State of Connecticut

Resources Recovery Task Force

Final Report

December 13, 2013
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Public Act 13-285, An Act Concerning Recycling and Jobs, established a task force to study the operations, financial stability, and business models of resource recovery facilities operating in Connecticut. The Act specifically required the task force to review statutes and regulations concerning renewable energy certificates for waste to energy facilities, explore whether resource recovery facilities should be defined as electric municipal utilities, analyze the potential for new forms of bilateral contacts, and make “any other recommendations the task force deems appropriate concerning the future of resource recovery facilities in the state and the long-term financial status of such facilities.” The thirteen-member panel consisted of members appointed by the Governor and legislative leaders.
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INTRODUCTION

In the 1970s, Connecticut policymakers recognized the environmental hazards of landfills, which can endanger the ecosystem, human health, and the environment. At the time, waste-to-energy technology, which produces electricity by burning solid waste, was seen as a preferable method of disposal. As state policy embraced the technology, a quasi-public agency was formed in 1973 to accelerate the construction and operation of waste-to-energy plants (also called resource recovery facilities, or RRFs). The nonprofit Connecticut Resource Recovery Authority (CRRA) was granted the authority to issue bonds for the construction of plants in the state,¹ and by 1993, the Authority had managed the construction and operation of plants in Bridgeport, Bristol, Hartford, Lisbon, and Wallingford. CRRA began offering recycling services in 1990 and added single-stream recycling for some of its member towns beginning in 2008.²

Private waste-to-energy operators entered the market in the 1980s and over time acquired four of the five plants built by CRRA. The MidConn plant in Hartford continues to be owned and managed by the Authority. Two private operators, Covanta and Wheelabrator, now manage the disposal of a majority of the municipal solid waste produced in the state, while CRRA processes approximately 30 percent of the total, approximately 700,000 tons/year, at its MidConn facility.

One Policy Goal Achieved, another Deferred

The shift to waste-to-energy technology was highly successful in minimizing the amount of solid waste sent to landfills. There is now only one landfill in the state that receives municipal solid waste (MSW). That landfill, in Windsor, Connecticut, takes in less than 10,000 tons of MSW per year. In 2010, the Department of Energy and Environmental Protection (DEEP) reported that 92 percent of MSW was not disposed of in landfills. Of this amount, approximately one-third is recovered through recycling and two-thirds is combusted for energy. The combusted portion of Connecticut’s trash is converted to more than one million megawatt hours of electricity, enough to power more than 100,000 homes.³

While the adoption of waste-to-energy technology as the core of the state’s waste disposal infrastructure represents a successful implementation of the state’s policy to minimize landfilling, progress toward the 1973 Public Act’s call for source reduction and recycling has been mixed. While recycling rates rose through the 1990s, they have since

¹ Public Act 73-549 established the Connecticut Resource Recover Authority (CRRA).
leveled off, and today an estimated 24 percent of waste is diverted from the waste stream through recycling, close to the 25 percent target set by the state more than twenty years ago in 1991.\(^4\) In 2006, DEEP renewed a call for increased reuse or recycling, setting a goal to achieve a rate of diversion from disposal (including energy recovery or landfill) of 58 percent by 2024.\(^5\) In 2012, Governor Dannel P. Malloy convened the Modernizing Recycling Working Group to study approaches to increase recycling and source reduction in the state. The working group affirmed the state’s materials management hierarchy articulated by both United States Environmental Protection Agency and Connecticut law. Specifically, the Working Group identified source reduction, reuse, recycling, and composting as the foremost methods for solid waste management in Connecticut, with energy recovery at waste-to-energy facilities preferred over incineration without energy recovery or landfilling.\(^6\) Additionally, the Governor’s working group re-affirmed the state’s 58 percent diversion target.

**Continued Reliance in a Changing Market**

While source reduction and recycling are poised to receive renewed emphasis in Connecticut’s waste policy in the years to come, the state remains heavily reliant on waste-to-energy technology. One reason for this is the state’s long-held preference for waste self-sufficiency — the pursuit of policies which minimize the need to send waste to be disposed in other states. Environmental advocates and others contend that managing waste in-state allows a greater degree of control in avoiding the other, less preferred disposal methods (e.g., landfilling or incineration). From an economic perspective, in-state disposal at waste-to-energy plants allows municipalities and haulers to avoid the transportation costs of sending waste out of state. The policy of waste self-sufficiency was revisited by the Modernizing Recycling Working Group in 2012. After extensive study, the group acknowledged that interstate regional solutions for managing some special wastes (e.g., Construction and Demolition waste, and certain Extended Producer Responsibility, or EPR, materials) may be a preferred option. The Working Group also highlighted the importance of working on a multi-state regional level to improve materials management practices and build infrastructure capacity for recycling a range of materials.\(^7\)

Recent market challenges affecting both CRRA and the private operators prompted the state to examine possible options to maintain the viability of waste-to-energy as a bridge to a transformed waste management system in which more materials are diverted through recycling. A decrease in the wholesale price of electricity, driven in large part by

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\(^5\) This target was stated in the state’s Solid Waste Management Plan, online at http://www.ct.gov/deep/cwp/view.asp?a=2718&q=325482&deepNav_GID=1646%20


increased natural gas production and low natural gas prices, is a positive reflection of the Governor’s energy policies, which promote cleaner generation and seek to lower costs for consumers. Electricity price decreases also, however, diminish revenue for the state’s waste-to-energy operators, and were cited by CRRA as a cause of future projected operating deficits. Other factors, including the property taxes paid by private operators, dated and inefficient technology, and the expiration of long-term contracts with municipalities, have raised the possibility that one or more plant in the state may close, potentially compromising the state’s waste self-sufficiency and increasing disposal costs for municipalities.

The Connecticut Legislature convened the Resources Recovery Task Force (Task Force) through its passage of Public Act 13-285 to study “the operations, financial stability, and business models of resource recovery facilities operating in Connecticut.” Fundamentally, the Task Force was asked to study the desirability of interventions to stabilize the waste-to-energy market.

Public Concerns: Environmental Justice and Recycling

Prior to making its recommendations, the Task Force considered the written and verbal testimony of over twenty individuals representing over one dozen organizations. Among the comments were concerns about the human health impacts of waste-to-energy plants sited in urban communities. While waste-to-energy plants are subject to strict pollution controls, it was alleged that harmful emissions are still released. Task Force members felt it will be important to consider these concerns as the state determines its future reliance on waste-to-energy technology. In addition, a number of comments urged the state to accelerate its progression toward increased source diversion and recycling. The Task Force foresees a rebalancing of the state’s waste disposal infrastructure away from waste-to-energy and toward source reduction and recycling. It is hoped that this can be accomplished without drastic budgetary repercussions for cities and towns, and ultimately, taxpayers throughout the state. That is why, while the Task Force supports the state’s policy toward increased diversion, it recognizes that waste-to-energy should remain a viable option in the state during this transition.
EXECUTIVE SUMMARY OF FINDINGS

Market Assessment

Findings:

- The State of Connecticut's stated waste policy prefers source reduction and recycling to waste-to-energy, and ranks landfill disposal as the least desirable option.

- Connecticut's current primary method of disposing of solid waste is through waste-to-energy.

- The infrastructure that will facilitate the state’s goal to dramatically increase recycling and source-reduction by 2024 is early in its development, necessitating a continued — if declining — reliance on waste-to-energy.

- While each of the state’s waste-to-energy plants faces unique market conditions, the waste-to-energy market as a whole is challenged by decline in electricity prices, a reduction in the waste available for conversion, competition from out-of-state alternatives, and the inequitable application of the solid waste assessment.

- Waste-to-energy revenue is driven at least 60 percent by tipping fees which are negotiated between the operators and their customers. When forming new contracts, operators have the option of raising tipping fees to offset electricity price decline. This has the potential to adversely impact municipal budgets and increase out-of-state disposal, but also allows waste-to-energy operators to account for market factors in their pricing.

- The closure of either of the state’s two largest waste-to-energy plants, Bridgeport Resources Recovery Project and Hartford’s Mid-Connecticut Project, has potential to create a surplus of waste that could not be accommodated by the remaining plants, which are operating near capacity. This is would lead to an increase in the disposal of waste in out-of-state landfills, and could create a non-competitive environment with increased costs for municipalities.

Recommendations:

- Given the uncertain sustainability of the state’s waste-to-energy infrastructure, the state should accelerate diversion, product stewardship, and the creation of the infrastructure and regulatory environment necessary to reduce the state’s
dependence on waste-to-energy. These steps should be taken while seeking to minimize adverse impacts on municipal budgets.

- Market interventions intended to increase revenue for private waste-to-energy companies should continue only for so long as is necessary for the state to successfully implement a waste management policy which increases source reduction and recycling and substantially reduces reliance on waste-to-energy.

**Dual-Commodity Contracting**

Findings:

- Dual-commodity contracting (referred to Public Act 13-285 as “bilateral contracting”) is a conceptual contract framework in which waste-to-energy operators contract with a municipality or group of municipalities to both dispose of municipal solid waste and to provide commercial and residential electricity.

- Dual-commodity contracting may bring value to both communities and waste-to-energy industry by providing some stability for annual budgets.

- One way to structure dual-commodity contracts is to establish a long-term tip fee for waste disposal and lock in the electricity price for a set term with a re-opener to be negotiated (this provides both parties with the necessary predictability and flexibility). Both parties may see value in aggregating the load to secure the best block pricing in the market that could be shared between them. The same value would be expected through the MSW component.

- There do not appear to be any statutory or regulatory obstacles that need to be modified in order for RRFs and municipalities to explore dual-commodity contracting. The parties are free to negotiate and come to terms that make sense for both/all sides.

Recommendations:

- Municipalities and the State of Connecticut should consider whether dual-commodity contracts may offer value and stability for their particular needs.

**Renewable Energy Credits (RECs)**

Findings:

- As the state begins development of the next Solid Waste Management Plan, it will identify the future solid waste management needs of the state. This is likely to include an overall review of the solid waste management system to ensure the state
remains a national leader and that the state does not slip back and begin long haul land filling.

- The state will continue to incorporate the solid waste hierarchy elements including goals for WTE capacity over a multi-decade period, as well as other detailed diversion targets and implementation strategies.

- The potential greenhouse gas mitigation achieved by waste-to-energy technology could be an environmental benefit to the state.

Recommendation:
- The state should consider restructuring the Class II RECs to more fully account for the value of the greenhouse gas reduction and environmental benefits of WTE facilities relative to landfills. In its analysis, the state should consider REC structures in other states, as well as measurements of the net lifecycle greenhouse gas mitigation achieved by waste-to-energy technology.

**Electrical Municipal Utility Definition**

Findings:
- The addition of waste-to-energy plants to the definition of “electrical municipal utilities” as referred to in Connecticut General Statutes 4a-57 would allow the State of Connecticut to enter into direct purchase agreements with these plants to purchase electricity for State-owned facilities within their service areas without having to engage in the competitive bidding process.

- The change would have limited impact, and would benefit CRRA’s MidConn plant more than others, as it is sited in Hartford and could potentially contract directly with the State to provide electricity to State government facilities in the capitol city.

Recommendations:
- The Task Force makes no recommendation, but recognizes that such an approach would give the state greater flexibility to enter into such contracts, which have the potential to provide new revenue to waste-to-energy-plants.

**Solid Waste Assessment**

Findings:
- The State of Connecticut currently collects a $1.50/ton solid waste assessment for waste processed by the state’s waste-to-energy plants. However, the same
assessment is not imposed for waste disposed in landfills, either in-state or out-of-state, or other out-of-state disposal alternatives.

- The unequal application of the solid waste assessment provides a competitive advantage for landfills and other methods of disposal, because those methods can pass the savings on to customers in the form of lower tipping fees. This creates a perverse incentive that is contrary to the state’s policy favoring in-state disposal and placing resource recovery above landfilling in the waste hierarchy.

- If diversion rates increase as forecast by DEEP, increased competition for the remaining municipal solid waste between waste-to-energy operators and for-profit landfills may make this $1.50/ton assessment an even greater relative disadvantage for the state’s waste-to-energy plants, and has the potential to generally undermine their ability to remain competitive.

Recommendations:
- The state should extend the solid waste assessment to tonnage disposed in landfills, both in and out-of-state, as well as all other out-of-state disposal alternatives.

- The state should apply revenues realized from this expansion to programs that promote source reduction and recycling, in furtherance of the goals of the state’s Solid Waste Management Plan.
THE WASTE-TO-ENERGY MARKET OUTLOOK IN CONNECTICUT

An assessment of the sustainability of the waste-to-energy market in Connecticut is a necessary step when considering the current waste disposal infrastructure. This analysis is complicated by the fact that the profitability of waste-to-energy hinges on complex market forces which are difficult to forecast in the long term, including wholesale electricity prices, out-of-state disposal costs, spot-waste prices, and commodity prices for recovered materials.

In studying the market in Connecticut, the Task Force heard presentations from the three waste-to-energy operators in the state, Covanta, Wheelabrator, and CRRA. Although each faces unique challenges, all agreed that there is a structural problem with the waste-to-energy business model. This problem presents itself in the form of two significant challenges: 1) a reduction in the price of electricity; 2) a reduction in waste volume as reuse or recycling increases.

Previously, waste-to-energy facilities had long-term contracts that provided stable revenues from the sales of electricity at prices more favorable than today. Most of those contracts recently expired and some of the waste-to-energy facilities in Connecticut are experiencing a loss in revenue from a lowering of the price received for the electricity they generate.

Also, while waste-to-energy facilities report that they are operating at or near capacity, further efforts to reuse or recycle waste may mean these facilities could experience a shortfall in waste as a result of the effort to increase the state’s recycling rates.

It is apparent that each plant and each company has unique challenges. While certain general trends impact all plants alike, such as lower electricity revenue over the last five-year period, the viability of any single plant is driven primarily by differences in operation, technology, and geography. For example, the Bridgeport facility, owned and operated by Wheelabrator, paid $12.1 million in taxes to the City of Bridgeport in 2012, an amount that caused the plant to post a financial loss for the year. CRRA, which had projected millions in operating losses in coming years, released a transition plan in December 2013 that claimed to solve the projected deficit through operational efficiencies and borrowing for capital improvements.

What is clear to the Task Force is that the closure of either of the state’s two largest plants would create a surplus of waste that could not be managed by the remaining plants, which are operating near capacity. Such a closure could lead to an increase in the disposal of waste in out-of-state landfills, and could create a non-competitive environment where operators raise their tipping fees substantially, adversely impacting municipalities. Based on information reviewed by the Task Force, it appears that both the Bridgeport Resources Recovery Project and Hartford’s Mid-Connecticut Project, the state’s two largest facilities, have faced significant financial challenges. While CRRA now contends it can return to
financial stability through operational and budgeting measures, its outlook is based upon projections that foresee a rise in wholesale electricity prices. In the case of Wheelabrator’s Bridgeport facility, the company stated that the plant has not shown a profit since 2009. This may be due in large measure to the plant’s annual tax obligations, but the company also cites electricity pricing and other market forces as contributing factors.

Given what it understands to be the current state of the waste-to-energy market, the Task Force recommends that the state consider two complementary approaches:

First, the state should increase economic incentives to accelerate the construction of modern reuse and recycling and disposal alternatives, including anaerobic digesters to process organic waste, so that the reliance on waste-to-energy technology is diminished. Action should be taken before potential waste-to-energy plant closures disrupt the state’s waste economy and force an abandonment of the policy of waste self-sufficiency.

Second, the state should consider offering limited and temporary market incentives for waste-to-energy operators to help the state transition to greater reliance on source-reduction and recycling. Any such incentives must be short-term and must be keyed to the achieving specific benchmarks, for example, meeting the state’s 58 percent recycling goal.

RENEWABLE ENERGY CREDITS

In 1998, the State of Connecticut established a renewable portfolio standard (RPS) under which electric suppliers, distributors, and load serving entities have to obtain at least 23 percent of their retail load through qualified renewable power by 2020. This target can be met by purchasing electricity generated by Class I or Class II resources located within the jurisdiction of the New England ISO. To meet this requirement, each electric supplier, distributor, and load serving entity has to purchase renewable energy credits (RECs), which are equal to one megawatt hour of power generated by a renewable facility. Electricity generated through waste-to-energy is classified in Class II.8 The current supply of Class II resources significantly exceeds the existing Class II RPS requirements. The surplus has driven down Class II REC prices to less than $1/MWh. This compares to Class I REC prices that are currently trading at prices exceeding $50 MWh. The Class II surplus has existed for many years and is not expected to improve in the foreseeable future.

Due largely to its six waste-to-energy facilities, Connecticut is in a unique position in that there is only nominal reliance on active MSW landfills in the state, avoiding the release of a significant amount of methane into the atmosphere. As noted above, these waste-to-energy facilities face economic challenges due to current and projected low energy prices and other factors, including market pressure to maintain competitive tipping fees. It is

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important to recognize that one of the main purposes of the state's RPS is to incentivize new development and ensure the viability of existing renewable energy facilities so that their environmental benefits can be realized.

According to some estimates, waste-to-energy can mitigate as much as one ton of greenhouse gas emissions for every ton of MSW sent to a waste-to-energy as opposed to a landfill. Using the EPA's “social cost of carbon" index to monetize this benefit gives a range of $45 - $69 per MWh. While pricing a special REC category in this range is untenable because of its impact on ratepayers, it is worth noting that by this measure, the value of the mitigation provided would equal or exceed that of Class I RECs. Among the approaches to revaluing Class II RECs would be to use a percentage of the value of Class I. This would maintain a separation between the Class I REC value and the value attributed to in-state greenhouse gas mitigation, but still compensate the plants for their methane mitigation.

The Task Force recommends that the state consider restructuring the Class II RECs to more fully account for the value of the greenhouse gas reduction and environmental benefits of WTE facilities. In its analysis, the state should consider REC structures in other states, as well as measurements of the net lifecycle greenhouse gas mitigation achieved by waste-to-energy technology.

DUAL COMMODITY CONTRACTING

Dual Commodity Contracts, in which RRFs contract with a municipality or group of municipalities to both dispose of municipal solid waste and to provide commercial and residential electricity, is a new contract structure that is apparently without precedent. The Task Force did not identify any statutory or regulatory obstacles that need to be modified for RRFs and municipalities to explore options such as Dual Commodity Contracts. As long as the RRFs work through registered ISO agents to sell electricity – or become registered ISO agents themselves – and follow other regulatory requirements, the parties are free to negotiate Dual Commodity agreements and come to terms that make sense for both/all sides.

Creative contracting models such as Dual Commodity Contracts do not appear to provide an opportunity to eliminate some of the additional costs currently built into the retail power cost structure required by the Connecticut Public Utility Regulatory Authority and ISO–New England. Nonetheless, such models may benefit RRFs and municipalities by providing some stability to the municipalities’ and the industries’ annual budgets. One way to structure such a Dual Commodity Contract, to provide both the stability and the flexibility that the parties would need, is to establish a long-term tip fee for waste disposal and to lock in the electricity price for a set term with a re-opener to be negotiated. In addition to providing price stability and flexibility, the Dual Commodity Contract model may also add value for those communities that like the idea of disposing their waste at an RRF and getting back power for their municipal buildings.
Municipalities and RRFs may also be able to benefit by aggregating electricity load throughout several municipalities or communities to secure the best block pricing in the market – a benefit that would be shared among all parties. The same value associated with aggregating would be expected through the MSW component.

Municipalities, through Capitol Region Council of Governments (CRCOG) and other organizations, already participate in municipal purchasing consortia to make use of economies of scale to achieve better pricing on a number of goods and services. A natural gas purchasing consortium among municipalities has been in existence since the late 1990s and an electricity purchasing consortium has existed since 2008. The municipal consortia also utilize reverse auctions to purchase commodities such as electricity. Depending upon the specific terms negotiated, municipalities may be interested in pursuing Dual Commodity Contracts with RRFs to achieve more stable long-term pricing and realize the other benefits discussed above.

**ELECTRICAL MUNICIPAL UTILITY DEFINITION**

Public Act 13-285 calls for the Resources Recovery Task Force to make “a recommendation on whether resource recovery facilities in this state should be defined as an ‘electric municipal utility’ for the purpose of the municipalities such facilities serve...” The delineation would apply only to Connecticut General Statutes 4a-57, governing competitive bidding for state contracts. Under this section, electrical municipal utilities are exempt from competitive bidding when providing power to state facilities within their service areas. The Task Force studied this question and determined that the addition of waste-to-energy plants to the definition of “electrical municipal utilities” would allow the State of Connecticut to enter into direct purchase agreements with these plants to purchase electricity for its facilities without having to engage in the competitive bidding process. The change would have limited impact, and appears to benefit CRRA’s MidConn plant more than others, as it is sited in Hartford and could potentially contract directly with the State to provide electricity to state government facilities in the capitol city. However, any direct purchase agreements made by the state outside of the bidding process would be likely to increase the costs for electricity procurement. The Task Force makes no recommendation on the desirability of direct state contracting as public policy, but recognizes that such an approach would give the state greater flexibility to enter into such contracts, which have the potential to provide new revenue to waste-to-energy-plants. This potential should be weighed against the potential increase in cost to the state.

**THE SOLID WASTE ASSESSMENT**

The State of Connecticut currently collects a $1.50/ton solid waste assessment for waste processed by the state’s waste-to-energy plants. However, the as noted in the Legislative Program Review and Investigations (LPRI) Committee’s Municipal Solid Waste
the same assessment is not imposed for waste disposed in landfills, either in-state or out of state, as well as out-of-state RRFs. This provides a competitive advantage for landfills and other methods of disposal, because those methods can pass the savings on to customers in the form of lower tipping fees. This creates a perverse incentive that is contrary to the state’s policy favoring in-state disposal and placing resource recovery above landfilling in the waste hierarchy. If diversion rates increase as forecast by DEEP, increased competition for the remaining municipal solid waste between waste-to-energy operators and landfills may make this $1.50/ton assessment an even greater relative disadvantage for the state’s waste-to-energy plants, and has the potential to generally undermine their ability to remain competitive. The Task Force recommends that the state should extend the solid waste assessment to tonnage disposed in landfills, both in and out-of-state, as well as all other out-of-state disposal alternatives. The state should apply revenues realized from this expansion to programs that promote source reduction and recycling in furtherance of the goals of the state’s Solid Waste Management Plan.

LIST OF SOURCES

The Resources Recovery Task Force consulted many materials in the course of its work. The following is a list of some key resources that assisted the Task Force in forming its recommendations.

Reports


Presentations


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