A Plan
to Support and Promote Industries Transporting, Processing, and Using Recycled Material

DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT

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EXECUTIVE SUMMARY

This report describes a plan to support and promote industries that use, process or transport recycled materials pursuant to Section 32-1e of the Connecticut General Statutes (CGS). Section 32-1e states that the plan shall outline ways in which existing programs of the following agencies will be used to promote such industries: the Department of Economic and Community Development (DECD), the Department of Environmental Protection (DEP), the Connecticut Resources Recovery Authority (CRRA), the Connecticut Development Authority (CDA), and Connecticut Innovations (CI). With the exception of the DEP and CRRA, the DECD, CDA and CI do not have existing programs that specifically address or promote recycling industries. DECD and CDA provide loans, loan guarantees, grants, and tax incentives to established firms in any industry. CI provides seed capital to startups in biotechnology and energy industries. Therefore, it is possible for a startup or established firm in the recycling business to obtain some form of state assistance, but such assistance programs do not currently foster the recycling industry exclusively.

This report takes the seminal 1989 Mt. Auburn Associates study as a starting point.[1] The study was a plan (as originally required by Section 32-1e) that made recommendations to address recycling market development so that Connecticut recycles as much of its waste stream as possible, creates and retains jobs, and reduces the need for additional disposal capacity at landfills or Resource Recovery Facilities (RRFs in which trash is incinerated and energy generated). Section 32-1e requires a plan to outline ways existing programs, rather than new programs, will be used to support and promote industries that transport, process, or use recycled materials. However, we survey other states' actions (in Appendix A) as they inform or enhance the current strategy. Thus, the funding of new programs is not an implication of this plan; however, the plan does suggest expanded funding for leveraging existing programs through a variety of marketing initiatives.

Integral to Connecticut's recycling efforts are the facilities to process recyclable materials. CRRA is Connecticut's largest residential recycling operation serving 118 municipalities (Appendix B).[2] Its newest recycling facility opened May 2007 in Hartford as an expanded version of the CRRA's Intermediate Processing Center (IPC), on property adjoining CRRA's RRF. Both facilities are part of the CRRA's Mid-Connecticut project (serving the Mid-

Connecticut municipalities) along with the IPC located in Stratford (serving the Bridgeport Project municipalities). Governor Rell commissioned the CRRA's Mid-Connecticut IPC in a ribbon-cutting ceremony that began operations May 17, 2007. This facility replaces two existing processing centers (one handling paper and cardboard, the other containers made of glass, metal and plastic), which had been in operation since 1992. This facility processes plastics, cardboard, newspapers, discarded mail, boxboard, mixed paper, metals, and glass and with the other IPCs provides a stream of usable intermediate goods for Connecticut, the region's, and international industries that use such products. In addition to its IPCs, CRRA conducts environmental and recycling educational programs at its Trash Museum in Hartford and Children's Garbage Museum in Stratford educating approximately 50,000 children and adults annually. Public education is key to waste reduction and increasing the recycle stream. "Think Globally, Act Locally" has become a "mantra," but it reflects the fact that recycling and source reduction are not just issues of local and regional disposal capacity, but, are direct contributors to the quality of the environment both locally and globally.

Connecticut's municipal solid waste (MSW) stream has outgrown the capacity of the state's six MSW RRFs and its few remaining landfills. Connecticut's export of MSW to out-of-state landfills has increased more than ten-fold from 1994 to 2004 contravening the state's solid waste management statutory hierarchy (which ranks source reduction, reuse, and recycling as top priority management options and relegates landfilling as a management option of last resort) and increasing waste stream processing costs and Connecticut's vulnerability to cost fluctuations beyond its control. The December 2006 Connecticut State Solid Waste Management Plan (SWMP) calls for the state to decrease it's MSW per capita disposal rate by increasing it's MSW source reduction and recycling rate from 30% to 58% by 2024 in order to reduce or eliminate the need for additional in-state disposal capacity or increased export to out-of-state disposal facilities by 2024. If the waste diversion rate remains level at 30% through FY 2024, DEP expects a significant shortfall in in-state MSW disposal capacity.[3]

The DEP 2006 Solid Waste Management Plan[4] that amends the 1991 DEP Plan recommends that the state should consider broad, new approaches to dealing with waste, including:

- Dramatically increasing the rate at which Connecticut diverts waste from disposal by increasing the amount we reuse, recycle and compost from the state's current recycling rate of 30% to 58% as outlined in the new Plan;
- Maximizing resources to support and maintain infrastructure, partnerships, and education programs for recycling and waste reduction programs at the state, regional, and local level. This would ensure the recycling of items currently required to be recycled, and encourage firms and individuals to make environmentally sound choices by purchasing more durable and less toxic items and items made from recycled materials (a list of such products appears in Appendix C). Equally important is the need to locate where such products can be purchased.[5]
- Establishing a recycling program for electronics; on July 6, 2007, Governor Rell signed Public Act 07-189 establishing an electronic device collection and recycling program;
- Adding certain types of plastics as well as magazines to the list of mandated recyclables and increasing the volume of material available for recycling by expanding the bottle bill to include plastic water bottles;
- Establishing programs to Increase the recycling of specific items such as commercially generated source separated organic materials (food waste);
- Establishing programs to reduce the amount of construction and demolition (C&D) was generated and increasing the amount of C&D waste recycled; and,
- Continuing to support environmentally preferable purchasing by state government in leading by example.

Major Findings

Markets for Connecticut's recyclables are expanding. Recently adopted state laws require manufacturers of TVs, personal computers, and computer monitors to be responsible for the costs of processing their branded products that are delivered to recyclers as of January 1, 2009.[6] Recycling market prospects for other materials are currently strong due mainly to increased demand for recycled materials by overseas markets (see Appendix C). Because current agency programs can be leveraged to increase the support for and promotion of the recycling industry, our plan recommends initiatives building on existing programs.

INTRODUCTION: BACKGROUND AND HISTORY

In 2005, Connecticut's recycling businesses that process and transport recycled material employed 3,200 people, and had a payroll of $133 million (see Appendix D).[7] There are several Connecticut industries that use recycled material and that would otherwise reduce their employment or relocate were it not for the ready supply of recycled materials from Connecticut households and businesses. Recycling is not only good for the environment, it's good business.

Legislation to protect Connecticut's environment has been the subject of intense interest for at least three decades. Among environmentalists, nature organizations, outdoor enthusiasts, and other individuals and groups, recycling has been a favored community-wide action. It leads to an environmental mindset and is easy to do as a first step towards a more environmentally sustainable world. Legislation related to the "return for deposit" of carbonated beverage containers ("bottle bill") enacted in 1978 (effective January 1, 1980)[8], establishment of mandatory recycling by 1991 for certain materials, and 2007 recycling legislation for major electronic appliances such as computers and televisions signed into law (Public Act 07-189) by the Governor in July 2007, are major milestones.

In December 2006, DEP updated the state's *Solid Waste Management Plan* ("the Plan") replacing a 1991 draft plan. A major objective of the 2006 Plan was to strengthen Connecticut's public and private recycling and composting efforts and infrastructure to increase the quantity and quality of recovered materials, and to build resilient, highly efficient and continually improving programs to reduce the amount of solid waste Connecticut disposes, both now and in the future.[9]

In 2006, the General Assembly passed, and the Governor signed into law an amendment to the existing recycling business charge (contained in Section 32-1e of the CGS) to prepare "a plan for the support and promotion of industries" that "use, process, or transport recycled materials." The statute states: "The plan shall outline ways existing programs [emphasis added] will be used to promote these industries."

There were minor changes in Section 32-34, Subsection (a) of the CGS in 1989 when the Connecticut Product Development Corporation was renamed "Connecticut Innovations, Incorporated," and in 1995-1996, when Sections 8-37i and 8-37k of the CGS acknowledged the merger of the former Departments of Housing (DOH) and the (then) Department of Economic Development (DED), creating the DECD. Effective May 8, 2006, the statute was amended to extend the time for completion of a plan from July 1, 1989, to July 1, 2007, and to change the provision regarding industries that "use recycled materials" to those that "use, process or transport recycled materials."

The present plan addresses the current requirements of Section 32-1e. The plan examines previous recommendations made to the (then) DED that in many cases have been implemented.[10] We review programs and actions taken by other states as well in Appendix A. This plan lays out a strategy based on findings herein for future action to enhance the economic development of markets for recycling industries in Connecticut and to mitigate the need to expand in-state disposal capacity.

The plan considers recoverable materials that can be converted into new products rather than the entire spectrum of waste, some of which is currently not "recyclable" or for which technology is not far enough advanced to make collection, storage, transportation and/or conversion feasible. This focus is consistent with the U.S. Environmental Protection Agency (EPA) definition of recycling as a "series of activities that includes collecting recyclable materials that would otherwise be considered waste, sorting and processing recyclables into raw materials such as fibers, and manufacturing raw materials into new products."[11] Common recyclable materials include paper, plastic, glass, metal products, and organic material such as leaves and grass.[12]

There are challenges to the development of a recycling plan because markets sometimes fail to provide the circumstances by which some goods and services are bought and sold. That is, there can be a failure in the interaction between supply (what producers are willing and able to sell at each price) and demand (what consumers are willing and able to buy at each price) that determines an equilibrium price at which the market clears, where the quantity supplied matches the quantity demanded. Such cases of "market failure" suggest alternative approaches to development of a plan, a few of which appear in Appendix E.

Mt. Auburn Associates' 1989 Plan

Connecticut's recognition that the environmental and fiscal costs of disposing its waste stream in its landfills and RRFs would not be acceptable in the long run prompted action to encourage reduction in waste, recycling wherever possible, and reuse of materials. In 1989, the DED commissioned Mt. Auburn Associates, Inc. of Somerville, Massachusetts to propose a plan for the promotion of in-state markets for recovered materials. Mt. Auburn provided three reports to the (then) DED. Details of Mt. Auburn's seminal work are contained in Appendix F. Markets have changed dramatically since then. Among other things, China, India, and Mexico are consuming more than half the recyclables collected in the U.S. Current global competition means that there is currently insufficient recycled material being recovered to meet domestic industry demand for some types of recyclables and the quality of the recovered material has worsened. A new *State Solid Waste Management Plan Amended December 2006* is now in place to guide the state's recycling policy. At the time Mt. Auburn recommended its strategies, Connecticut was just beginning its recycling programs and in the early 1990's DEP awarded over $41 million in grants to help establish Connecticut's recycling infrastructure. (Appendix G lists each agency's relevant programs). New circumstances require new strategies, even if they originate from previous recommendations.

The first Mt. Auburn report, *Survey of State Market Development Initiatives: Recovered Materials Market Development Project* selected 16 states for review, and identified ten states for detailed analysis. The report reviewed recycling programs in California, Illinois, Massachusetts, Michigan, Minnesota, New Jersey, New York, Pennsylvania, Oregon, and Rhode Island. Today, programs by these and other states (see Appendix A) might be the focus of research on the effectiveness and cost of such programs, and whether they succeed in promoting their recycling industry.

Mt. Auburn's second report, *Emerging Uses and Manufacturing Technologies for Recovered* Materials, focused on newspaper, steel can scrap, and plastics. Three sections discussed opportunities, possible programs, and new technologies to increase the demand for such recycled materials. Today newspaper is not an issue. Plastics are in greater demand than the market can supply. International markets are demanding more recycled material from the industry.

Mt. Auburn's research for DEP and DED culminated in a comprehensive report, *Plan for the Promotion of In-State Markets for Recovered Materials*. Today, evaluation of in-state and out-of-state plans for increasing the quantity and quality of material recovered for recycling as well as market building are more relevant than focusing exclusively on in-state markets. All markets are important and only those state programs that have been successful have the potential to expand markets for Connecticut firms that use, process, or transport recycled materials. The Mt. Auburn plan focused on recommendations to stimulate in-state markets for materials recoverable from Connecticut's MSW stream.[13] In brief, the plan's findings and recommendations included:

- Active use of each agency's existing programs to stimulate recycling;
- Active recruitment and stimulation of start-up businesses producing innovative and existing newspaper-using products such as newsprint, office paper, and paperboard in small but growing markets;
- Exploration of out-of-state markets for steel can scrap and an in-state detinning mill (a technology used to remove a coating of tin and make the metal reusable); and,
- Encouragement of an in-state, advanced processing, and integrated plastics recycling network supported by locating new operations in the state.

We review those recommendations that are relevant and combine them with other strategies described below to constitute the proposed 2007 DECD plan to address Section 32-1e. The Mt. Auburn recommendations were addressed to a particular agency (DEP, DECD, CRRA, CDA, CI), or were general steps for all. The steps were grouped by agency, material, and type:

- Group One: Organizational Development and Capacity Building (for all);
- Group Two: General Program and Project Development (for DED);
- Group Three: Action on Specific Market Opportunities (for DED);
- Group Four: Project Development in Daily Functioning (for DED).

DECD Plan to Support and Promote Recycling Industries

Connecticut agencies have an extensive history of more comprehensive and stringent requirements to collect and to recycle material (see Appendix H). However, in contrast to 1989, when the main issue was developing sufficient market capacity to utilize the increased amounts of material anticipated to be collected for recycling, a principal issue today is how to increase the quantity and the quality of recyclable materials as well as to promote their use by manufacturers and other end users. Helping to meet the needs of transporters and processors is critical to achieving increased recovery of high-quality recyclables.

Several Mt. Auburn recommendations support and promote industries that use, process or transport recycled materials. However, since 1989, markets and conditions in the industry have changed significantly and not all the Mt. Auburn recommendations are appropriate today. Rather, the DECD plan builds on four groups of Mt. Auburn actions listed below and adds new recommendations to promote industries that transport, process or use recycled material based on a survey of other states (Appendix A). We organize the DECD plan elements according to the recommendation groups Mt. Auburn established.

From Group One (tactics), DECD should act on the following:

- Educate agency staff in recycling market development that recognizes the transporting, processing, and end-users;
- Identify a recovered materials market development program manager;
- Establish an interagency recycling workgroup consisting of DEP, DECD, CI, CRRA, CDA staff to create an annual report assessing compliance with and action on the plan herein;
- DECD takes the lead responsibility to create at least one legislative proposal annually from the interagency recycling workgroup to be proposed by the DECD and DEP Commissioners and the Executive directors of CDA, CI and CRRA;
- Develop specific interagency (DEP, DECD, CI, CRRA, CDA) responsibilities for recycling market development and marketing existing programs to firms that transport, process or use recycled material;

- Revise the agencies' (DEP, DECD, CI, CRRA, CDA) promotional materials to encourage broad participation of recycling industry firms;
- DECD takes the lead responsibility to research and identify firms for expansion or extension of recycling markets;
- DECD, DEP and CRRA create marketing initiatives including public service announcements, billboards, 'op-ed' articles, infomercials; and,
- DEP, DECD, CI, CRRA and CI should sustain and increase their involvement with regional and national recycling organizations such as the Northeast Recycling Council (NERC).

Five Mt. Auburn Group Two recommendations that should be adopted in the current plan include:

- List recycling firms in an up-to-date published or online directory and/or materials exchange;
- Recruit foreign and domestic operations that transport, process and/or use recycled materials to make innovative recycled products;
- Consider a CDA Growth Fund set-aside targeted to recycling firms;
- Explore joint DECD/DEP creation of a loan guarantee pool to assist recycling firms that transport, process and/or use recycled material; and,
- Target CI technology investments to the recycling industry.

From among the Mt. Auburn Group Three recommendations, DECD should:

- Work closely with existing Connecticut firms that transport, process and/or use recycled material to assist them with technical and financial support from existing programs; and,
- Promote the creation of an industrial park targeted to fledgling recycling firms.

Recommended Group Four steps:

- Establish a market development council as in Virginia; and

- Encourage innovative, recycled-product research through the federal Cooperative High Technology Research and Development Grant Program.

Recommendations

Some steps listed above require research to assess how well they have worked in other states. Four major themes run throughout these recommendations summarized broadly as follows:

- Knowledge (education, information, publication);
- Research (firms, technologies, materials);
- Cooperation and joint collaboration (agencies, organizations, states); and,
- Finance (grants, loans, funds, investments, parks).

It is with these themes, and consistent with the goal of Section 32-1e, DECD offers the following summary recommendations:

Agency Staff Knowledge of Recycling Markets is Essential: The agencies tasked by Section 32-1e to support and promote the state's recycling industries must have access to market information, short- and long-term trends, prices, policies, the latest technical developments, and should be able to integrate these components into an overall and coordinated plan of action by staff, firms, agencies, organizations, and the joint efforts of states and non-governmental organizations (NGOs). Recycling market indices are published for a fee; this is a cost that could be shared by agencies as a way to permit DEP and DECD to keep abreast of conditions.

Recommendation: Encourage and educate recycling-related agency staff in aspects of recycling market development and facilitate better understanding of recycling market development collaboratively among DECD, DEP, CRRA, CI and CDA staffs and working groups. Currently, DEP and DECD have designated staff to participate in a monthly teleconference of the EPA's Resource Conservation Challenge (RRC) Web Academy.

Business leads and market research help find new opportunities: Even with the best information, the ongoing task of updating, identifying, and recruiting firms that transport,

process and use recycled materials to make innovative products will not be easy. For example, as with other states, Connecticut needs to bring specific types of end users to the state (such as companies that utilize source-separated organic products to make a product), improve processing and quality of material recovered for recycling, and adopt incentives to encourage the reuse of material and use of recycled-content products especially in new construction and renovation projects as well as promoting source reduction programs such as the use of construction and demolition techniques that reduce the amount of waste produced.

Recommendation: List firms that use, process, and/or transport recycled materials and establish a materials exchange on the DEP website. Link the website to information about recycling facilities regarding what they take, and from whom, and promote incentives in existing programs for recycled material haulers, processors and users.

Agencies work together to promote the recycling industry: Lending by example is one if the most important promotions an agency can undertake. Few agency staff will be experts in all areas of recycling market development. Responsibilities should be shared among agencies and staff that are most appropriate to their area of expertise. State agencies should revise procurement policies as appropriate to purchase goods with as high a recycled content as possible. State agencies should recycle as much of their waste stream as possible.

Recommendation: While not creating new positions, identify a program manager for recovered materials market development in DECD, DEP, CDA, CRRA and CI who has lead responsibility. An existing staff member could be designated to research and identify business prospects for users, transporters, and processors, propose legislation, assess progress and compliance with regard to this plan, revise and distribute promotional materials. Such managers would then jointly pursue a variety of recycling marketing initiatives.

Cooperation with other states is essential: Joint efforts with other states need to be cultivated and maintained because a unified approach can be successful in achieving recycling market development progress.

Recommendation: Sustain and increase involvement with local, regional and national organizations such as the Connecticut Recycling Coalition (CRC), Northeast Recyclers Coalition (NERC), Northeast Waste Management Officials' Association (NEWMOA), Northeast Resource Recovery Association (NRRA) Mid-America Council of Recycling Officials (MACRO), and Mid-Atlantic Consortium of Recycling and Economic Development Officials (MACREDO). Connecticut should establish a market development council as in Virginia to lobby and "champion" the state's recycling industries. The council would promote businesses that can help firms design a successful waste reduction/recycling program, a "WasteWise" network, and a "Buy Recycled Business Alliance."[14]

Fund fledgling recycling industries: Firms in recycling industries need to be self-sustainable, yet early financial support is a practice in many states. Toward this end, the agencies cited in Section 32-1e should examine financial assistance as a means to promote industries that transport, process and use recycled material.

Recommendation: Consider modifications to existing financing programs such as a joint CDA/DEP loan guarantee pool recommended by Mt. Auburn, and use of all of CDA's flexible financing to support the market development mission, including promotion of an industrial park targeted to fledgling recycling firms; and provide financial support for innovative recycled product research via the U.S. Cooperative High Technology Research and Development and other grant programs.

CONCLUSION

Recycling markets are currently expanding largely as a result of increased foreign demand for recycled material and improved technology for processing recyclables. Recycling market prospects are strong because demand for products from recycled materials is growing (Appendix B). In addition, an increasing number of states, including CT, mandate electronics recycling. In 2007, Connecticut legislation was passed requiring electronic materials to be collected beginning October 1, 2009. Because existing DEP, DECD, CI, and CDA programs are useful, we recommend leveraging them specifically for recycling industry growth.

Continued participation in consensus-oriented, multi-state and regional organizations offers significant recycling promotion potential based on NERC, NEWMOA, NRRA, and various regional EPA-supported initiatives. Appendix I contains a list of such organizations.

The Market Development Council concept has special appeal. Virginia's Council is directed by statute to strengthen Virginia's recycling infrastructure and markets by improving the supply and quality of recyclables available, by expanding the capacity of collectors, processors and manufacturers to handle and use secondary materials, and by developing strategies to increase the use of specific recyclable materials.

Currently, Connecticut does not have a recycling industry directory or a materials exchange. If the industry deems a directory is not needed, but a materials exchange has greater potential to increase industry growth such an exchange could be accessible electronically.

In addition, cooperative purchasing of goods with recycled content by state and municipal governments and creating mechanisms encouraging firms to plan, from the outset, for ecologically acceptable final goods and packaging at each stage of a product's life cycle (product stewardship) has the potential to extend the paradigm inherent in Connecticut's new electronic recycling legislation to other products.

Connecticut has advanced considerably since the 1989 Mt. Auburn recommendations. Recycling facilities located throughout Connecticut process and market recyclable material. High-density polyethylene (HDPE) and polyethylene terephthalate (PET) (plastic resin codes #1 and #2) plastic containers, with limited markets in 1989, are currently being processed at all of the state's regional intermediate processing facilities (IPCs). Greater amounts of electronic devices will be recycled beginning in 2009. The expansion of recycling facilities from the Bridgeport IPC to the recent Mid-Connecticut expanded IPC in Hartford demonstrates two decades of commitment by state and private partnerships to further the goals of recycling. This has helped absorb the growing list of recyclable materials, and stabilize market supplies of recycled materials.

Connecticut needs to leverage the existing and relevant programs of DECD, DEP, CDA, CI and CRRA to contain waste disposal costs and promote a rapidly growing industry segment in the region. We need to creatively use our existing programs and technologies to cope with the rising tide of MSW much of which can be recycled. This plan addresses that need.

APPENDIX A:
SURVEY OF RECYCLING MARKET DEVELOPMENT INITIATIVES

In addition to the specific, recommended steps above, there are other recycling market development initiatives worth considering. This Appendix summarizes a variety of these initiatives, practices, or methods to support and promote recycling industries. In general, seven types of tools are available to state government to promote recycling industries and overcome the barriers to market development identified in the Mt. Auburn table appearing in Appendix E. Additional concepts appear below.

In promoting recycling industries, some states have chosen tactics such as providing:

- Tax incentives;
- Financial assistance;
- Information centers such as a materials exchange or recycling directory;
- Technical assistance;
- Advice for recycling-related businesses;
- Membership in multi-state or regional recycling organizations; and,
- Cooperative purchasing and guaranteed purchases.

A complete list of current DEP, CI, CDA, and DECD programs appears in Appendix F. Some examples of states' programs include the Recycling Market Development Zone (RMDZ) program in California that provides financial incentives to promote industries that use recycled materials, and offers technical and marketing assistance to make the industry more attractive to new businesses. The Recycling and Reuse Business Assistance Center in Florida, and the Recycling Grants and Recycling Expansion and Modernization (REM) programs in Illinois, and the Recycling Market Development Program in Indiana offer similar services.

The REM program in Illinois offers a unique service in that it seeks to expand the market for recyclable goods or recycled-content products by encouraging the use of new technologies and ideas. By targeting the market for expansion, the REM program assists in the

expansion of the industry, which, in turn, encourages more businesses to use recyclable goods or produce recycled-content products. In addition, businesses more easily identify states with centralized programs in the recycling field and such states appear more welcoming to companies in the recycling industry.

Tax Incentives: Several states, including Arkansas, California, Iowa, Indiana, Montana and Oregon, offer tax incentive programs to encourage businesses in these states to recycle. Most such programs offer a credit for equipment used directly in the recycling process. Iowa offers a property tax exemption as well as a sales tax exemption for pollution control equipment or machinery directly used in the recycling process.[15]

Montana offers a tax deduction for business-related purchases of recycled materials or for buying Montana compost. In addition, a business in Montana can earn credits toward the payment of certain permit fees if it uses post-consumer glass in its manufacturing process.[16]

Some states offer a tax credit as a percentage of the equipment cost for equipment that firms use directly in the recycling process or in the manufacturing process if the firm uses recycled materials in production. For example, Arkansas offers a tax credit equal to 30% of the cost of equipment that firms will use directly in recycling or recycling-related manufacturing and installation.[17]

Alternatively, California imposes a monetary limit on the amount of credit individual firms or corporations can claim for recycling equipment used to process or manufacture from recycled materials. Sales and use taxes paid on machinery and parts can be credited against state tax liability if that equipment is used to "(1) produce, process, manufacture, combine, or assemble [recycled-content] products; (2) produce renewable energy resources; or (3) control air or water pollution." Individual firms can claim a credit for the first $1 million in purchases of qualified machinery and corporations can claim the first $20 million in qualifying recycling-related equipment purchases.[18]

Financing

A popular tactic to promote industries that use, process or transport recycled materials is to offer special financing options to fund recycling-related projects. Several states have

programs that offer grants or loans or both for such purposes. In general, businesses requesting a grant or low interest loan must demonstrate that the project funded by the grant or loan will benefit the state's recycling industry or reduce solid waste bound for landfills.

Michigan's Solid Waste Alternatives Program establishes several categories for funding market development projects. Companies may receive grants or loans through the program for three project types: market research and demonstration, market development, and marketing projects. The Michigan program supports the development of structures or equipment that will result in more use of recycled materials in new marketable products or the intermediate processing of materials to supply a new market. Project managers can use up to $10,000 or 10% of the financing for promotional programs related to the project.

The Minnesota Office of Waste Management, through its Recycling Market Development Program, offers both grants and loans. Private businesses and nonprofit organizations can apply for grants of up to 25% of eligible project costs up to $50,000, or for loans of up to 50% of eligible project costs up to $2 million. Eligible projects must create new or expand existing manufacturing capacity that uses recyclable materials or provides end-markets for Minnesota's recycling program.

Financing: Grants

Several states including New York, Illinois, Pennsylvania, Minnesota, Wisconsin, Missouri, Massachusetts, and Indiana offer grant programs to encourage the expansion of recycling-related businesses. Several of these grants match funds that the business devotes towards the opening or expansion of its recycling-related enterprise.

The Illinois Department of Commerce and Economic Opportunity (DCEO) administers the Illinois Recycling Grants program as business assistance.[19] Illinois' Recycling, Expansion and Modernization program is part of the larger grants program that awards funds to businesses that want to update their company and technology in order to minimize waste output.[20]

The Environmental Services Unit (ESU) of Empire State Development in New York State has a grant program that provides funding for capital investments, research, development

and demonstration, and technical assistance projects that produce measurable results in pollution prevention, reuse, and recycling.

Indiana has an extensive recycling grant program and offers five types of grants to qualifying businesses. The Recycling Market Development Program is administered by the Department of Environmental Management and provides an Innovations Grant, a Recycling Business Start-up Grant, a Recycled Product Marketing Grant, a Recycled Product Purchasing Grant, and a Reduce, Reuse, Recycle (3 R's) Assessment Grant. The funds available per project range from $6,000 for the Assessment Grant to $500,000 for the Innovations Grant and provide capital to businesses to fund research, development or demonstration projects that promote recycling or the reuse of recycled materials.[21]

The Wisconsin Department of Natural Resources administers a Waste Reduction and Recycling Demonstration Grant to encourage new and innovative waste reduction and recycling projects.[22] Minnesota and Pennsylvania offer grants that support technology development and research related to recycling. Minnesota's Office of Waste Management offers a Directed Research and Feasibility Grant program to support research activities that lead to increased demand for and use of recyclable materials and recycled products. Grants offered under this program are limited to $100,000.

Massachusetts and Pennsylvania have reimbursement grants that compensate companies for using equipment that increases the amount of recycled material in their production processes.[23] Massachusetts specifies goals and objectives to which the business must commit in order to receive its grant including creating a long-term demand for unprocessed recycled materials by using recycled materials in the production process on a consistent basis.[24]

Financing: Loans and Revolving Loan Funds States that prefer an alternative to outright grants may offer loan programs to promote recycling at an interest level lower than the rates offered by commercial banks in the area. Wisconsin, Pennsylvania, New Jersey, California, Florida, Indiana, Massachusetts and Michigan offer such loan programs. In general, the business seeking funding must demonstrate that it will have a direct impact in waste reduction and will be directly involved in the recycling process, whether it is through the transportation of recyclable goods, or through the manufacture of recycled materials into

new products. Often, the loans apply to the purchase of equipment related to the manufacturing process of recycled-content products exclusively.
Wisconsin provides loans, loan guarantees, and rebates for purchase of recycling equipment by firms that develop local recycling infrastructure. Pennsylvania's Environmental Technology Fund supports recycling market development by making low-cost loans of up to $100,000 available to manufacturers and processors to finance the purchase of machinery and equipment that will be used to process materials taken from the municipal waste stream.

In California, the goal of recycling promotion programs is to reduce the amount of waste in landfills, so companies must demonstrate that the implementation of the borrowed money will decrease the net amount of landfill waste by decreasing source production or by using recycled materials in the manufacturing process to create new products.[25] The Florida loan program focuses specifically on technological equipment to help new businesses get started or existing businesses update their out-of-date equipment to improve recycling.[26]

In Indiana, the Department of Environmental Management offers loans with no interest to companies purchasing equipment used in the manufacture of products with recycled materials. However, these loans have a maximum amount of $500,000 and match up to 50% of the total costs. The loans may increase to $1 million for businesses using hard-to-recycle materials in their production processes or businesses that demonstrate the potential for large-scale waste reduction as a result of their production implementing recycled materials.[27]

The Waste Tire Fund (WTF) Program offers this type of loan and the Indiana Office of Pollution Prevention and Technical Assistance administers the program.[28] New Jersey has a similar loan program of up to $500,000 with more money available for businesses working with post-consumer plastics, tires, or low-grade paper recycling mills.

The Michigan Department of Business and Economic Growth offers Small Business Pollution Prevention loans. In order to qualify for the Pollution Prevention Loans, the projects must eliminate waste at the source, "result in environmentally sound reuse and recycling for the loan applicant's general wastes" and conserve energy or water.[29] Michigan

and Massachusetts offer similar loan programs with maximum amounts and interest rates of $400,000 at five percent and $300,000 at four percent, respectively.[30]

Other (Non-Financial) Programs: Several states offer non-financial support programs or centers directed towards small businesses that may find it difficult to comply with environmental regulations and implement recycling programs. To encourage businesses to recycle, states such as Montana, Michigan, Ohio, Iowa, Hawaii, Illinois and New Jersey each have, in one form or another, programs to encourage and promote recycling that target small businesses.

In Ohio, the Office of Compliance Assistance and Pollution Prevention of the state's Environmental Protection Agency provides small business assistance by providing links to local recyclers and waste exchanges.[31] In Montana, the Department of Environmental Quality administers the Small Business Assistance Program (SBAP). The role of the SBAP is to assist small businesses with compliance and to aid with further pollution prevention beyond the state requirements through workshops, technical assistance and on-site visits to promote recycling.[32]

Hawaii, Iowa and New Jersey have special programs for recycling-related businesses that do not cater specifically to small businesses. The Hawaii State Department of Health established the Pollution Prevention and Waste Minimization Program that is administered by the Hazardous Waste Section. The program's goal is to provide assistance in three areas: reduction of source waste, pollution prevention, and the recycling of irreducible wastes.[33]

In general, such programs provide various services such as workshops and presentations, technical bulletins, special projects, and an awards program to recognize businesses that go beyond compliance. Iowa's Department of Economic Development runs a Recycling Related Business Planning Assistance program that provides reports and guides on manufacturing with reused and recycled materials, guides for preparing a business plan for a small-scale recycling related venture, and guides for writing business plans for recycling enterprises of any size.[34]

The New Jersey WasteWise Business Network is part of the larger nationwide WasteWise program administered by the EPA.[35] The New Jersey Network works with the New Jersey (NJ) Department of Environmental Protection (NJ DEP) and administers a voluntary program that encourages small business members primarily to establish goals to reduce waste and recycle. The NJ Network invites members to biannual educational meetings to learn how to reduce waste, increase recycling, reduce disposal costs and expand purchases of recycled products.[36]

Materials Exchange: Another popular option for reducing waste is the establishment of material exchanges which divert reusable materials from disposal by linking entities with unwanted material to entities that have a use for that material. A material exchange is often administered by a government or not-for-profit organization and can consist of a website, newsletter, warehouse, etc. Several states operate material exchanges. Typically, a nonprofit organization operates a material exchange with government funding. The organization essentially functions as a clearinghouse: businesses submit descriptions of recyclable materials available or needed to the exchange, which in turn disseminates the information in either a published catalogue or computerized database. Accuracy depends on the information supplied by the businesses. Often businesses pay a fee for "advertising" in waste-exchange catalogues. States must frequently update waste exchange information to be useful and increasingly, exchanges are computerized to allow easy updating and access. DEP has indicated that Connecticut may have a number of public or private institutions interested in hosting a material exchange.

Price Preferences: To spur demand, twenty states, including Connecticut currently allow a price preference for recycled-content products. As a result, firms may select recycled products that generally have a higher cost than virgin products in competitive bidding. These price differentials, which range up to 15%, occur most often for paper, but some differentials apply to rubber-asphalt and metals.

Cooperative Purchasing Programs: Local and state agencies can work in concert to issue bids for large, multi-agency purchases of certain products, which would allow their manufacturers to achieve economies of scale. The New York State Office of General Services, for example, functions as a central purchasing agent for local governments and public authorities. Most Connecticut Department of Administrative Services' (DAS) contracts

for the purchase of environmentally-preferable products by state agencies are open to purchase by political subdivisions, such as municipalities. Wisconsin and Minnesota have agreed to a cooperative purchasing program for selected recycled products. Such programs stimulate manufacturers and save the agencies money through volume purchases. However, it can be difficult to get several agencies in different states to agree to use the same product.

Guaranteed Purchases

In a guaranteed purchase agreement, a state agency promises to purchase a portion of a firm's production. Guaranteed purchases are most common for military items where the government is the sole consumer. Recently, public officials have explored guaranteed purchase arrangements for recycling businesses. The South Florida Coalition of Counties wants a company to build a new manufacturing facility that would use the counties' plastic wastes. In exchange, the coalition will promise to buy some portion of the finished products, most likely low-demand items such as plastic park benches. Restrictions might apply that would eliminate manufacture of inferior products, or products not competitively priced.

Market Development Councils

Virginia's General Assembly established the Recycling Markets Development Council in 1993. The Council is directed by statute to develop and monitor the implementation of a plan to strengthen Virginia's recycling infrastructure and markets by improving the quality of recyclables available, expanding the capacity of collectors, processors and manufacturers to handle and use secondary materials and developing strategies to increase the use of specific materials. The Council has representatives from plastics, paper, oil, glass, electronics, organics/composting, tires, metals, aluminum, and waste industries, as well as the public in urban and rural sectors, among others, and one representative from each of four state agencies with jurisdiction for environmental quality, transportation, business assistance, and general services. In carrying out the charge that the General Assembly provided to the Council, the Council is to undertake the following activities:

- Promote and coordinate state agencies' and authorities' efforts to enhance markets for recycled or recovered materials;
- Promote the purchase of products made from recycled or recovered material;
- Identify and evaluate financial and other incentives that may attract new businesses that can use recycled or recovered materials generated in Virginia;
- Identify barriers to the development of markets for recycled material including existing state policies, regulations and procedures, and recommend alternatives to overcome such obstacles;
- Develop recommendations for the establishment of a regional or interstate marketing system for recycled materials;
- Encourage the use of uniform recycling definitions and standards throughout the state; and
- Promote and encourage public/private market development initiatives.[37]

Publish Online Directories: The Michigan Recycled Materials Market Directory is available to commercial, industrial, municipal, and institutional recyclers in Michigan to assist in finding markets for accumulated or collected recyclable materials. This directory lists four common recyclable materials: glass, metals, paper, and plastics, and companies or volunteer agencies that collect, process or serve as brokers for these materials. In some instances, information describes specific grade and types of recyclables that are handled.

North Carolina maintains a free, online database of recycling markets and businesses to facilitate finding markets for recyclables called the Directory of Markets for Recyclable Materials (DMRM) created in 1992. The DMRM has now advanced to allow self-registration for any recycling business or organization by simply completing an online form. This allowed the DMRM to expand to include a multitude of recyclable commodities and cover a larger geographic area. The DMRM is a powerful tool for the recycling industry in North Carolina. The DMRM is run by the North Carolina Recycling Business Assistance Center (RBAC) whose mission is to "support and grow the state's recycling industry through technical assistance and partnerships. RBAC is a partnership of the N.C. Department of Environment and Natural Resources' Division of Pollution Prevention and Environmental Assistance, and the Department of Commerce".

The American Chemistry Council publishes one model of a comprehensive market directory -- Recycled Plastic Products Directory.[38]

Demonstration Projects and Product Testing: The State of Georgia has combined several programs to bolster textile production and recycling: (1) it funds the Center for Textile Recycling at the University of Georgia, (2) holds a major annual conference, (3) maintains a database of generators and users of scrap textiles, and (4) funds a variety of research projects.[39]

Centralized Programs/Centers Providing Business Assistance: The Recycling and Reuse Business Assistance Center (RBAC) in Florida provides access to special incentives and services for recycling-related businesses in one simple program.[40] RBAC is part of the Florida Department of Environmental Protection (FL DEP) Waste Reduction/Recycling Division. Before 1996, the Florida Department of Commerce was the government promoter of economic development for the recycling industry. However, when Enterprise Florida assumed the duties of the Department of Commerce, the new quasi-public agency began to focus solely on "high impact" industries such as silicon technologies. As a result, there was much less focus on recycling-related industries. However, the Florida DEP received a federal "Jobs Through Recycling" grant in 1996 and was able to form the Reuse and Recycling RBAC to keep recycling economic development activities alive. RBAC provides technical, financial, marketing and business assistance to recycling-related businesses.

Further Initiatives: Product Stewardship: EPA defines product stewardship as "a product-centered approach to environmental protection. Also known as extended-product responsibility (EPR), product stewardship calls on those in the product life cycle—manufacturers, retailers, users, and disposers—to share responsibility for reducing the environmental impacts of products." "In most cases, manufacturers have the greatest ability, and therefore the greatest responsibility, to reduce the environmental impacts of their products. Companies that accept the challenge recognize that product stewardship also represents a substantial business opportunity. By rethinking their products, their relationships with the supply chain, and the ultimate customer, some manufacturers are dramatically increasing their productivity, reducing costs, fostering product and market innovation, and providing customers with more value at less environmental impact. Reducing the use of toxic substances, designing for reuse and recyclability, and creating

take back programs are just a few of the many opportunities for companies to become better environmental stewards of their products."[41]

Producers that concern themselves from the outset of product development with a plan for an ecologically acceptable final good and packaging at each stage of the product life cycle represent examples of product stewardship. Overseeing a product through its entire lifecycle from start-up production to disposal becomes a driving force in the manufacturing process.

Electronics recycling laws recently passed in several states, including Connecticut (Public Act 07-189), provide for producer responsibility for recycling of specific electronic devices at the end of product life. These laws will not only result in increased recycling of those electronic devices but also have the potential to provide an incentive for manufacturers to produce a product that is more durable, less toxic, and more easily recycled.

Recruitment Efforts: There are ongoing efforts to recruit of out-of-state companies by DECD and other entities attempting to bring firms into the state. Additional personnel and resources are needed to strengthen such activities with regard to users, processors, or transporters of recycled materials.

Recycling Education: Consumer education can significantly promote recycling participation, and the markets for recycled-content products through billboards, public service announcements (PSAs), "op eds," and "infomercials." This is an ongoing activity in Connecticut via CRRA's Museum of Garbage and Trash Museum. As important as these types of efforts are, however, ultimately it is price and product performance that are the best ways to promote use of recycled materials

Procurement Training: Connecticut enacted requirements (Section 4a-67h) for DAS regarding procedures promoting the procurement and use of recycled products and environmentally preferable products and services by state agencies. Training could be offered to the appropriate agency staff on a statewide basis to facilitate such procurement practices. In fact, DAS had an EPA program and held workshops on this matter. The responsibility is now spread among each agency's procurement staff, but there is no environmentally-preferable product (EPP) procurement person designated on each staff.

Legislation

The evolution of the recycling is marked by a series of historic legislative actions. Appendix H contains a short history of recycling developments in Connecticut. There are numerous recycling-related legislative proposals before the Connecticut General Assembly each year. Legislation may be needed to enact some of the programs suggested and described in this plan. However, legislatively creating exemptions such as a sales and use tax exemption for recycling manufacturing materials and equipment can lead to other policy issues, and indications are, that market development can be accomplished without new legislation.[42]

APPENDIX B:
REGIONAL RESOURCE RECOVERY FACILITIES (RRFS OR WASTE-TO-ENERGY FACILITIES) IN CONNECTICUT[43]

MSW RRFs in Connecticut

Selected information	Bridgeport RRF	Bristol RRF	Mid-CT RRF	Southeast RRF	Wallingford RRF	Lisbon RRF
Maximum Permitted Design Capacity (tons/year) (1)	821,250	237,250	888,888	251,485	153,300	195,640(2)
Average Amount (tons) of MSW Burned/Year (3)	722,692	196,113	715,011	250,484	143,158	181,987
Year Bonds will be Paid Off	2008	2014	2012	2015	2009	2020
Operator	Wheelabrator	Covanta	MDC/ Covanta	Covanta	Covanta	Wheelabrator
Number of Towns Contracted (4)	19 (Towns contracted to CRRA; CRRA has contract with Wheelabrator)	14	70	16	5	5 +11(4)
2005 Member Tipping Fee(5)	$69	$66	$70	$60	$57	$60-$66
Ash Disposal Site	Putnam	Seneca Meadows (NY)	Hartford	Putnam	Putnam	Putnam
Post-Contract Ownership	Wheelabrator	Covanta	CRRA	Covanta	Covanta	Eastern CT Resource Recovery Authority (ECRRA)

(1) This represents the maximum (theoretical) amount of waste the facility is permitted to process per day multiplied by the number of days a year the facility operates. Facilities usually do not operate at this level due to efficiency variations and to repairs, maintenance, and other down time.

(2) As appropriate, 13,140 tons/year are dedicated only for processed demolition wood (based on the Lisbon RRF permit to operate).

(3) The Average Amount of waste burned per year is based on the fiveyear period of FY2000 – FY2004.

(4) A total of 129 CT municipalities of 169 are currently under contract for MSW disposal at one of the six in-state MSW RRFs plus eleven Housatonic Resources Recovery Authority (HRRA) communities that have a contract with Wheelabrator to dispose of their MSW at a Wheelebrator disposal facility. Currently most of this HRRA waste is delivered to the Lisbon facility, however it is not contracted specifically to that facility.

(5) Tipping fees cover a range of activities, from disposal only to transfer, recycling education, recyclables processing, and electronics recycling activities.

APPENDIX C:
EPA'S COMPREHENSIVE PROCUREMENT GUIDE (CPG) TO PRODUCTS MADE WITH RECYCLED MATERIAL.[44]

"The Comprehensive Procurement Guideline (CPG) program is part of EPA's continuing effort to promote the use of materials recovered from solid waste. Buying recycled-content products ensures that the materials collected in recycling programs will be used again in the manufacture of new products."

"The CPG program is authorized by Congress under Section 6002 (PDF) (6 pp, 51 K, About PDF) of the Resource Conservation and Recovery Act (RCRA) and Executive Order 13101. EPA is required to designate products that are or can be made with recovered materials, and to recommend practices for buying these products. Once a product is designated, procuring agencies are required to purchase it with the highest recovered material content level practicable."

"Under RCRA, the requirement to purchase an EPA-designated product containing recovered materials applies to "procuring agencies" that spend more than $10,000 a year on that item. Procuring agencies include all federal agencies, and any state or local agency or government contractor that uses appropriated federal funds. For example, if a county agency spends more than $10,000 a year on an EPA-designated item, and part of that money is from appropriated federal funds, then the agency must purchase that item made from recovered material."

Construction Products:

- Building insulation products
- Carpet (polyester)
- Carpet cushion
- Cement and concrete containing:
- Coal fly ash
- Ground granulated blast furnace slag

- Cenospheres
- Silica fume
- Consolidated and reprocessed latex paint
- Floor tiles
- Flowable fill
- Laminated paperboard
- Modular threshold ramps
- Non-pressure pipe
- Patio blocks
- Railroad grade crossing surfaces
- Roofing materials
- Shower and restroom dividers/partitions
- Structural fiberboard

Landscaping Products:

- Compost made from yard trimmings or food waste
- Garden and soaker hoses
- Hydraulic mulch
- Lawn and garden edging
- Plastic lumber landscaping timbers and posts

Non-paper Office Products:

- Binders, clipboards, file folders, clip portfolios, and presentation folders
- Office furniture
- Office recycling containers
- Office waste receptacles
- Plastic desktop accessories
- Plastic envelopes
- Plastic trash bags
- Printer ribbons
- Toner cartridges

Paper and Paper Products:

- Commercial/industrial sanitary tissue products
- Miscellaneous papers
- Newsprint
- Paperboard and packaging products
- Printing and writing papers

Park and Recreation Products:

- Park benches and picnic tables
- Plastic fencing
- Playground equipment
- Playground surfaces
- Running tracks

Transportation Products:

- Channelizers
- Delineators
- Flexible delineators
- Parking stops
- Traffic barricades
- Traffic cones

Vehicular Products:

- Engine coolants
- Rebuilt vehicular parts
- Re-refined lubricating oils
- Retread tires

Miscellaneous Products:

- Awards and plaques
- Bike racks
- Blasting grit
- Industrial drums
- Manual-grade strapping
- Mats
- Pallets
- Signage
- Sorbents

APPENDIX D:
2005 CONNECTICUT RECYCLING ESTABLISHMENTS, PAYROLL, AND EMPLOYMENT FROM COUNTY BUSINESS PATTERNS

	Industry Code	Industry Code Description	Industry Code as found in *County Business Patterns (2005)* Geographic Area Series for CT	Industry Code Description	Number of Employees for week including March 12	2005 Annual Payroll ($000's)	Total Establish-ments
	562111	Gov't & Private Staffed Curbside Solid Waste Collection (w/o disposal)	562111	Solid Waste Collection	2,970	$ 125,486	170
	325314	Fertilizers (mixing only)	325314	Fertilizer (Mixing Only) Manufacturing	132	$ 4,776	5
	56292	Material Recovery Facilities	562920	Materials Recovery Facilities	218	$ 7,657	22
	42193	Recyclable Material Wholesalers					
	327213	Glass Containers	3272	Glass and Glass Product Manufacturing	563	$ 25,613	24
	327212	Pressed and Blown Glass and Glassware	327212	Other Pressed and Blown Glass and Glassware Mfg	0-19	$ -	6
	331314	Miscellaneous Secondary Nonferrous Smelting, Refining and Alloying	33131	Alumina and Aluminum Production and Processing	208	$ 12,056	7
	331423		33142	Copper Rolling, Drawing, Extruding, and Alloying	1,073	$ 48,889	15
	331492		331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	20-99	$ -	6
	331421	Miscellaneous Nonferrous Products	331421	Copper Rolling, Drawing, and Extruding	801	$ 37,935	9
	331315		331315	Aluminum Sheet, Plate, and Foil Manufacturing	100-249	$ -	3
	331316		331316	Aluminum Extruded Product Manufacturing	0-19	$ -	1
	331319		331319	Other Aluminum Rolling and Drawing	0-19	$ -	3
331521--	331528	Nonferrous Foundaries	331521	Aluminum Die-Casting Foundries	0-19	$ -	2
			331522	Nonferrous (except Aluminum) Die-Casting Foundries	98	$ 3,614	4
			331524	Aluminum Foundries (except Die-Casting)	180	$ 10,125	7
			331525	Copper Foundries (except Die-Casting)	20-99	$ -	3
			331528	Other Nonferrous Foundries (except Die-Casting)	0-19	$ -	1
	322121	Paper Mills (Except newsprint)	322121	Paper (except Newsprint) Mills	500-999	$ -	5
	322122	Newsprint Mills	32212	Paper Mills	500-999	$ -	5
	32213	Paperboard Mills	32213	Paperboard Mills	250-499	$ -	5
	322215	Non-folding Sanitary Food Container Mfg. (egg cartons)	32221	Paperboard Container Manufacturing	2,070	$ 92,843	37
	322298	Other converted Paper Product Mfg.	3222	Converted Paper Product Manufacturing	2,500-4,999	$ -	64
	325221	Cellulose Organic Fiber Mfg.					
	324121	Asphalt paving mixtures and blocks	324121	Asphalt Paving Mixture and Block Manufacturing	137	$ 12,067	29
	325991	Customed Compounding of Purchased Plastics Resins	325991	Custom Compounding of Purchased Resins	608	$ 35,336	16
	42261	Plastics Bottles Mfg.	326160	Plastics Bottle Manufacturing	551	$ 19,276	4
326113	326121		326113	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	852	$ 44,518	23
			326121	Unlaminated Plastics Profile Shape Manufacturing	250-499	$ -	9
		Plastic Converters/Misc. Plastics Products	326130	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	140	$ 4,018	8

APPENDIX D:
2005 CONNECTICUT RECYCLING ESTABLISHMENTS, PAYROLL, AND EMPLOYMENT (CONTINUED)

	Industry Code	Industry Code Description	Industry Code as found in *County Business Patterns (2005)* Geographic Area Series for CT	Industry Code Description	Number of Employees for week including March 12	2005 Annual Payroll ($000's)	Total Establishments
			32614	Polystyrene Foam Product Manufacturing	229	$ 7,965	6
32614	325991		325991	Custom Compounding of Purchased Resins	608	$ 35,336	16
326191	326122		32619	Other Plastics Product Manufacturing	4,572	$ 199,736	116
			326122	Plastics Pipe and Pipe Fitting Manufacturing	0-19	$ -	1
326121	326199		326199	All Other Plastics Product Manufacturing	2,500-4,999	$ -	113
	331111	Iron and Steel Mills	331111	Iron and Steel Mills	296	$ 18,596	5
331511--	331513	Iron and Steel Foundaries	331511	Iron Foundries	100-249	$ -	4
			331512	Steel Investment Foundries	100-249	$ -	1
			331513	Steel Foundries (except Investment)	0-19	$ -	1
	Varied	Other Recycling Processors and Manufacturers					
		Computer and Electronic Appliance Demanufacturers					
	42114	Wholesale Used Motor Vehicle Parts	42314	Motor vehicle parts (used) merchant wholesalers	197	$ 5,526	21
	45331	Used Merchandise Stores (excluding pawn shops)	45331	Used Merchandise Stores	1,060	$ 22,913	212
	326212	Tire Retreading	326212	Tire Retreading	20-99	$ -	5
	32192	Wood Reuse in Wood Pallets and Skids	32192	Wood Container and Pallet Manufacturing	230	$ 7,301	20
	321999	Wood Products, NEC	321999	All Other Miscellaneous Wood Product Manufacturing	167	$ 5,579	17
	54199	All Other Professional, Scientific, and Technical Services	541990	All Other Professional, Scientific, and Technical Services	485	$ 37,982	173
42181--	42183	Wholesale Machinery, Equipment, and Supplies					
	333	Machinery Mfg.	333	Machinery Manufacturing	18,039	$ 991,369	527
	54133	Engineering Services	541330	Engineering Services	7,798	$ 537,302	609
541611--	541614	Management Consulting Services	541611	Administrative Management and General Management Consulting Services	4,263	$ 460,504	605
			541612	Human Resources and Executive Search Consulting Services	2,753	$ 270,501	281
			541613	Marketing Consulting Services	3,464	$ 196,022	396
			541614	Process, Physical Distribution, and Logistics Consulting Services	514	$ 50,343	70
	52314	Commodity Brokerage	52314	Commodity Contracts Brokerage	92	$ 21,605	10
	48851	Freight Transportation Arrangement	48851	Freight Transportation Arrangement	1,336	$ 135,677	150
481--	484	Air, Rail, Water, and Truck Transportation	481	Air Transportation	1,881	$ 82,888	56
			483	Water Transportation	770	$ 65,185	29
			484	Truck Transportation	7,342	$ 304,408	684

Source*: U.S. Census, County Business Patterns, 2005*

APPENDIX E:
MARKET DEVELOPMENT TOOLS AND CAUSES OF MARKET FAILURE

Solution: → / **Cause:** ↓	**Information and Tech Assistance**	**Buy-Recycled**	**Direct Finance**	**Grants**	**Taxes and Fees**	**Regulation**
Imperfect Flow of Info.	Directories/Waste Exchanges Outreach Procurement Training	Set-asides Guaranteed Cooperative Purchases Bid Specs Price Preferences	Loans Guarantees Bond & Equity Financing Royalty Financing	Local Gov't Grants		Product Labeling
Uncertainty About Future Markets	Market Studies/Projections Demonstration Projects Testing	Set-asides Guaranteed Purchases Cooperative Purchasing	Loans and Loan Guarantees Bond Financing Equity Financing Royalty Financing			Utilization Requirements
Undervaluing Public Benefits and Costs	Outreach Education	Bid & Material Specs Price Preferences	Low Interest Loans All Pgms. Below ↓	Local Gov't Grants	Tax Credits Tax Exemptions Rebates Tax on Virgin	Utilization Requirements Voluntary Agreements
High Costs of Transaction	Market Data Recycling Directories Waste Exchanges		Loan & Equity Programs Royalty Financing	Local Gov't Grants	Local Gov't Grants	
Initial Small Market for Recycled Products	Product Directory	Set-asides Guaranteed Purchases Cooperative Purchases				Voluntary Agreements
Aversion to Risk			Loans and Guarantees Bond Financing Equity Financing Royalty Financing			
Unrestricted Nature of Information				Research Grants		

Source: Mt. Auburn Associates, Inc. and Northeast-Midwest Institute (1993). "Developing Markets for Recyclable Materials: Policy and Programs." For the U.S. EPA.. http://www.epa.gov/jtr/docs/devmrkts.pdf.

APPENDIX F:
THE MT. AUBURN ASSOCIATES 1989 PLAN

The first (June 23, 1989) report, *Survey of State Market Development Initiatives: Recovered Materials Market Development Project* selected 16 states for review, and identified ten states for detailed analysis. Mt. Auburn reviewed recycling programs in California, Illinois, Massachusetts, Michigan, Minnesota, New Jersey, New York, Pennsylvania, Oregon, and Rhode Island.

Mt. Auburn conducted interviews and relied on existing state surveys of buyers of secondary materials. They categorized as "general market development instruments" measures such as studies, surveys, preference procurement, regional marketing, average cost credits, and transportation support. Among Mt. Auburn's major conclusions:

- Economic development departments, in general, (as much as environmental protection agencies) have to play a prominent role in market development;
- Existing economic development programs could be adapted to work for recycling;
- Well-trained, in-house staff are essential;
- Coordination among agencies is essential; and,
- Acceleration of market development beyond private sector efforts requires a commitment of state resources (funding or technical assistance).

Mt. Auburn's second submission to DED, in July 1989, Emerging Uses and Manufacturing Technologies for Recovered Materials, focused on newspaper, steel can scrap, and plastics. Three sections discussed opportunities and possible programs for each of these materials. The report described new technologies to increase the demand for such recycled materials.

Mt. Auburn's research for DEP and DED culminated in a comprehensive report, Plan for the Promotion of In-State Markets for Recovered Materials, submitted October 4, 1989, and is useful to the current report because it is an overview of U.S. recycling markets and several early or ongoing recycling programs in other states. Some recommendations have been implemented, while others hold potential for the current market-building effort.

The Mt. Auburn plan focused on recommendations to stimulate in-state markets for materials recoverable from Connecticut's MSW stream to create and retain jobs.[45] A summary of the plan's findings and recommendations includes:

- Active and creative use of each agency's existing programs to stimulate recycling;
- Active recruitment and stimulation of start-up businesses producing innovative and existing newspaper-using products such as newsprint, office paper, and paperboard in small but growing markets;
- Exploration of out-of-state markets for steel can scrap and an in-state detinning mill (a technology used to remove a coating of tin to make the metal reusable); and,
- Encouragement of an in-state, advanced processing, and integrated plastics recycling network supported by locating new operations in the state.

The Mt. Auburn plan's five sections are: (1) general steps, (2) old newspapers, (3) steel can scrap, (4) plastics, and (5) an implementation plan with specific steps for DED, CDA, and CI. Mt. Auburn grouped the steps by agency and material. Those steps that were not aimed at specific agency or materials, but encouraged the use of recycled materials across the board are listed in Group One. The four groups by type of step appear below.

Group One: Organizational Development and Capacity Building (for DEP, DED, CI and CRRA)

- Encourage agency staff in market development;
- Appoint a recovered materials market development program manager;
- Prepare and update an in-house plan of action;
- Create a format for providing semi-annual reports to the legislature;
- Determine DED/DEP responsibilities for market development and marketing;
- Cooperate with other Northeast states in market development; and,
- Revise promotional materials.

Group Two: General Program and Project Development for DED

- List recycling firms in licensing/joint venture programs;

- Identify and recruit foreign operations making innovative recycled products; and,
- Encourage state procurement of recycled products produced in Connecticut.

For CDA

- Consider creating a Growth Fund set-aside;
- Explore with DEP creation of a loan guarantee pool; and,
- Develop arrangement for loan review assistance from DEP/DED staff.[46]

For CI

- Create and publicize a recycled products initiative.

Group Three: Action on Specific Market Opportunities (for DED)

Old Newspapers [Note: this is not an issue currently.]

- Work closely with existing boxboard mills;
- Survey paperboard converting plants;
- Encourage new newspaper-using operations;
- Immediately contact any recycling- using, processing, or transporting firms that may have already expressed interest in siting a new plant;
- Undertake preliminary studies of the potential for insulation board, padded envelope, animal bedding, and hydro-seeding operations in the state;
- Examine the feasibility of creating an industrial park targeted to small waste-paper using firms; and,
- Carry out site survey for a "world class" recycled newsprint mill in the Northeast.

Steel Can Scrap [Note: This is not an issue in today's markets]

- Explore the potential for siting a tin-removal ("detinning") mill; and,
- Work with foundries to facilitate use of scrap.

Plastics [Note: Current market demand exceeds supply]

- Encourage the establishment of secondary plastics processing capacity in the state;
- Encourage the development of plastics buyback/processing centers;

- Encourage existing Connecticut plastics firms to integrate into recycling operations; and,
- Contact sponsors of highly integrated plastics manufacturing operations regarding relocating in Connecticut.

For CDA

Old Newspapers [Note: Newspaper is not an issue today]

- Address the financing needs of boxboard mills.[47]

For CI

Old Newspapers

- Stimulate operations making innovative products using newsprint;
- Explore with the U.S. Forest Products Laboratory the possibility of a Connecticut operation licensing SpaceboardTM for production;[48]
- Contract with NERAC[49] to research existing knowledge and prospects for newsprint-using innovations;
- Carry out preliminary feasibility studies concerning specialty groundwood papers and "de-inked" ground wood pulp.[50] If results are positive, consider searching for an entrepreneur to analyze the potential for such operations in depth and to help arrange production experiments meeting publishers' specifications, possibly with expertise from the U.S. Forest Products Laboratory (FPL); and,
- Determine whether to issue a request for proposals (RFP) for the development and manufacture of innovative newsprint-using products.

Keep abreast of newsprint-based innovations and product development research.

Steel Can Scrap

- Create a testing program for using tinned and detinned scrap.

Plastics

- Encourage research on advanced processing techniques for secondary resins; and,
- Encourage the development of recycling machinery manufacturing in the state.

Group Four: Project Development in Daily Functioning

Actively pursue projects that involve in-state market development for recovered materials;
Actively seek projects using newspapers and steel cans and be open to other materials;
The Connecticut Technology Assistance Center (CONNTAC): Review the Small Business Innovation Research (SBIR) RFPs involving recycled materials; and,
CONNTAC: Encourage innovative recycled product research through the Cooperative High Technology Research and Development Grant Program.

APPENDIX G:
EXISTING DEP, DECD, CI, AND CDA ASSISTANCE PROGRAMS

This appendix describes relevant programs currently offered by DEP. Additionally, it describes a number of generic programs offered by CI, CDA and DECD. While these CI, CDA and DECD programs are not specifically aimed at recycling industries, they are available to any firm meeting eligibility criteria of any of the programs listed. Therefore, these programs can be used to help achieve the goals of Section 32-1e.

DEP Programs

DEP Business Assistance

DEP's Office of the Ombudsman provides a central point of contact for businesses and others seeking information and assistance from the Department including:

- Assisting applicants in understanding the environmental permitting process and coordinating application processing for new and expanding businesses;
- Working in partnership with the DECD, other state agencies, and municipalities in outreach efforts to new and expanding businesses.

DEP's Small Business and Compliance Assistance Program provides environmental compliance assistance to small businesses including:

- Developing compliance assistance tools such as manuals and computer software programs to simplify and streamline compliance tasks;
- Researching ideas to expand the availability of financial assistance when the lack of financing is an obstacle to environmental compliance.

DEP's Pollution Prevention (P2) Office offers a variety of services related to community and business assistance such as:

- Case studies on Connecticut companies explain existing successful pollution prevention programs and provide contacts at such companies.
- Sector fact sheets provide technical information on implementing pollution prevention for many sectors including: Auto Repair, Metal Finishers, Dry Cleaners, Consumers, Voc-Tech Auto Repair Facilities, Printers, and Lithographers.

DEP Recycling Programs

DEP's solid waste responsibilities include adopting and implementing a solid waste management plan for Connecticut – which entails planning and implementing programs to: reduce the amount of solid waste generated in CT; maximize the amount of solid waste material recovered for recycling and reuse; and assure that the remaining waste is disposed in a manner that protects the environment and the health of CT's citizens. As a result, DEP has a myriad of programs to promote the recovery of materials for recycling and use of those materials to make new products. Programs range from promoting residential pay-as-you throw programs; promoting the purchase of recycled content products; to enforcing recycling requirements related to businesses, state agencies, institutions, residents, municipalities, solid waste haulers, etc.; to tracking the amount of Connecticut waste generated, disposed, and recycled; to providing technical assistance for businesses, residents, government, institution via fact sheets and web pages on what and how to recycle; to conducting studies to determine the amount and location of specific materials generated such as commercially generated food waste; to helping assure markets for material by overseeing Connecticut mandates requiring industries to either use recycled material in their products or to recover their products for recycling; to developing table-top exhibits available to organizations and municipalities on a loan basis to promote recycling, source reduction and pollution prevention membership and participation in regional and local organizations that promote recycling such as the Northeast Recycling Council (NERC) and the Connecticut Recyclers Coalition (CRC); oversee legislation to reduce the toxicity of materials in the waste stream such as the Connecticut Toxics in Packaging legislation; and in the early 1990's awarding grants to municipalities and recycling regions to help develop the Connecticut recycling infrastructure.

For a summary of DEP recycling programs and practices, see the Solid Waste Management Plan (SWMP) (www.ct.gov/dep/swmp) and the DEP website at: www.ct.gov/dep/recycle.

Other examples of current DEP recycling programs include information to encourage consumers to reduce the waste they generate by making simple shopping decisions such as not buying over-packaged products, avoiding disposables, and selecting durable, reusable items. A "Don't Trash Grass!" program encourages homeowners and businesses to leave their grass clippings on the lawn, which effectively removes them from the waste stream. A home composting education program encourages residents to manage yard trimmings and food scraps on their own property. This enables them to produce a valuable soil amendment,[51] compost, and reduces the need for costly collection programs for these items.[52]

Undoubtedly, the state's keen ongoing interest is invigorating source reduction and recycling as put forward in the December 2006 SWMP. New Connecticut legislation regarding electronics recycling, and the current expansion of demand for recyclables by recycling markets both overseas and domestically is likely to increase and improve Connecticut's recycling efforts. A brief history of Connecticut's recycling experience appears in Appendix H.

Keeping recyclables separate from the waste stream and keeping contamination at a minimum is a critical part of the recycling process. Although some recyclables (for example, different types of paper) can be collected together, designated recyclables cannot be collected together with mixed MSW. There are facilities in Connecticut permitted to process designated recyclables and remove inadvertent contaminants; those facilities can only accept source-separated recyclables and should generate a minimum of residue. There are no facilities permitted in Connecticut to "pick through" mixed MSW to retrieve designated recyclable material.[53]

DEP directives encompass other forms of waste, including, hazardous waste, biomedical waste, and wastewater. DEP engages in a number of compliance assistance and pollution prevention initiatives. In addition to working with large generators or handlers of waste, DEP instructions are geared toward individuals, offering guidance and assistance to minimize waste as well as to foster recycling and reuse efforts.[54]

Three recycling programs are described below ("Buy Recycled," Tire Recycling, and "Pay-as-You-Throw").

Connecticut buys recycled products

The DEP observes (see note 54): "The State of Connecticut has been a leader in taking a proactive role to promote market development for recyclables." In 1988, the Connecticut General Assembly charged the Department of Administrative Services (DAS) to prepare and implement a state plan to increase the purchase of products made from recycled material. Specifically, Section 4a-59 authorized the DAS commissioner to give a price preference for goods made with recycled materials.[55] Since then there have been additional statutes adopted to increase the purchase of environmentally-preferable products by state agencies. Other legislation to improve markets for recycled material includes legislation passed in 1990 (Section 22a-256m through 22a-256u of the Connecticut General Statutes) that required newsprint publishers and printers to utilize an increasing percentage of recycled fiber in their newsprint.[56]

Connecticut was one of the first states in the nation to revise specifications for printing and writing paper to incorporate standards specified by an October 1993 Federal Executive Order 12873. It directed each federal executive agency, the Office of Federal Procurement Policy, and a newly created Federal Environmental Executive designated by the President and located within the EPA, to ensure compliance with new requirements regarding recoverable and recycled-content procurement, federal assistance to the states, outreach, training, and incentives to promote use of such material.[57] Specifications for recycled-content procurement favor recycled, recyclable or remanufactured products and materials where such products or materials are available. These policies acknowledge that recycling is a process, which involves not only collection, but also remanufacturing, and the purchase of products made from recycled materials. All aspects of this process are equally important if we are to "close the loop" and make the most of our natural resources.[58]

Recycling and Disposal of Scrap Tires

Although today's tires last for more miles than they did in the past, the number of cars on the road is increasing and the average number of miles driven annually is also increasing. According to the Scrap Tire Management Council, the standard assumption is that waste

(also known as scrap) tires are generated at a rate of one tire per person per year. The population of Connecticut is approximately 3.41 million people implying that number of waste tires is produced each year.

Management of Waste Tires

The DEP SWM Regulations, under Section 22a-209-8(g) of the Regulations of Connecticut State Agencies (RCSA) specify the handling requirements for the storage, disposal or processing (sort, shred, grind, etc.) of waste tires. DEP considers tire-to-energy plants as resource recovery facilities. Their design, permitting and operation, including storage of tires, must conform to the requirements of Section 22a-209-10 of the RCSA. DEP requires that facilities that process or burn tires report quarterly on the origin of the waste received, amounts received, and amounts recycled and disposed, and the destination of all materials leaving their facility.

Waste tires generated in the New England states are for the most part managed within New England. Studies show that waste tires generally stay in their area of origin due to the high cost of transportation. The most common management method for waste tires is as fuel either for the paper mills in Maine or for a tire-to-energy-facility in Connecticut. There are three paper mills in Maine that supplement their fuel use with tire-derived fuel (TDF). Together the three mills consumed approximately 71,000 tons of TDF in 2000 that equates roughly to 7.1 million passenger tires. The dedicated tire-to-energy facility, Exeter Energy Limited in Sterling, Connecticut burns mainly whole tires, and consumed 10.13 million tire equivalents in 2000.

State statute defines tires as a “special waste” as opposed to MSW because they require special handling whether in a landfill or an energy recovery plant. However, Connecticut no longer permits the land filling of waste tires, either whole or in pieces. Most of Connecticut’s waste tires are burned to create energy at the tire-to-energy plant in Sterling. Connecticut also has three volume reduction facilities that process tires.

Tire Recycling

In addition to TDF, other uses of waste tires, for which tires have useful engineering properties, include:

- Road building material, chiefly as an additive or supplement to asphalt;
- Engineering applications such as lightweight fill to support road base material and as fill behind retaining walls;
- Drainage material in landfills and leachate systems in septic system design;
- Paving material to occupy the space between and around railroad tracks;
- Rubber matting for playground surfaces and in cow and horse barns; and,
- Surfacing for equestrian arenas.

Pay As You Throw (PAYT) Programs

Nearly a dozen Connecticut municipalities have joined a national trend toward successful implementation of PAYT programs. As with the purchase of gas, electricity, and other utilities, households pay for waste collection based on the amount of waste they throw away. This introduces incentives to increase not only the amount of recycled material, but to reduce waste from the start.

The DEP PAYT program features an implementation handbook (CT DEP Pay-As-You-Throw (PAYT) Implementation Handbook) and U.S. EPA "tools" (Pay-As-You-Throw (PAYT) tools), educational presentations (Pay-As-You-Throw (PAYT) Presentations), municipal town contacts for the program (Municipal Pay-As-You-Throw (PAYT) contacts).[59]

The DEP Pay-As-You-Throw (PAYT) Implementation Handbook contains a glossary of terms, a section on program planning issues, bags and sticker information, public education materials, a listing of other PAYT resources, and case studies. An appendix section is available upon request that contains a glossary of terms, a section on program planning issues, bags and sticker information, public education materials, and a listing of other PAYT resources. The U.S. EPA offers fact sheets and implementation tools that are available free to any town interested in PAYT design and implementation Website: www.epa.gov/payt.[60]

CI Programs[61]

CI is a quasi-public authority of the State of Connecticut. Its vision is to drive a vibrant, entrepreneurial, technology-based economy in Connecticut. To carry out this vision, CI provides funding but also valued advice and technology leadership, working closely with technology entrepreneurs, universities, local, regional and national technology organizations, and government representatives. Through an array of initiatives, CI stimulates high-tech growth by investing in early-stage Connecticut technology companies as a "patient" investor; driving a clean energy market transformation in the state; facilitating university and corporate technology transfer; and playing other roles critical to the technology community. These programs may assist a variety of recycling-related businesses, from biomass recyclers to research facilities for innovative ways to recycle and reuse plastics.

Please note, that while not specifically aimed at recycling industries, these CI programs are available to any firm meeting eligibility criteria. In that sense, these programs can be applied to help achieve the goals of Section 32-1e.

Eli Whitney Fund

Investments typically range from $250,000 to $1 million on the initial round. CI will co-invest with other institutional investors. Most investments are in four technology sectors – Bioscience, Energy and Environmental Systems, Information Technology, and Photonics (applied optics).

For investment consideration, companies must have the following:

- Sustainable competitive advantage founded in a proprietary or patented technology or technology expertise;
- Beta-stage prototype of the company's product(s);
- Solid management team, consisting of individuals with domain expertise and strong track records;
- Headquarters, key technology functions, the majority of its operations, a growing employee presence in Connecticut; and

- Ability to obtain funds from other investors.

Investments are structured using equity and near-equity instruments, with terms negotiated and dependent, in part, upon the level of risk. CI anticipates venture returns commensurate with high-risk investments.

Connecticut BioSeed Fund

Established in 2001 to help accelerate the growth of early-stage bioscience enterprises, this fund provides seed capital to support the initial financial needs of Connecticut bioscience start-up companies. These funds are intended to sustain a company until it is able to secure investors for a "Series A" round of financing.

CI manages the $5 million BioSeed Fund: investments of up to $500,000 are based on the potential of the business opportunity (usually addressing an unmet medical need), the track record of the company's scientific and business leaders, and the strength of the intellectual property.

BioScience Facilities Fund

This fund provides financial solutions to qualified biotechnology companies for the construction of wet laboratory and office-related space. CI manages this $46 million Fund, which has been instrumental in assisting the startup and expansion of numerous Connecticut biotech companies.

Since the Fund's inception in 1998, CI has committed more than $33 million to facilitate the creation of more than 320,000 square feet of new laboratory and related space in the state, which includes 10,600 square feet of newly constructed transitional wet laboratory space in New Haven's Science Park. Opened in 2003, this space is available for rent from CI on a short- or long-term basis, consists of two separate suites, and provides a turnkey laboratory solution for emerging biotech companies.

Seed Investment Fund

CI launched this $2 million investment fund in 2007 to help entrepreneurs get fledgling technology companies off the ground in Connecticut. The Seed Investment Fund

complements the Connecticut BioSeed Fund, which for several years has provided early-stage financing exclusively for bioscience firms.

The Seed Investment Fund fills a critical funding gap for companies in their very early stages. It gives entrepreneurs a greater opportunity to turn innovative ideas into successful Connecticut technology companies, and it helps supply CI's pipeline for future investments. Qualifying companies may request funding of up to $500,000 from the Seed Investment Fund.

Pre-Seed Support Services Program

This program helps innovative and high-technology entrepreneurs develop companies in Connecticut. The CI team provides mentoring, coordination of services and limited funding for business assistance to prepare the tech company for future investments. Eligible entrepreneurs and companies will work with a CI case manager who will help identify and fund appropriate support services such as:

- Intellectual property reviews;
- Technology reviews;
- Business plan development and reviews;
- Market analysis; and
- Market entry strategies.

Connecticut Clean Energy Fund (CCEF)

CI administers the ratepayer-funded program that develops, invests in and promotes clean, sustainable energy sources. The fund works to keep Connecticut at the forefront of energy innovation and enhance the prosperity, health and security of Connecticut residents.

Since 2000, CCEF has invested $48.3 million in clean energy programs and initiatives, and its momentum grows each year. Fiscal Year 2007 saw exceptional growth, with a 300 percent increase in its commercial solar program and a greater than 200 percent increase in companies seeking to participate in its programs.

CDA Programs

CDA, a quasi-public authority, provides debt financing and investment capital to help create jobs by financing companies and projects that private sector financial institutions are unable to accommodate. For example, CDA offers direct, guaranteed, participating, or "line-of-credit loans,"[62] as well as economic inducement and special financing. These include such incentives as lower-cost, tax-exempt industrial revenue bonds for manufacturers and tax incremental financing.

Please note, that while not specifically aimed at recycling industries, these CDA programs are available to any firm meeting eligibility criteria. In that sense, these programs can be applied to help achieve the goals of Section 32-1e.

CDA was established under Title 32, Chapter 579 of the General Statutes of Connecticut in 1973. The legislature created the Authority to stimulate industrial and commercial development within the state through its Self-Sustaining Bond, Umbrella and Insurance Programs as well as the Growth, Connecticut Works, Connecticut Capital Access, Business Environmental Clean-up, Environmental Prevention, and Job Training Funds. CDA oversees the Connecticut Brownfield Redevelopment Authority.

Occasionally, CDA programs link up with other agencies' programs such as the "seamless" loan transactions with DECD. When a large economic development deal comes to CDA and a decision to fund it with a loan is made, DECD has the option to participate in the loan, up to 50%. CDA also sponsors several other funds including Connecticut Growth, and Connecticut Works, etc.

CDA's marketing has received greater recognition in recent years and its marketing efforts have been expanding. CDA conducts most such activity via speeches print ads that appear in trade publications. CDA distributes a brochure at trade shows and conventions. TV or radio is not currently part of CDA's marketing. As always, personal contact with interested or invited clients is often the most successful in "getting the word out" about what CDA offers. However, the agency does occasional marketing via hard-copy advertising in industry periodicals and newspapers within Connecticut and the region. These advertisements are placed for both Connecticut Development Authority and Connecticut

Brownfields Redevelopment Authority. Currently, CDA is preparing a "thought leadership" campaign to promote entrepreneurship and be placed in periodicals in targeted areas.

CDA is in the midst of two market assessments for outreach – one with its lending partners and one with small and minority business organizations – to communicate better the services offered by CDA to these business sectors. CDA awaits final reports on both assessments and with the information received it will hold in-house as well as partner meetings to determine the best course of action moving forward.[63]

A complete list of CDA programs appears below. As noted earlier, these programs are not specifically directed at recycling industries; however, such companies may apply and be eligible beneficiaries of these programs.

Self-Sustaining Bond Program

Under the Self-Sustaining Bond Program, CDA accommodates the financing for specific industrial and certain recreational and utility projects through the issuance of special obligation industrial revenue bonds. These bonds are available for financing such projects as the acquisition of land or the construction of buildings, and purchase and installation of machinery, equipment and pollution control facilities.

Growth Fund

Under the Growth Fund, CDA can issue individual loans up to a maximum of $4,000,000. This program provides financial assistance for any purpose CDA determines will materially contribute to the economic base of the state by creating or retaining jobs, promoting the export of products and services, encouraging innovation in products or services, or supporting existing activities that are important to the state's economy. Financing may be used to purchase real property, machinery and equipment, or for working capital. CDA has established an overall maximum loan term of 20 years and a maximum 90% loan-to-value ratio for real property loans. The maximum loan terms for machinery and equipment are ten years and 80% financing and a seven-year term for working capital loans.

Connecticut Works Fund

The Connecticut Works Fund includes direct loans and a loan guarantee program with participating lenders to encourage them to provide more credit on terms that are more favorable. Eligible projects include most manufacturing related projects and any project that materially supports the economic base of the state through jobs, defense diversification, exporting and the development of innovative products or services. Loan types and amounts include revolving credit, fixed asset loans and refinancing in some cases.

The Connecticut Works Guarantee Fund

This fund provides commitments to guarantee loans made by participating financial institutions. Eligible projects are determined by the due diligence principles set forth in the loan presentation guidelines and underwriting considerations for the loan guarantee program of the Connecticut Works Fund. Projects could include recycling facilities or educational programs.

Connecticut Capital Access Fund (Urbank)

The Connecticut Capital Access Fund provides portfolio insurance to participating financial institutions to assist them in making loans that are somewhat riskier than conventional loans. The financial institution making the loan as long as the projects meet the requirements specified in the participation agreements determines eligible projects usually.

Business Environmental Clean-Up Revolving Loan Fund

The Business Environmental Clean-up Revolving Loan Fund provides direct fixed-rate loans to business property owners unable to obtain clean-up financing from conventional sources.

The Environmental Assistance Revolving Loan Fund

The Environmental Assistance Revolving Loan Fund provides direct loans to businesses unable to obtain financing from conventional sources. Assistance relates to the prevention of future environmental hazards.

Tax Incremental Financing Program

Section 32-285 of the CGS authorizes the Tax Incremental Financing Program, under which incremental sales, admissions, cabaret and dues taxes generated by an eligible project

approved by the Authority may be used to pay debt service on bonds issued by the Authority to help finance such a project. Eligible projects under Section 32-285 are large-scale economic development projects that may add a substantial amount of economic development activity and employment in the project area and may generate significant additional tax revenues, which are economically viable and self-sustaining considering the application of bond proceeds and which meets certain other criteria provided for in Section 32-285. The Authority is responsible for conducting an independent financial assessment of the project's feasibility, including the incremental tax revenues derived from it.

Brownfields/IT Bond Program

Pursuant to the authority granted by Section 32-23zz of the CGS, effective October 1, 2001, CDA established a bond program for the purpose of assisting the development or redevelopment of information technology projects in certain eligible municipalities and projects involving significant environmental remediation in accordance with a remediation plan approved by the Department of Environment Protection. The assistance is provided in the form of a grant to the applicant either directly from the Authority or from the Connecticut Brownfields Redevelopment Authority ("CBRA"), a wholly-owned subsidiary of the Authority created pursuant to Section 32-11a(l) of the CGS. The funding for the grant is made available from the proceeds of bonds or other obligations issued by the Authority for that purpose, or, on either a temporary or a permanent basis, from other funds legally available to the Authority. The grant funding provided by the CDA is repaid from incremental municipal real property taxes attributable to the project, which incremental property taxes are assigned to the CDA or CBRA for that purpose by the municipality in which the project is located. Neither the applicant nor the municipality has any repayment obligation with respect to the grant except by way of the payment, collection and remittance to the CDA or CBRA of the incremental portion of the generally applicable municipal property taxes attributable to the project.

Sales Tax Relief

CDA may provide Sales & Use Tax relief on the purchase of tangible personal property for qualifying economic development projects. It involves the sale of such property by CDA, and storage, use or other consumption in Connecticut of property purchased from CDA for an economic development project.

Connecticut Growth Fund: Special Purpose Financing

The fund serves small contractor or minority businesses. Any subcontractor, manufacturer, or service company which has been in business for at least one year with sales of less than $3,000,000; or any minority business enterprise, including businesses owned and managed by women and the disabled, with a state contract award meet eligibility criteria.

Connecticut Capital Access Fund: Entrepreneurial Loan Program

Under this program, a borrower must be ineligible for conventional financing or any government-sponsored loan or guaranty programs due to an adverse credit history. Types of assistance include: access to non-conventional bank loans through portfolio insurance; CDA loss reserve of 20% of outstanding portfolio balance can be used to induce bank loans to entrepreneurs; and, with multiple loan enrollments by a bank, loss protection from reserves can equal 100% of an individual loan. The Entrepreneurial Center at the University of Hartford offers technical assistance to prospective business entrepreneurs to develop a business plan and to monitor the business progress after receiving CDA financial assistance.

Connecticut Business Development Corporation

This is a certified statewide development company operated by the CDA under the federal Small Business Administration (SBA) 504 program. It provides low-cost, long-term, fixed-rate financing to active for-profit businesses.

Small Contractor's Revolving Loan Fund

The fund provides working capital loans or lines of credit to small contractors to stimulate and encourage the growth and development of the state economy through the private enterprise of small contractors.

DECD Programs

Please note, that while not specifically aimed at recycling industries, these DECD programs are available to any firm meeting eligibility criteria. In that sense, these programs can be applied to help achieve the goals of Section 32-1e.

DECD has a number of housing and housing development programs omitted from this section because they are not directly relevant to recycling industries. However, such programs could be modified or reoriented to encourage the use of recycled materials in new construction and renovation.

Naugatuck Valley Revolving Loan Fund – Financial Assistance

Administered by the Office of Business and Industry Development (OBID), this program provides funding for manufacturers and eligible wholesale distributors of certain Connecticut communities for acquisition, construction, renovation, rehabilitation and purchase/installation of equipment and machinery.

Special Contaminated Property Remediation and Insurance Fund - Financial Assistance (SCPRIF)

The goal of this program is to provide assistance with investigating the environmental conditions of a site and ultimately to encourage redevelopment that is beneficial to the community. DECD provides assistance through low-interest loans. The recipient of SCPRIF loan funds will repay the state upon sale or lease of the property, or upon approval of a final remedial action report, in accordance with the terms of the program. In the event the assessment determines that the redevelopment of the site is not feasible due to the cost of remediation, loans made under the program may be forgiven under certain conditions. Any person, corporation, municipality or business is eligible to apply for SCPRIF funds. Typically the applicant is the current owner of the site, the prospective owner or developer of the site, or the municipality in which the site is located. Eligible activities include: Phase II environmental site assessments, Phase III site investigations, including remedial action work plans, building lead and asbestos surveys (for demolition or rehab), lead abatement and asbestos removal (for demolition only), and demolition (full not partial).

Turn Around Management Assistance – Technical Assistance

This program provides technical assistance for businesses experiencing significant difficulties. The goal of the program is to provide DECD knowledge, experience and abilities to companies seeking assistance in resolving their financial and operation challenges. The program provides services on a pro bono basis to the agencies and business community seeking such assistance.

Urban and Industrial Site Reinvestment Tax Credit – Tax Credit

This program offers investors a dollar-for-dollar corporate tax credit of up to 100% of their investment up to a maximum of $100 million. DECD defines an eligible Urban Site Investment Project as an investment that adds significant new economic activity, increase employment in a new facility and generate significant additional tax revenues to the municipality and the state.

Job Creation and Displaced Worker Tax Credit Programs – Tax Credit

The Job Creation Tax Credit program, under Section 12-217gg, provides tax credits for companies that relocate to Connecticut and create at least ten new, full-time jobs in the state. Under the Displaced Worker Tax Credit program, Connecticut companies receive a $1,500-per-person business tax credit if they hire furloughed workers in the state. The credit applies against the insurance premium, corporation, and utility company taxes and is allowed for the income year during which the displaced worker completes his first 12 months of employment with the taxpayer. The credit cannot exceed the total tax due. The act allows only one credit per qualifying worker. The credit equals up to 60% of the state income tax withheld from the new employees' wages. For each new employee, the credit applies for five consecutive years. The act limits the annual credits for all companies awarded in any one fiscal year to $10 million. Credits must be taken in the same income year they are earned. Unused credits expire.

Export Assistance – Technical and Financial Assistance

DECD is committed to expanding the state's international business and assisting companies compete in the global marketplace. To help companies reach new markets and raise awareness of export opportunities, DECD and the U.S. Department of Commerce (USDOC) Middletown Export Assistance Center have developed this program. It is a unique trade partnership agreement that allows qualified small and medium-size Connecticut firms take advantage of a variety of export promotion programs and services. Eligible companies can cost-effectively access market research resources, schedule appointments, and advertise through USDOC services such as International Partner Search, Gold Key Service, International Company Profile, Commercial News USA, and others. These programs provide companies with access to the U.S. Department of Commerce's (DOC's) extensive network of commercial staff in U.S. embassies and consulates in 80 countries around the world. DECD reimburses qualified Connecticut firms up to 50% of the participation fee for

certain USDOC export programs and services including export counseling, seminars, trade shows and missions.

Executive Education Alliance – Technical Assistance

This Program provides rapidly growing inner city entrepreneurs with the advanced business skills necessary for continued success in a competitive economy to company presidents that have been identified as fast growing inner-city companies by the "Inner City 10/100" program.

Economic Development and Manufacturing Assistance Act (MAA) – Financial Assistance

This program offers incentive-driven direct financial assistance for projects undertaken by manufacturers, economic base businesses and cluster-based businesses when there is a strong economic development potential. Financial assistance may be in the form of grants, loans, forgivable loans, loan guarantees or extensions of credit. Emphasis is on job creation and capital investment. Eligible uses are: planning, feasibility studies, engineering, appraisals, market studies and related activities, acquisition of real property, machinery or equipment or any combination, provided such assistance does not exceed the fair market value, construction of site and infrastructure improvements relating to a municipal or business development project, construction, renovation, demolition of buildings, relocation expenses for the purpose of assisting manufacturing or other economic-based businesses to locate, construct, renovate or acquire a facility, working capital in conjunction with a business development project, business support services such as labor training, day care, energy conservation, pollution control, recycling and the like, and environmental insurance in conjunction with other state agencies.

Small Manufacturers Competitiveness Fund – Financial Assistance (SMCF - MAA)

The SMCF program provides loans and other financial assistance to small manufacturers enabling them to become or remain competitive against out-of-state, and/or foreign manufacturers. The SMCF is designed to prevent business closures, and continued loss of manufacturing jobs to small businesses. Funding can be used for working capital, inventory, machinery and equipment and/or to provide technical assistance for specific projects that have been evaluated and determined to be necessary for stability and growth of a small business. Other use may include lean manufacturing, business management, turn-around

management, training, marketing/ exporting/ procurement, research and development and any other industry related service or assistance that would make a business more competitive or retain jobs at the discretion of the Commissioner of DECD.

Industrial Parks Program -- Technical and Financial Assistance

The purpose of the Industrial Parks Program is to create new sites for industrial employers and improve existing manufacturing facilities through the planning, development, and construction of industrial parks. DECD currently conducts the program under the Manufacturing Assistance Act (1990), but has been in existence since 1967. With this program, the State of Connecticut works cooperatively with municipalities and developers to create economic resources development throughout the state. There are two types of projects: landscaped industrial parks, and urban industrial parks involving the reuse of land and existing buildings in the state's urban centers.

Enterprise Zone Program and Enterprise Corridor Zone Program – Tax Credit

These programs make it attractive for manufacturers and certain designated service sector firms already located in an Enterprise Zone or Enterprise Corridor Zone to reinvest in that area and to attract new eligible businesses to stimulate job creation in those communities by offering 80% tax abatement on real and personal property for five years; and a 25% or 50% state corporate business tax credit for ten years. The Enhanced State Corporate Business Tax Benefit is subject to meeting a minimum hiring threshold. This incentive is available to manufacturers and certain qualifying service sector firms in the Enterprise Zones, the Northeast Enterprise Corridor Zone and Route 8 Enterprise Corridor Zones. Traditional Enterprise Zones are located in the following Targeted Investment Communities: Bridgeport, Bristol, East Hartford, Groton, Hamden, Hartford, Meriden, Middletown, New Haven, New Britain, New London, Norwalk, Norwich, Southington, Stamford, Waterbury, and Windham (Willimantic). Non-targeted Investment Community Enterprise Zones have been designated in Bloomfield, Plainville, and Stratford; and Northeast Corridor communities include Griswold, Killingly, Lisbon, Plainfield, Putnam, Sprague, Sterling and Thompson. Route 8 Corridor towns are Ansonia, Beacon Falls, Derby, Naugatuck, Seymour, Torrington and Winchester.

Brownfields Revolving Loan Fund (CBRLF) – EPA Financial Assistance

DECD offers low-interest loans to qualified applicants for environmental cleanup of contaminated properties in Hartford and Berlin. EPA funds the program. The applicant (any organization or business owner) must not be the responsible party of the contamination, and the property must meet eligibility criteria. The site must be environmentally characterized with an estimate for remediation provided by an environmental consultant (preferably a Connecticut-licensed environmental professional) and the applicant must enroll the property in the DEP Voluntary Remediation Program.

Urban Action Grant Program – Financial Assistance

This program is used to redirect, improve and expand state activities, which promote community conservation and development and improve the quality of life for urban residents of the state. Eligible applicants are: municipalities, non-profit corporations, for-profit sole proprietorships, partnerships and corporations.

Urban Sites Remedial Action Program – Technical and Financial Assistance

This program is designed to facilitate the transfer, reuse and redevelopment of potentially polluted commercial and industrial real property which otherwise would remain vacant and unproductive for the economy of the municipality, region and state. When necessary, the state can commit public funds to prepare the planning and implementation of the site remediation. These funds are intended as "seed capital" to expedite the project. DECD seeks recovery of state funds committed to a project.

Small Town Economic Assistance Program (STEAP) – Financial Assistance

The DECD administers, and the Office of Policy and Management (OPM) must approve STEAP funds for economic development, community conservation and quality of life projects for localities that are ineligible to receive financial assistance by statute. STEAP funds can only be used for capital projects; programmatic expenditures or recurring budget expenditures are not eligible for STEAP. Other ineligible activities include: 1) salt and sand sheds; 2) town office buildings and improvements; and 3) communications systems, such as police radios. Projects eligible for STEAP funds include: economic development projects such as (a) constructing or rehabilitating commercial, industrial, or mixed-use structures and (b) constructing, reconstructing, or repairing roads access ways, and other site improvements; transit; recreation and solid waste disposal projects, social service-related

projects, including day care centers, elderly centers, domestic violence and emergency homeless shelters, multi-purpose human resource centers, and food distribution facilities; housing projects; pilot historic preservation and redevelopment programs that leverage private funds; and other kinds of development projects involving economic and community development, transportation, environmental protection, public safety, children and families and social service programs.

Community Development Block Grant Program (CDGB Small Cities) – Financial Assistance

Since 1974, CDBG has been the backbone of improvement efforts in many communities, providing a flexible source of annual grant funds for local governments nationwide. The U.S. State CDBG Program provides states with annual direct grants, which they in turn award to smaller communities and rural areas for use in revitalizing neighborhoods, expanding affordable housing and economic opportunities, and/or improving community facilities and services. States must award at least 70% of their CDBG funds for activities that benefit low-and moderate-income persons (generally defined as members of low-and moderate-income families that earn no more than 80% of median income). These can be activities in which the majority of beneficiaries who benefit are low-and moderate-income or activities that benefit an area in which at least 51% of the residents are of low- and moderate-income.

Inner City Business Strategy Loan Guarantee Program – Financial Assistance

DECD will provide a 30% loan guarantee on loan amounts that are greater than $5,000 and not more than $250,000 will be eligible for the guarantee. DECD's maximum exposure under this program will be up to $300,000, which will leverage a $1,000,000 in direct financing to be provided by the Connecticut Economic Development Fund (CEDF). Currently $200,000 has been approved for this program. Loans enrolled in this program must not be eligible for the Microloan Guarantee Program for Woman-Owned and Minority-Owned Businesses. Eligible loan recipients must be engaging in one or more of the following activities to be considered eligible for the program: construction, leasehold improvements, purchase of machinery and equipment, projects that support lean manufacturing, technology upgrades, product diversification, improved marketing, joint ventures and alliances within a cluster, franchising, training that will support cluster activities, reuse of Brownfield Sites, job readiness programs, development of lab space, and activities

that mitigate crime. Eligible businesses must be located in one of the following communities: Bridgeport, Hartford, New Britain, New Haven, and Waterbury.

Micro Loan Guarantee Program for Women and Minority Owned Businesses (CEDF)

DECD, in partners with CEDF, provides loan guarantees on direct loans offered through CEDF. Eligibility applies to woman-and minority-owned businesses where a woman or a member of minority who is actively engaged in the daily affairs of the business with power to direct the management and policies of the business holds 51% of the stock. Businesses must be located in Connecticut and within a targeted or public investment community. Businesses can use the loan for general business purposes including working capital, machinery and equipment, leasehold improvements, construction and start-up funding.

APPENDIX H:
A BRIEF HISTORY OF SWM AND RECYCLING IN CONNECTICUT

In 1971, Connecticut had 144 landfills and 20 incinerators, each out of compliance with state regulations. Air pollution, groundwater contamination, and a landfill-use growth of 200 acres/year prompted the legislature to take action in bringing about change.[64]

The "Bottle Bill"

Over the past three decades, the way Connecticut handles solid waste has changed dramatically. The first major step in the development of recycling programs and markets resulted from a litter control measure enacted when the Legislature passed Connecticut's "Beverage Container Deposit and Redemption Law" (the "Bottle Bill") on April 12, 1978. That legislation, requiring redeemable deposit containers, was implemented on January 1, 1980.

Beyond Returnable Bottles and Cans

In 1987, another landmark event occurred when the Connecticut General Assembly passed a law codified as Section 22a-241a of the CGS establishing mandatory statewide recycling, and setting a goal of recycling 25% of Connecticut's solid waste by January 1, 1991. Nine items were designated to be recycled including glass food & beverage containers, used motor oil, vehicle (lead-acid) batteries, scrap metal, corrugated cardboard, newspaper, metal food & beverage containers, leaves, white office paper (private residences exempt).

In 1993, Connecticut's General Assembly passed legislation (Section 22a-220(f) of the Connecticut General Statutes), which, among other provisions, expanded the statewide recycling goal from 25% to 40% of the state's solid waste stream by the year 2000. To help achieve this goal, many municipalities added additional items to their programs including: plastic resins #1 & #2, magazines, discarded mail, and even textiles. Connecticut achieved a milestone that year, processing more than two million tons of trash and recyclables.

On May 1, 1996, nickel-cadmium batteries were added to the list of mandatory recyclables. They are recycled via retailers, businesses, municipalities and other sites though a take-back program sponsored by the battery manufacturers.
By October 1998, grass clippings were banned from solid waste disposal facilities. They are composted or left in place on lawns ('grasscycling'). They are banned from disposal at landfills and banned from incineration.

To facilitate the collection, processing and marketing of recyclable commodities, municipalities were encouraged to join one of 10 recycling regions. Towns belonging to regions send their collected recyclables to one of the five IPCs located in Stratford, Hartford, Danbury, Berlin and Groton where recyclable materials are prepared for market. Working through an IPC allows communities to take advantage of the economies of scale that a larger facility offers.

In 2005, DEP estimated that 57% of Connecticut MSW was incinerated at one of Connecticut's six RRF's (located in Hartford, Bristol, Bridgeport, Wallingford, Preston and Lisbon). The energy produced by the RRFs is sold to electric utility companies and the resulting ash is land filled); four percent was land filled in Connecticut; nine percent went out-of-state; and 30% was recycled. In addition, about 50,000 tons did not impact the SWM infrastructure because it was home-composted or grasscycled and was not collected.[65]

Connecticut Resources Recovery Authority

At least as important, historically, as the implementation of recycling in Connecticut, was the establishment of the CRRA -- a quasi-public agency to provide SWM services to municipalities and businesses through recycling or incineration. The Connecticut General Assembly passed legislation creating the CRRA in 1973 when Governor Thomas Meskill signed into law Section 22a-261 of the CGS. Bridgeport was the first site selected for a regional TTE project.

In 1978, the South Meadows area of Hartford became the second site for a regional resource recovery facility (RRF – also referred to as waste-to-energy facility or trash-to-energy –TTE) project. The Mid-Connecticut Project consisted of a 2,850 ton-per-day refuse-derived fuel RRF. Ultimately the Mid-Connecticut Project would include four transfer

stations (in Essex, Ellington, Torrington, and Watertown), the Hartford landfill, a regional recycling center (IPC) and a “Trash Museum” in Hartford.

By 1988 two RRFs—Bridgeport and Mid-Connecticut—were in start-up. During the next ten years one landfill, two additional RRFs, two recycling centers, and 11 transfer stations were sited and built. Today, the CRRA serves the citizens of Connecticut, through their local governments, with an integrated SWM system and provides waste management and recycling services to more than two thirds of Connecticut’s 169 cities and towns.

The state’s third RRF project was initiated in 1985 when the Southeastern Connecticut Regional Resources Recovery Authority (SCRRRA) was formed. Nine towns executed Municipal Services Agreements with SCRRRA that, in turn, contracts with CRRA for facility development services in Preston. The Preston facility opened in 1992. Construction of a third RRF in Wallingford began in 1986 and operation started in 1988.

A Bristol RRF began commercial operations in May 1988. Today, the plant is owned and operated by Covanta Bristol, Inc. a subsidiary of Covanta Energy under a 25-year agreement with the Bristol Resource Recovery Facility Operating Committee (BRRFOC), a consortium of towns. Covanta Energy is considered the largest RRF operator in the world.[66] Both the Mid-Conn and SECONN facilities were admitted to EPA's National Environmental Performance Track program, and are recipients the EPA’s New England Environmental Merit Award.[67]

Progress was not without its setbacks. In 1990, the VICON Company, operator of the Wallingford RRF, filed Chapter 7 bankruptcy. General partnership interests in the facility were purchased by a wholly owned subsidiary of Ogden Projects, Inc. The Mid-Connecticut Project was also ultimately impacted in 2001 by the Enron bankruptcy. However, CRRA’s new board and management worked to mitigate the impact of that loss, recovering more than $111 million that has stabilized the project's disposal fees.

In 1991, CRRA purchased land in Stratford as a site for a southwest regional recycling facility or IPC and issued bonds for the construction of the Mid-Connecticut Project Regional Recycling (or IPC) and Visitors Center in Hartford, the largest recycling center of its kind in the United States. The IPC, which began operations in 1992, accepted, in addition to

mandated glass and metal food and beverage containers, plastic containers that were not among items mandated for recycling by the state and project member towns were not charged a processing fee for residential recyclables delivered to the facility – which provided an incentive for the towns to recycle more and dispose less.[68]

Funding for the state solid waste recycling program was established under PA 86-1 Special Session II, which established CT's Recycling Program. The Program, which is codified under Sec. 22a-241 of the CGS, was initially funded with $10.0 million of State surplus funds. The uses of those funds are described under 22a-241(f). Authorized uses included: the costs associated with the development of a statewide recycling program plan, grants, and DEP administrative costs to name a few.

The program did not receive authorization for any dedicated annual fees, assessments or taxes to maintain the program until PA 89-385 Section 6, which was amended by PA 91-293, changing effective dates of implementation. PA 91-293 (now codified as 22a-234a) established a two-year assessment (at 40 cents/ton) for solid waste processed at resource recovery facilities or disposed at MSW landfills. Under that statute, the assessment ran from July 1, 1992 through June 30, 1994. Under Sec. 22a-241(f), DEP could use up to $800,000 annually of the receipts of the 40 cents/ton.

The 40-cents/ton assessment generated approximately $2.2 million in revenue, which was deposited, into the Recycling Program Trust Account. During that two fiscal year period, the DEP expended approximately $1.1 million in administrative costs. An amendment to 22a-241 (f) required DEP to provide a $1.3 million grant to the Southeastern Connecticut Regional Resources Recovery Authority (SCRRRA). That grant actually represented a tipping fee subsidy to SCRRRA, which was not provided to the region under Sec. 22a-219 a- 22a-219 e, due to a lack of sufficient available funds. The net available funds from the 40 cents/ton collected resulted in approximately $900,000 being available to DEP to support the State Recycling Program. The Recycling Program Trust Account was depleted by the end of FY 2005. Recycling funds were distributed as follows: bond funds totaling $34,000,000; this money was primarily used for capital purchases of equipment such as tub-grinders, recycling trucks, compost equipment and recycling bins. The majority of the bond funds were distributed for the development of regional recycling programs (including some directly to IPC costs [CRCOG, Bristol/TROC, SE]) and about $6 million was used to support

local recycling programs that were not part of regions. In order to be eligible, municipalities had to have operating local recycling programs.

Trust Funds totaling $5.2 million. This money was primarily used for public education, planning, project management and staff costs for regional coordinators. Again, the majority of trust fund money was allocated to regional program development and recycling public education support. A little over ½ million was allocated to municipal public education. The regions were the only entities eligible for recycling coordination staff support, generally for one year's time.

DOE/OPM Funds totaling $2,780,000. The funds from fuel overcharge monies obtained from OPM, were dedicated to two regional "demonstration" projects. The first project supported the regional recycling grant to the SW region and was awarded to SWEROC. $1,680,000 in funding to SWEROC was used for the purchase of household recycling containers (blue curbside containers). $1,100,000 was awarded to SCRRRA in 1986 (the first regional recycling grant). It was used to support the modifications to an IPC in Groton that was upgraded to serve the Southeast Region. (That IPC was later scuttled and replaced with the current facility on the same site).

Total Grant Funds to support recycling:

$ 34,000,000 Bonds
$ 5,200,000 Trust Fund
$ 2,780,000 Fuel Overcharge funds (OPM)

$ 41,980,000 Total Major Recycling Grant Support*

**Over the years, there had also been additional but smaller, specialized grants awarded to municipalities/regions with other OPM funds ($260K), composting grants ($200K and office paper recycling grants and grants to assist in business recycling ($200K estimated).*

There is currently a $1.50/ton assessment (increased from the original $1/ton) on solid waste processed at resource recovery facilities in Connecticut. The revenue collected from the Solid Waste Assessment under Sec. 22a-232 and 22a-233 is used to support Connecticut's solid waste management program, CT's air management program related to resource recovery emissions and pollution prevention in general. In the past the Solid

Waste Assessment was not used to support recycling program administration. Currently some of that is used to support the DEP recycling program.

The Present Situation

Connecticut has advanced considerably since the 1989 Mt. Auburn recommendations. The state's regional IPCs and other recycling facilities are able to process and market Connecticut material collected for recycling. A small amount of material collected for recycling in Connecticut is also processed at out-of-state recycling facilities. Plastics are currently being processed at each regional IPC and at many other Connecticut recycling facilities. A greater number of electronic devices will be recycled once the requirements of Connecticut's 2007 electronics recycling law become effective beginning in 2009. The expansion of recycling facilities from the Stratford IPC to the most recent expansion of CRRA's Hartford IPC demonstrates two decades of commitment by state and private partnerships to further the goals of recycling. This has helped absorb the growing list of recyclable materials, and stabilize market supplies of recycled materials.

APPENDIX I:
REGIONAL AND NATIONAL RECYCLING ORGANIZATIONS

While DECD and DEP cooperate with other states, such involvement should be sustained and increased within regional and national organizations. The large number of state-level, multi-state, and regional organizations makes the growth of recycling industries more likely to succeed, and opens possibilities for out-of-state markets and marketing via new contacts and the exchange of ideas.

There are several organizations that provide guidance in expanding recycling industry markets. The Northeast Recycling Council, Inc. (NERC) is a ten-state, non-profit organization that leverages the strengths and resources of its member states to advance an environmentally sustainable economy in the Northeast by promoting source and toxicity reduction, recycling, and the purchasing of environmentally preferable products and services.[69]

NERC's Business Assistance Guide is a comprehensive compendium of business resources available to start-up and expanding recycling businesses in the Northeast states. The Guide provides state-specific contact and program information about grant and loan programs, tax incentive programs, sources of technical support, and other resources for assisting recycling businesses in getting established or expanding. Each listing includes a contact name, address, phone, fax, email, and web link (as available).

NERC's members are state recycling and economic development agencies. Advisory members include utilities, trade associations, private businesses, state and regional recycling organizations, non-profit organizations and other interested parties. NERC is the only forum in the Northeast for cooperative research, collaborative action, and networking on regulatory, market and business development issues that links recycling and economic development such that related industries are promoted and strengthened.

NERC provides direct services to recycling entrepreneurs, including business plan review, coaching in presentation skills, and identifying sources for market information, and provides

referrals to other market information sources. NERC has been working on recycling business development issues for the past nine years, and among others, has implemented the following projects:

- An Environmentally-Preferable Purchasing Mentor Project (2004-2005);
- Two regional conferences per year on recycling market development issues;
- Recycling finance seminars for service providers;
- Northeast recycling investment forums (1996 -1999); and'
- Conference and meeting presentations to various financiers and service providers.

NERC produces the following publications[70] related to recycling business development:

- Investors Research Guide to the Recycling Industry, Second Edition;
- Mergers and Acquisition Activity in the Recycling Industry, Fourth Edition;
- Financial Transactions of the Paper, Plastics and Compost Industries;
- Recycling Economic Development Bulletin;
- Recycling Economic Information Study; and.
- Regional Collaboration.

Other regional organizations include:

- The Northeast Waste Management Officials' Association (NEWMOA)[71] coordinates interstate hazardous and SWM, pollution prevention activities, and supports state waste programs;[72] and,
- The Northeast Resource Recovery Association (NRRA) "provides cooperative purchasing programs, educational and networking opportunities, technical assistance, and cooperative marketing programs" and works to make the recycling programs of members efficient and financially successful.[73]

Other multi-state organizations include:

- Mid-America Council of Recycling Officials (MACRO);

- Mid-Atlantic Consortium of Recycling and Economic Development Officials (MACREDO);
- Mid-Continent Recycling Association (MCRA);
- Pacific Northwest Economic Region (PNWER);
- Southern States Waste Management Coalition (SSWMC); and,
- Southwest Public Recycling Association (SPRA).

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[41] U.S. EPA http://www.epa.gov/epaoswer/non-hw/reduce/epr/about/index.htm.

[42] CDA, for example, has indicated that upon initial research, such an exemption would be possible even without new legislation.

[43] State of Connecticut Department of Environmental Protection *State of Connecticut State Solid Waste Management Plan, Amended December 2006*, Appendix F, 2007, http://www.ct.gov/dep/lib/dep/waste_management_and_disposal/solid_waste_management_plan/swmp_final_appendices.pdf.

[44] U.S. Environmental Protection Agency (EPA) (January 30, 2007). "Comprehensive Procurement Guidelines (CPG): Products," http://www.epa.gov/epaoswer/non-hw/procure/products.htm.

[45] Mt. Auburn's 1989 plan contained three appendices in separate volumes: Volume 1: "Assessment of Existing and Potential Connecticut Markets for Recovered Newspapers, Steel Cans, and Plastics," consists of five sections discussed below; Volume 2: "Review of Existing Connecticut Development Programs Available to Promote and Support the Use of Recovered Materials"; and, Volume 3: "Survey of Market Development Initiatives in States Other than Connecticut."

[46] Presumably Mt. Auburn recommended this relating to the viability of a specific recycling process involved, not the strength of the business; and where applicable, that CDA should consider incorporating loan review assistance from recycling experts at DECD/DEP.

[47] The U.S. Census Bureau *County Business Patterns 2005* indicates five paperboard establishments in Connecticut employing 531 people. They include Kimberly-Clarke in New Milford, Simkins Industries in New Haven, Caraustar Industries' mill in Sprague (both acquired by Toronto-based Cascades, Inc. in 2006), International Paper (headquarters relocated from Stamford to Memphis Tennessee) listing consumer packaging at its Sherwood Waterbury location. MeadWestvaco Corporation of Stamford is a leading manufacturer and distributor of school supplies in the United States and Canada.

[48] Spaceboard ™ is a process technology that forms recycled fibers into three-dimensional (3-D) structural products. Processing adjustments can be made to produce desired performance properties of the end product. This processing flexibility allows placement of fibers within a product for maximum structural and material efficiency. The Forest Products Laboratory (FPL) has six related patents for the Spaceboard™ process. See Hunt, John F. and Rose Smyrski. "Spaceboard™: Today's Structural Recycled Fiber Products for the Future." in Laufenberg, Theodore J., ed. *Meeting Society's needs through forest products technology marketing. Proceedings, technology transfer national workshop*. 1994, November 7-10. Madison, WI. U.S. Department of Agriculture, Forest Service, Forest Products Laboratory: 15–16. http://www.fpl.fs.fed.us/documnts/pdf1994/hunt94a.pdf. See also: University of Michigan School of Natural Resource and Environment National Pollution Prevention Center (NPPC) for Higher Education, (June 26, 2006), "Waste Prevention." *Recycling and Reuse-Unit A.* http://www.umich.edu/~nppcpub/resources/compendia/ARCHpdfs/ARCHr&rA.pdf.

[49] NERAC began operating in 1966 as the New England Research Application Center, an experimental collaboration between the University of Connecticut and the National Aeronautics & Space Administration (NASA). Over time, NERAC broadened its technology resources to encompass engineering, scientific and business disciplines. In 1985, NERAC separated from the University of Connecticut and incorporated under the name NERAC, Inc. having succeeded in its NASA-sponsored mission, NERAC severed its ties with NASA in 1991. NERAC, headquartered in Tolland, Connecticut, provides customized research services for industrial sector clients. http://www.nerac.com/.

[50] The cheapest paper made (entirely of ground wood pulp) used, for example, for printing newspapers and other commercial products, but unstable chemically since its high acidity causes rapid deterioration. National Park Service (NPS) Publications (February 5, 2001). C*uratorial Care of Paper Objects* Appendix, http://www.nps.gov/history/museum/publications/MHI/Appendix%20J.pdf.

[51] A soil amendment is any material added to a soil to improve its physical properties, such as water retention, permeability, water infiltration, drainage, aeration and structure. The goal is to provide an environment for healthy roots. See Davis J.G. and C.R. Wilson (June 25, 2007). Colorado State University Extension, http://www.ext.colostate.edu/PUBS/GARDEN/07235.html.

[52] DEP (November 2005). "Recycling in Connecticut," http://www.ct.gov/dep/cwp/view.asp?a=2714&q=324892&depNav_GID=1645.

[53] DEP (November 2005). "Separating Recyclables from the Waste Stream," http://www.ct.gov/dep/cwp/view.asp?a=2714&q=324898.

[54] DEP (2007). "Regulating Waste: Storage, Treatment, Transportation, and Disposal," http://www.ct.gov/dep/cwp/view.asp?a=2718&q=325504&depNav_GID=1646%20.

[55] http://www.das.state.ct.us/Purchase/Epp/Index.htm

[56] See Note 54.

[57] Executive Order 12873. "Federal Acquisition, Recycling, and Waste Prevention." The White House. October 20, 1993. http://www.thecre.com/fedlaw/legal25/eo12873.htm.

[58] See Note 54.

[59] See Note 54.

[60] DEP (2005).

http://www.ct.gov/dep/cwp/view.asp?a=2714&q=324920&depNav_GID=1639#implementationhandbook .

[61] This information was provided by Connecticut Innovations (CI), Inc. Rocky Hill, Connecticut as well as CI literature.

[62] Subordinated direct loan participators with private-sector lenders so they meet their borrowers' financing requirements.

[63] Connecticut Development Authority. Email from Matthew L. Stone and Thayer Talbott. July 17, 2007.

[64] Hickman, H. Lanier, Jr. (May/June 2000) "A Brief History of Solid Waste Management in the US, 1950-2000" Municipal Solid Waste Management Magazine . https://www.forester.net/msw_0005_history.html.

[65] Connecticut DEP "Recycling in Connecticut" http://www.ct.gov/dep/cwp/view.asp?a=2714&q=324892&depNav_GID=1645.

[66] PR Newswire The Covanta Holding Company (February 12, 2007) "Covanta Announces Partnership with Changing Iron & Steel, Entry into Chinese Energy-from-Waste Market," http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=104&STORY=/www/story/02-12-2007/0004525249&EDATE=.

[67] Covanta Holding Co. http://www.covantaholding.com/environment.shtml.

[68] CRRA history is based on a timeline on the CRRA Website, http://www.crra.org/pages/timeline.htm.

[69] Northeast Recycling Council (NERC) (2007). http://www.nerc.org.

[70] NERC Various years. http://www.nerc.org/.

[71] Northeast Waste Management Officials' Association (NEWMOA) (2007). http://www.newmoa.org.

[72]NEWMOA (2007). http://www.newmoa.org .

[73] Northeast Resource Recovery Association (NRRA) (2006). http://www.nrra.net.