



PUBLIC RESPONSE TO

**Connecticut Department of Energy & Environmental Protection
Connecticut Materials Management Infrastructure**

Request for Information

Relative to materials management infrastructure- including disposal infrastructure, recycling infrastructure, and composting infrastructure- to meet the goals of the **2023 Draft Comprehensive Materials Management Strategy Amendment** to improve diversion of municipal solid waste for recycling and regaining self-sufficiency in managing municipal solid waste disposal within Connecticut's borders.

THE PROBLEM

Connecticut is facing major problems with **inadequate statewide processing capacity** to take care of its municipal solid waste. The existing systems handling municipal solid waste in Connecticut are waste projects which utilize “Mass Burn” systems. All of them were developed in response to an archaic system of handling garbage in Connecticut which relied on inefficient burning of garbage and use of landfills. **These projects, developed between 1985 and 1990, are now old and highly polluting.** They do not meet the lower emissions of state-of-the art modern technologies.

The existing plants were all developed utilizing special laws which provided for creation of Resource Recovery Authorities in conjunction with municipalities. The “Authorities” were able to develop Resource Recovery Facilities which were designed to receive unprocessed Municipal Solid Waste (MSW), perform some recycling and burn the remainder to create electricity. The ash created by the burning of the MSW was then placed in landfill systems.

The statute creating the Resource Recovery Authorities allowed these entities to issue bonds used for the financing of the development of the projects. The statute also allowed these facilities to enter into long-term electricity contracts with Connecticut utility companies at preferred rates. The electricity revenue contracts enabled the Resource Recovery Authorities to pay off the bonded debt and were usually tied to the term of the bonds issued by the Authority. At the time the initial laws were enacted this solution was a major improvement over previous methods of handling Connecticut’s garbage.

Some improvements were implemented to improve waste handling mostly dealing with increasing the amount of recycling at each Resource Recovery Facility. **As concerns about polluting emissions created by the burning of the MSW increased, there was little or no implementation of technological methods to take care of these problems.** Concerns about the landfilling of ash from the facilities also made it difficult to be able to permit much needed new landfills. No solutions were provided for capture and conversion of CO₂ emissions.

The decision to close the MIRA facility in Hartford after a number of attempts to replace the facility failed has resulted in the current situation which has forced many Connecticut municipalities to transport their MSW out of state to landfills located in Pennsylvania and Ohio.

The most current Connecticut waste-to-energy information (2021) provides a snapshot of how MSW was handled prior to the closing of the MIRA facility in

Hartford in 2022. The annual MSW capacity was almost 2,200,000 tons at the five resource recovery plants. Actual MSW in the 2021 time period was just under 1,900,000 tons. With the closing of the MIRA plant in Hartford, more than 700,000 tons of MSW capacity was terminated.

Data provided from U.S. Energy Information Administration and U.S. Environmental Protection Agency

Connecticut's Waste to Energy Projects (2021)

FACILITY	YEAR APPROVED	TONS PER DAY	GROSS MWH	2021	2021
				NET MWH	TONS MSW
COVANTA BRISTOL ENERGY	1985	650	16.7	13.2	214,858
COVANTA SCCRA PRESTON	1986	600	14.5	13.9	232,979
BRIDGEPORT	1985	2,250	67	53.52	737,366
LISBON	1990	500	15	11.43	193,732
MIRA	1984	2,000	68	21	502,944
TOTAL		6,000	181.2	113.05	1,881,879

While the four remaining resource recovery projects continue operations, only a portion of MIRA's waste processing was taken over by these plants. **The balance - in excess of 500,000 tons per year is now being shipped to landfills in Pennsylvania and Ohio.** The remaining four Resource Recovery Facilities located in Bridgeport, Bristol, Lisbon and Preston are operating at maximum capacity but still using older, polluting technology. These remaining projects are all in excess of 30 years old. All of them will require substantial expenditures to be able to meet current environmental standards. All of them are using waste burning technology which produces substantial CO₂, Methane and Nitrogen Oxides.

Connecticut's Waste to Energy Projects Emissions

FACILITY		2021	2021	2021
		CO ₂	METHANE	NITROUS OXIDE
COVANTA BRISTOL ENERGY	METRIC TONS	81,172	1,802	2,819
COVANTA SCCRA PRESTON	METRIC TONS	90,597	1,998	3,126
BRIDGEPORT	METRIC TONS	273,392	6,074	9,503
LISBON	METRIC TONS	68,826	1,470	2,299
TOTAL	METRIC TONS	513,987	11,344	17,749

THE SMART SOLUTION

There is a solution available to the State of Connecticut which can provide a positive, environmentally friendly solution to Connecticut's waste problem. That solution includes intense recycling coupled with waste diversion and clean, efficient, low emissions power generation. This approach will greatly improve Connecticut's environment and provide new MSW capacity and jobs. Simple to implement, with minor changes to existing legislation, this alternative approach can also help stabilize electrical prices for Connecticut consumers and save ratepayers millions of dollars. That solution is called ***SMART Technology Systems***.

These are the key methods that the **SMART SOLUTION** uses:

- Implementation of "world class" modern recycling methods.
- Recycling of 99% of metals, 98% of glass and preparation of "Refuse Designed Fuel".
- Inclusion of anaerobic digestive systems as part of the waste processing system.
- Utilization of proven "gasification technology" in place of "waste burning technology".
- Production of Class 1 Baseload electricity using "synthesis gas" and steam cycle as well as "biogas" and fuel cell technologies for energy conversion.
- Use of carbon capture technology to reduce air emissions including CO₂ plus conversion into "food grade" CO₂.
- Beneficial reuse of cleaner ash residues for use in cement and other products.
- Increase landfill diversion rates to reduce landfill use as much as possible.
- Tipping fee stabilization.

THE SMART SOLUTION WILL IMPLEMENT & ACHIEVE THE FOLLOWING GOALS:

- Connecticut has established a comprehensive material management strategy and solid waste plan which includes aggressive recycling goals. ***SMART's*** project helps Connecticut meet its recycling goals. ***SMART's*** technology package can help Connecticut increase recycling and lower emissions.
- ***SMART*** Waste Processing System uses proven "gasification technology" in place of "burn technology" to convert refuse derived fuel to a cleaner synthesis gas/ lower greenhouse gas which should qualify as a Class I energy source.

- The **SMART** technology converts/recycles plastics to a clean renewable gas while meeting emissions goals.
- **SMART** technology will reduce a significant amount of CO₂ while diverting million tons of waste from landfills and produce clean, base load electricity on a 24 x 7 basis.
- **SMART** uses technology with proven track records and best-in-class emission performance. Our projects will provide high capacity, high recycling rate, and a high landfill diversion rate, all within a small footprint while holding costs down for Connecticut residents. This approach will modernize MSW processing capacity and production of renewable energy with a high-capacity factor (>90%).
- The **SMART** approach also provides a carbon dioxide capture and conversion system to achieve maximum emissions reduction.
- Using minor modifications to existing statutes **SMART's** approach can help stabilize tipping fees in Connecticut.
- The **SMART** systems are based upon extremely adaptive technologies that will facilitate the integration of next-generation upgrades as they become available.
- The **SMART** solution will confirm Connecticut's position as a national leader in addressing the MSW challenge.

SUGGESTED REQUIRED DEVELOPMENT CRITERIA ELEMENTS

Based on our review of Connecticut's laws and policies we have evolved a list of development criteria to be applied to any waste processing projects:

- 1) **PROJECT LOCATION**- All proposed projects should be located away from major urban and residential areas. Those projects proposed to be located in environmental justice communities should be physically located so as to have little or no impact on those communities.
- 2) **PROJECT SIZE AND TYPE**: Proposed projects should be sized to achieve maximum environmental and recycling benefits. It is suggested that wherever possible municipal solid waste processing systems be developed in locations with anaerobic processing systems in proximity to minimize transportation of waste. Recycling technology on these properties should be designed to facilitate separation of anaerobic waste packages from MSW for onsite processing for organic wastes.

- 3) **TRANSPORTATION SYSTEMS:** It is imperative that proposed projects be located in proximity to existing railroad and highway systems for delivery of waste and also for shipping of materials to be recycled.
- 4) **EMISSION REDUCTION SYSTEMS:** Emission reduction and conversion needs to be an integral part of all future waste processing systems to achieve important environmental goals, including carbon dioxide reduction.
- 5) **PROVEN GASIFICATION SYSTEMS:** Clean gasification systems which convert refuse derived fuel into a cleaner synthesis gas with lower greenhouse gas impacts should qualify as a Class I Renewable Energy source as anaerobic digestion biogas does under current CMMS standards.
- 6) **TOTAL INTEGRATED PACKAGE:** The total integrated recycling and renewable energy conversion facility should qualify as a low emissions advanced renewable energy conversion facility as defined in the Connecticut Renewable Energy Portfolio Standard.
- 7) **PROJECT DEVELOPMENT PLAN:** It is suggested that the State of Connecticut evolve its **Comprehensive Materials Management Strategy (CMMS)** for development and implementation of new waste processing projects and evolve a cost-effective funding mechanism for these projects. The funding mechanism should include additional long-term financing for implementation of new technical improvements to be implemented at these projects as they evolve. As existing waste to energy facilities need to be replaced, the **CMMS** will be able to provide new projects. These will become permanent waste processing projects to meet Connecticut's needs going forward and achieve the waste processing and environmental benefits in a cost-effective manner.