste management costs of materials consumption, thus providing a strong incentive for industry and the consuming public to modify their consumption patterns. Third, the transfer of funds provision offers an effective funding source for local solid waste management efforts. And finally, the product charge may well result in a substantial increase in materials recycling. As a waste reduction technique, the product charge may have less dramatic results.¹⁹⁶ Yet over the long run, the charge will provide an incentive for producers to alter their product design specifications and to strive for less materials-intensive practices.¹⁹⁷

The predicted administrative and consumer costs resulting from the charge are not unreasonable. Despite the slightly regressive aspects of a charge based on materials consumption, the net income effect of the measure is minimal when compared to the benefits to be derived. And as Senator Gravel argued in support of the tax credit, “[t]he benefits are simple. . . . [W]e are going to begin,

¹⁹⁴ *Id.* at 7-33.

Little data exists on the breakdown of local governmental services by income group; however, it is likely that the financial pressures of increased solid waste management costs have resulted in curtailment in social services. The impact of such reductions is, of course, highly regressive. Thus, not only are the initial costs of the charge low on an absolute basis; but also the revenue transfer feature will most likely reduce the initial regressive impact on lower income groups. *Id.*

¹⁹⁵ See Smith, *supra* note 186, at 7. Mr. Smith suggests that one solution might be to earmark a portion of the revenue for food stamp or other redistribution programs.

¹⁹⁶ See EPA, *FOURTH REPORT*, *supra* note 136, at 7-23.

¹⁹⁷ *Cf.* Smith, *supra* note 186, at 2 (analogy drawn to reduced newsprint consumption following a comparable price increase).

for the first time in this country, to reorient the country so that we save the stuff that we have been burying."¹⁹⁸

V. CONCLUSION

Materials recycling and waste reduction are just two of many waste management techniques. If properly administered, they will invaluablely contribute to resource conservation, but they are not panaceas. The complexity of effective solid waste management militates against adopting any single approach. While the product charge should result in significant recycling increases, it will not resolve other immediate problems such as: reducing the high cost of municipal waste collection, reducing or readjusting transportation costs for secondary materials, assisting rural areas in their solid waste problems, and abolishing anachronistic tax benefits that only hamper additional recycling efforts. Each of these dilemmas requires close examination and analysis before action is taken.

Moreover, the product charge is a complex legislative design. For some wastes it promises to be an efficient market incentive, but for others, such as glass beverage containers, it may prove less effective than different waste reduction techniques. The studies cited in this article suggest, however, that the product charge should become an integral part of a developing national materials policy. The 95th Congress must now determine what market incentives, if any, they will use to stimulate the secondary materials market.

¹⁹⁸ 122 CONG. REC. S13411 (daily ed. Aug. 4, 1976).