RECYCLING AND CLIMATE CHANGE

Realizing the Environmental and Economic Value of Recycling in a Carbon-constrained World

NRC POLICY

NRC supports the development of public policy to address climate change that includes specific monetary incentives to substantially increase recycling rates in the U.S.

- **For cap-and-trade programs, the GHG emissions reductions associated with incremental increases in recycling volumes and expansion of material types should be available as offsets for emissions allowance holders. Communities and industries that increase recycling volumes from established baselines should be able to participate in market-based trading programs.**
- **If funds are available from emission allowance auctions, carbon-based taxes, or other appropriations, a portion of funds should be dedicated to investment in recycling infrastructure and public education on recycling.**
- **Tax and other incentives should be made available to materials and product manufacturers and to recycling service providers to stimulate use of and sustain market demand for recyclable materials.**

DISCUSSION

Why recycling?

Among its many environmental benefits, recycling significantly lowers the GHG emissions associated with virgin materials extraction, product manufacture, and waste disposal, The development of public policy to lower GHG emissions in response to climate change provides a singular opportunity to refocus the public's attention on the value of recycling, to enlist the public's direct participation in lowering GHG emissions, and to provide economic incentives for the modernization and expansion of the recycling infrastructure.

Recycling needs that incentive. In recent years, recycling rates have grown slowly, and in the case of some materials and products, rates have flattened or declined. Between

1990 and 2000, recycling volumes and rates rose approximately 10%/year. However, from 2000 through 2005, increases have slowed to 1-2%/year. Approximately half of all paper, paperboard, and aluminum beverage cans, and two thirds of plastic and glass containers, are not recycled. Many communities still do not have access to curbside recycling services, and only a small percentage with access have high participation and material recovery rates. A significant percentage of Americans, over 20%, do no recycling at all, with lack of access to service and inconvenience as primary reasons.

More importantly, investments in recycling infrastructure in order to enhance the supply of recycled materials for the market have lagged behind the demand for those materials generated by our global economy. Communities and recycling service providers need new collection vehicles and recycling carts. Processing facilities must be modernized. Best management practices for collection and processing and new approaches to public education and communication must be deployed. In short, new economic incentives are needed for engaging and motivating the recycling public, financing infrastructure investment for capturing and processing recycled materials, and for motivating materials and product manufacturers to use greater quantities of recycled materials.

The Carbon case for recycling

The environmental and resource conservation benefits of recycling are well-documented, and have been the foundation for the increase in recycling rates in the U.S. over the past 25 years. More recently, government, industry, and other stakeholders have developed estimates of the impact of recycling on greenhouse gas (GHG) emissions (See attached Fact Sheet). We now know both the direct cost and the GHG benefit of extracting the value from recycling. Equally important, a direct and quantifiable relationship now can be drawn between recycling behavior -- of individuals and entities – on GHG emissions. With these measurement tools, and with additional enhancements, recycling advocates have the basis for promoting and endorsing public policy that specifically identifies the enhancement of recycling as a key component in reducing GHG emissions.

Climate change policy and recycling

Climate change policy at the federal or state level will penalize activities that increase GHG emissions and create economic value for activities that lower GHG emissions. The options being discussed for creating that value include market trading mechanisms for GHG emissions offsets, re-investment of revenue from the auction/sale of GHG emissions allowances, re-investment of revenue from the taxing of GHG-emitting activities, or direct incentives. Climate change policy will also identify those categories of GHG-reduction activities and projects that would be eligible for participation in market trading or other incentives. The enhancement of recycling through investment in recycling infrastructure, public education, and production incentives must be a specific goal of any state or federal climate change policy.

Cap-and-Trade Markets and Recycling

To participate in a market for GHG emissions offsets, a recycling project must create real reductions in emissions -- *through real increases in recycled material volumes* -- that would not have occurred in the normal course of business, commonly referred to as additionality. In addition the recycling project must be distinct and measurable, with geographic and systems boundaries. With the proper measurement tools and rules, those attributes can be met by a community recycling program, whether provided by a single entity, such as a municipal government, or by several entities working collaboratively, such as multiple private collection services and one or more materials processing facilities. Both public and private entities, consistent with existing contractual arrangements, should be able to undertake projects that increase recycled material volumes. Any set of participants in a community recycling system, or an outside party, can undertake a project that measures the baseline performance of that community's program, identify and implement a series of measures and investments to increase recycling, measure and certify the performance of the project, apply GHG emission reduction factors to the increased volume, and bring those reductions to market.

Placing a GHG value on a recycled material produces the same economic incentive as an increase in the commodity value of that material. Community recycling systems can respond to that price signal and be motivated to seek additional material from their service recipients through investment in collection, processing, and education for both residential and commercial generators. Materials users, such as manufacturers, benefit from the additional, stable supply generated by the price signal.

Although this discussion focuses on residential and commercial recycling, a similar construct should be available for industrial recycling where proper metrics and emissions factors for each material can be established.

Going Forward

To date, most federal and state discussions on climate change policy focus on direct emissions reductions associated with alternative energy sources or the sequestration of carbon. The avoided GHG emissions associated with recycling are not yet a central part of the policy debate, despite the fact that the benefits of recycling are real and measurable. NRC believes that the value of recycling in lowering GHG emissions is unlikely to be substantively realized without a collaborative, focused effort by the recycling community. NRC intends to ensure that policy makers at all levels of government are made aware of the benefits of recycling in addressing global climate change so that public policy will provide the economic incentives that are necessary to realize those benefits.

Figure 1. MSW Generation Rates, 1960–2006

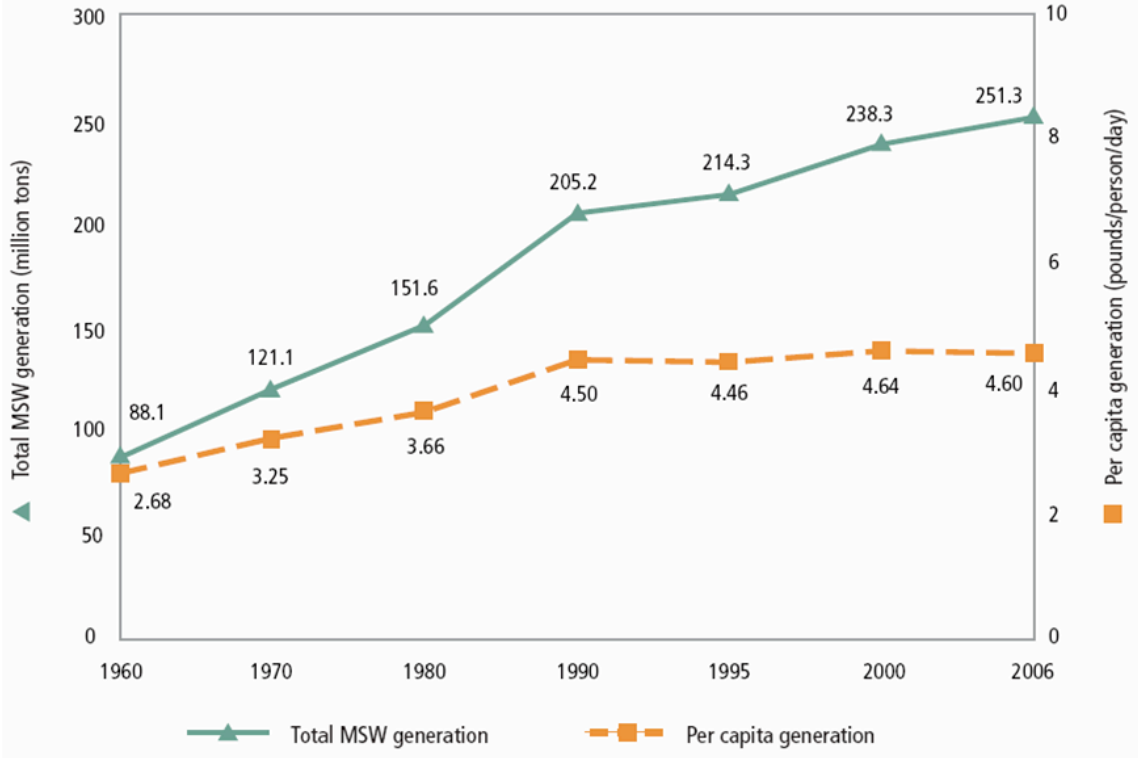

Figure 2. MSW Recycling Rates, 1960–2006

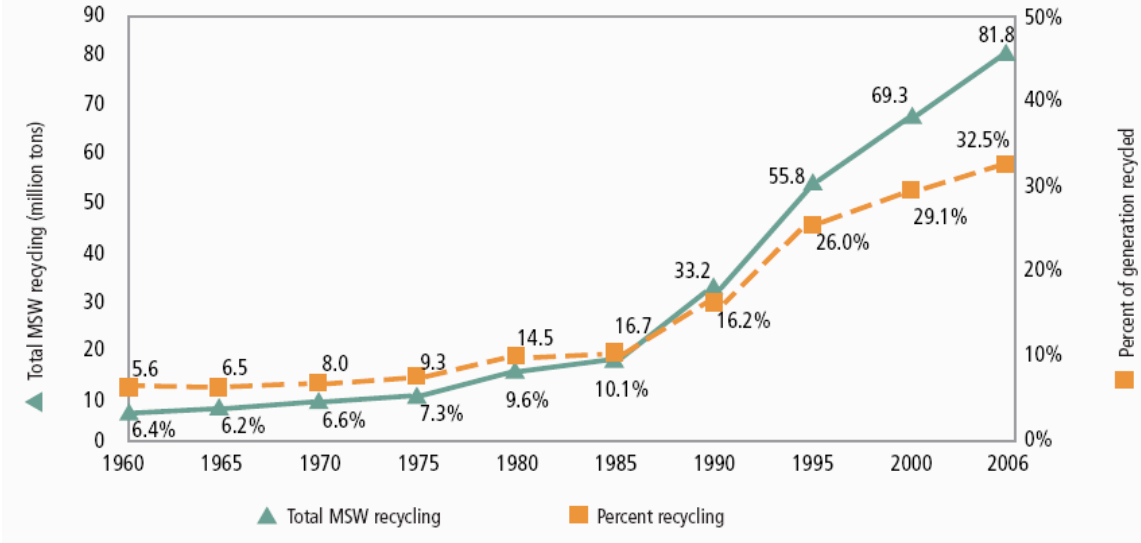

Figure 3. Recycling Rates of Selected Materials, 2006

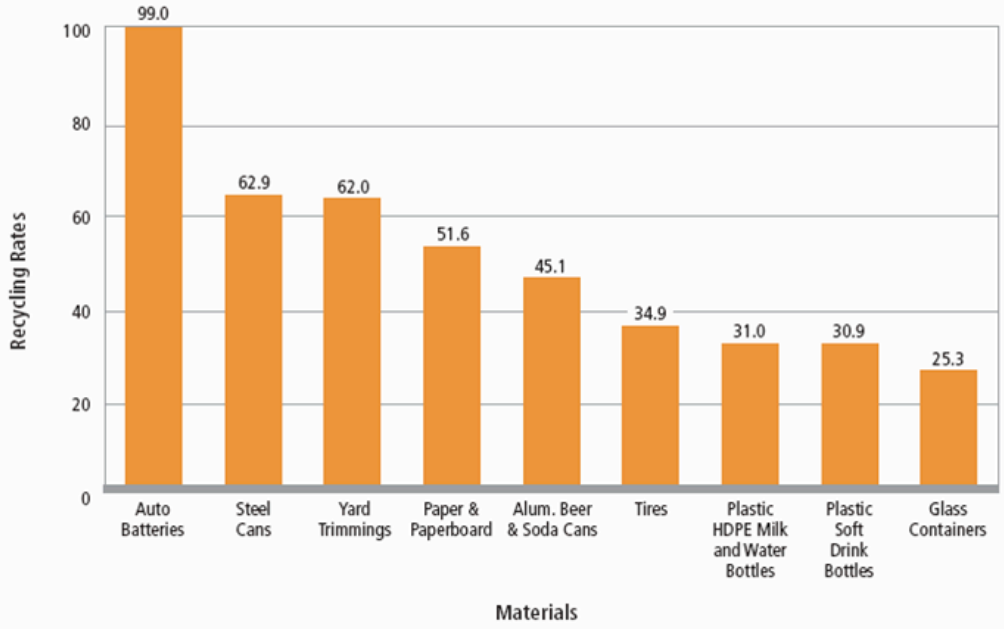

Figure 4. Management of MSW in the United States, 2006

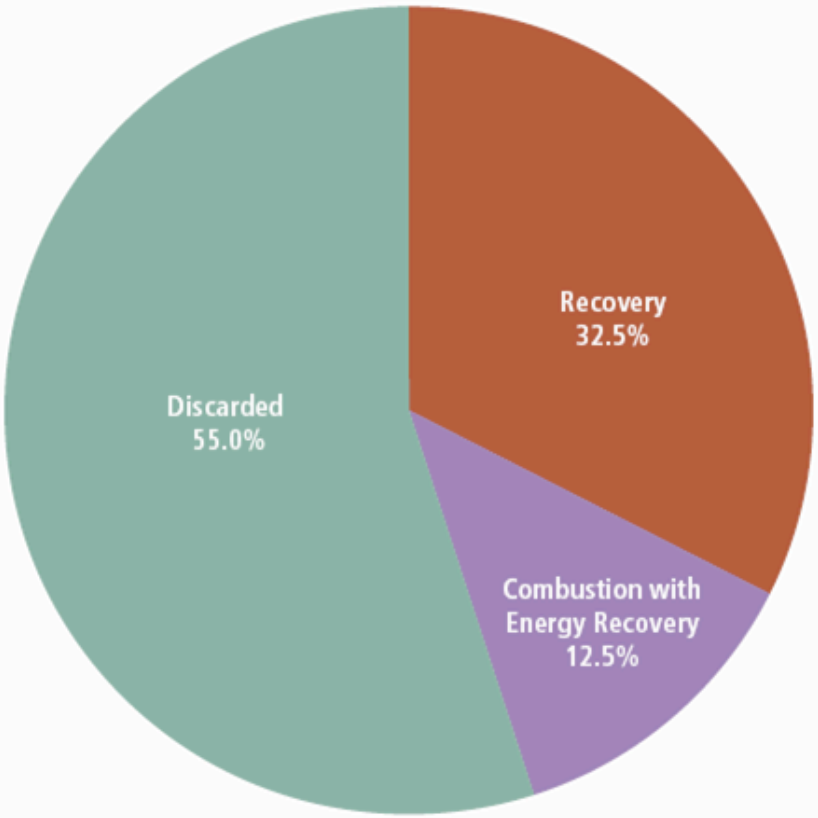

Figure 5. Total MSW Generation (by Material), 2006
251 Million Tons (Before Recycling)

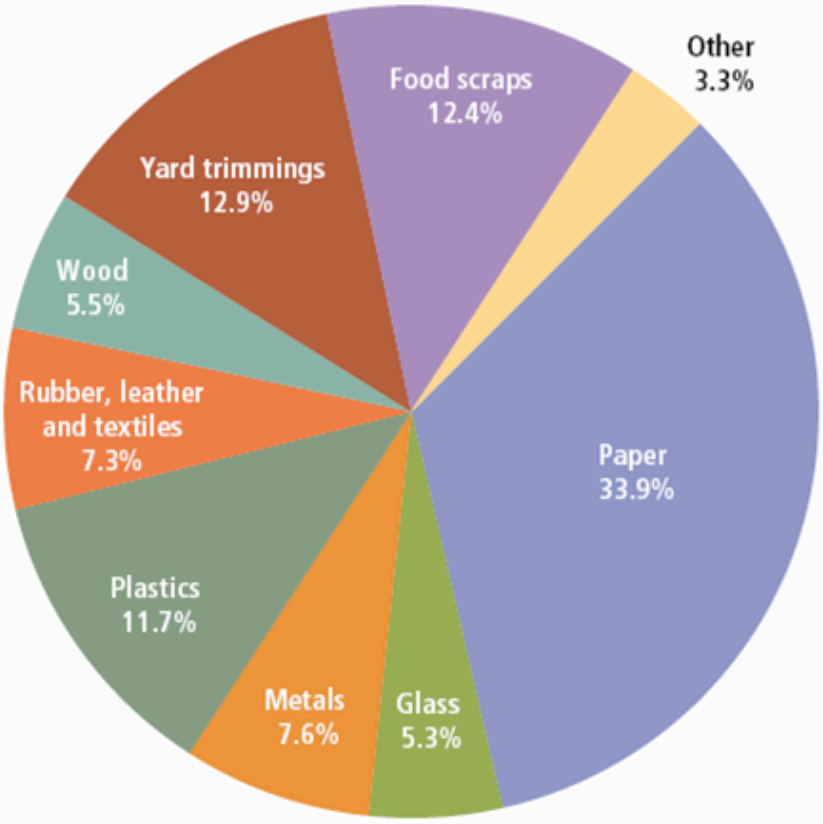

Figure 6

Metric Tons of Carbon Equivalent Savings per Material

Commodity	Total MTCE
Aluminum Cans	-2,561,266
Steel Cans	-2,265,938
Glass	-249,370
HDPE	-243,823
LDPE	-140,791
PET	-288,545
Corrugated Cardboard	-20,862,928
Magazines/third-class mail	-2,488,566
Newspaper	-5,748,962
Office Paper	-5,063,551
Phonebooks	-63,918
Textbooks	-374,251
Dimensional Lumber	-690,274
Food Scraps	-150,178
Yard Trimmings	112,646
Mixed Paper, Resid.	-1,233,859
Mixed Paper, Office	-1,432,379
Mixed Metals	-1,659,810
Mixed Plastics	-252,172
Carpet	-3,585,849
Tires	-440,782
Total	-49,684,568

Source for all charts above: EPA, 2006 Municipal Solid Waste Generation, Recycling, and Disposal in the United States

Figure 7

CLIMATE CHANGE AND THE MATERIAL LIFE CYCLE (USEPA, 2006)