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Massachusetts 2010-2020 Solid Waste Master Plan Response to Comments Document

April 2013

Index with Links to Comments by Topic

Process/General

1. **Comment:** Many people commended MassDEP for its efforts to seek public input in developing the Draft Solid Waste Master Plan over the past two years. While it was a long process, individuals and organizations are grateful for the opportunity to be engaged in the process and felt that MassDEP really listened to their points of view. The extensive stakeholder process ensured that all interested parties could review data and provide input and informed recommendations. MassDEP is encouraged to continue this information sharing process with stakeholders.

   Response: MassDEP appreciates these comments and believes it was important to have this stakeholder involvement and engagement in the early stages of developing the Master Plan, so that the Draft Plan was informed by the positions and interests of stakeholders prior to the formal public comment process. This process allowed MassDEP to learn from participants in the process and for them to learn from each other. MassDEP will continue to seek public input during Plan implementation.

2. **Comment:** Many organizations and individuals expressed interest in continuing to work with MassDEP on implementing the 2010-2020 Solid Waste Master Plan after it is finalized. In particular, MassRecycle and the National Solid Waste Management Association's Massachusetts Chapter urged MassDEP to work with their organizations and to take advantage of their professional networks.

   Response: MassDEP looks forward to working with these organizations, as well as other interested parties through our Solid Waste Advisory Committee (SWAC), as the Final Plan is implemented. The success of this Plan will require efforts by all parties that manage waste in Massachusetts, not just MassDEP.

3. **Comment:** MassDEP is applauded for its proposals to work across Northeastern states and across Massachusetts state agency lines to increase the impact of the Solid Waste Master Plan.

   Response: MassDEP will continue to work with other Northeast states on aspects of the Master Plan that will benefit from regional coordination. MassDEP also will continue to work with other Massachusetts agencies on issues such as procurement, construction, and recycling issues that can help support the goals of the Master Plan.

4. **Comment:** The Plan should include a definitions section to clarify the meaning of certain acronyms as well as to clarify how MassDEP is using certain words. These include "zero waste", "remanufacturing versus manufacturing with recycling feedstock", referring to Taunton's proposed facility as a "reuse" method when it is not, and using the term "recycling" inaccurately to encompass reusing, reduction, reuse and recycling. Reuse is defined by recycling professionals as being the act of using something over again without

changing its physical make up-- for example, washing a bottle and using it over again as a bottle. Recycling would be shredding or melting that bottle and then turning it into a new product, even another bottle (which would also be manufacturing with recycled feedstock). Remanufacturing that bottle would be fixing something about it that is broken, maybe putting on a new lid to allow it to be used again. The SWMP is a crucial forum in which to underscore the value of reducing, reusing and recycling and to be specific about each of these stages of the hierarchy. The Plan should present strategies in order and separately for reducing, reusing, and recycling waste.

Response: MassDEP has reviewed the terminology used in the Plan to ensure that we are using terminology more consistently and will clarify which action items in the Plan are specifically focused on reducing waste and on increasing reuse as opposed to those focused on recycling. The Plan also includes a list of acronyms used.

5. **Comment:** MassDEP retained the Tellus Institute to perform a theoretical analysis of the potential impacts on climate change of various approaches to solid waste management. MassDEP should not rely on the findings of the Tellus Report unless and until the basis for the report is made public and is subjected to full public review and analysis. Some of the results are inconsistent with the findings of other published analyses that have been widely reviewed and accepted. For example, the Tellus Report finds that waste-to-energy facilities result in a slight increase in carbon emissions, while other studies consistently find that modern waste-to-energy facilities provide substantial reductions in carbon emissions.

   Response: In developing the Draft Plan, MassDEP has considered the Tellus Institute report, Assessment of Materials Management Options for Massachusetts Solid Waste Master Plan Review, December 2008 as one of many information sources informing the development of the Draft Plan. Recognizing that there is disagreement over some aspects of the Tellus report, MassDEP has posted comments received on the report on our website with the report. This information is available at http://www.mass.gov/dep/recycle/priorities/dswmpu01.htm. The conclusions and opinions of the Tellus report do not necessarily reflect those of MassDEP; the Department has considered it in the same way that we have considered other information which we have received regarding the Solid Waste Master Plan. Relative to the specific comment about the carbon emissions of municipal waste combustion facilities, the Tellus report actually identified a net reduction in greenhouse gas emissions from municipal waste combustors on a lifecycle basis.

6. **Comment:** Missing in the Plan is a justification as to why there is a plan to begin with. Why is MassDEP imposing restrictions on solid waste management practices rather than letting the free marketplace determine what facilities are needed? The MassDEP's role should be to provide permission, compliance, standards for site assessments, consultation to towns, and provision of incentives. The DEP should not attempt to control the entire waste stream. There is no justification within the plan for the DEP to move outside of its traditional role of a permitting agency and into the role of a centralized planning agency with the power to deny free enterprise.

Response: MassDEP is required to maintain and update a Solid Waste Master Plan for the Commonwealth and plan for the Commonwealth's solid waste management needs per Massachusetts General Law Chapter 16, Section 21, as established in the Solid Waste Act of 1987. Massachusetts issued its first comprehensive Master Plan in 1990 and has consistently maintained a focus on reducing waste, increasing recycling and composting, and minimizing waste disposal as a core strategy for managing solid waste in the Commonwealth. The strategies developed to support the Master Plan have included, and will continue to include, a combination of promulgating regulations, maintaining compliance and taking enforcement actions at solid waste facilities, providing grants and technical assistance, and developing information and plans to inform and guide these strategies.

Zero Waste/Materials Management Vision

7. **Comment:** Many people commenting supported the fact that the Draft Plan presents a zero waste vision and policy framework. But, these commenters also said the strategies and actions in the Draft Plan are not aggressive enough to realize a zero waste vision. This is not a "zero waste" plan, but rather an integrated solid waste management plan. The Final Plan should adopt a clear, internationally recognized definition of "zero waste". According to the Zero Waste International Alliance's global definition and principles, zero waste does not allow for incineration, yet the Draft Plan allows use of source separated materials for energy and has loopholes that allow gasification. Gasification destroys resources just like traditional municipal waste combustion and is not consistent with zero waste. MassDEP should either adopt the ZWIA principles, including setting benchmarks, identifying incentives, and conducting waste audits, or else title this an Integrated Solid Waste Management Plan instead of a zero waste plan. The ZWIA zero waste vision states, "If a product can't be reused, repaired, rebuilt, refurbished, refinished, resold, recycled or composted, then it should be restricted, redesigned, or removed from production."

   Response: MassDEP understands that the ZWIA has developed a particular definition of zero waste that differs in some ways from this Plan. This Plan will move us forward along the path to zero waste in the future.

8. **Comment:** The main focus of zero waste should be to reduce the role and importance of the waste industry, not subsidize it, redesigning facilities at the manufacturing level, and in the curricula at schools. The Draft Solid Waste Master Plan focuses too much on a handful of special interest groups in the solid waste industry, when it should have a much broader scope that will serve all the citizens of the Commonwealth. Zero waste is not about creating low-paid jobs in non-technical industries to bulk-process small portions of waste. Accomplishing zero waste requires a large commitment. Currently, the plan is doing a disservice to the broader citizenry of Massachusetts by not taking this bigger picture view.

   Response: MassDEP agrees that striving towards reducing waste and reexamining how materials are designed, used and disposed requires a broader view that extends well beyond the solid waste and recycling industries. At the same time, however, the solid waste and recycling industries play a critical role in managing large amounts of materials that are

produced today, and one of MassDEP's core roles relative to solid waste management is to regulate and oversee this industry. In addition, the solid waste and recycling industry has an important role to play in implementing programs and infrastructure to reduce disposal and increase recycling and composting. The waste reduction goals in the Draft Plan would not be possible without their participation. In addition, many broader changes in how we manage and use materials as a society go well beyond the scope of Massachusetts Solid Waste Master Plan. The Plan includes a number of recommendations to influence these changes through extended producer responsibility approaches and working with businesses and institutions to reduce waste and use materials differently.

9. **Comment:** This draft plan represents a dangerous victory of rhetoric over reality that undermines the recycling and composting progress achieved in Massachusetts. The concept of the "irreducible minimum" of waste discussed in earlier proposals was a well grounded concept and made sense. The shift to a zero waste framework is not realistic and is grounded more in rhetoric than reality.

   Response: This plan envisions approaching zero waste by 2050, and MassDEP has proposed waste reduction goals for 2020 and 2050 that will reduce disposal through a combination of waste reduction, reuse, recycling, composting, and use of separated materials for energy. These goals are based on the concept of "irreducible minimum" described in this comment. MassDEP recognizes that these various forms of waste reduction will be limited by the degree to which there are viable market outlets and infrastructure to manage these materials. And, it is important to recognize that much of this progress will depend on important contributions from Massachusetts businesses, residents, local governments, waste, recycling, and composting service providers, and others. While achieving zero waste as a state may not sound realistic now, MassDEP believes that we can make significant progress towards a zero waste future over the course of several decades.

Disposal Reduction Goals

10. **Comment:** MassDEP needs to be more aggressive with its disposal reduction goals. A goal of 30% by 2020 and 80% by 2050 is less than ambitious and the timeline is too long to achieve those goals. We could achieve a 30% reduction in waste disposal within a few years through simple measures such as enforcing existing waste bans or expanding PAYT – we don't under any circumstances need 10 years to achieve this. The scope of a 2010-2020 Solid Waste Master Plan is one decade, and most Zero Waste plans work within a ten or twenty year framework. States across the country, including California and Florida, are already attaining similar goals at present time. New York State's 2010 Solid Waste Master Plan calls for a 90% reduction by 2030; San Francisco has achieved 72% diversion in less than 10 years, and Nantucket went from 8% recycling to 92% in 20 years. A more ambitious but also realistic target for a Zero Waste plan in Massachusetts is a 75% reduction by 2030 and at least 50 % by 2020. Another commenter proposed a goal of 75% reduction by 2020 and 90 percent reduction by 2050. Other plans around the country have achieved this within a ten-year framework. It would be helpful if the final plan provided comparisons of recycling and waste rates between Massachusetts and other jurisdictions such as New York or San Francisco.

Response: MassDEP believes that the goals proposed in the Draft Plan are very aggressive for the Commonwealth and that more aggressive goals would be unrealistic. The Final Plan clarifies the relationship between the proposed waste reduction goals and diversion rates. Based on current generation, a 30 percent reduction in disposal tonnage by 2020 would equate to a diversion rate of 63% by 2020.

It is very difficult to compare recycling rates between different state and local governments because of the inconsistency in how rates are calculated. Every two years, BioCycle magazine publishes a consistent comparison of state recycling rates for municipal solid waste. Their most recent analysis (October 2010) that covers 2008 data was recently released[1]. In this report, the highest reported state recycling rate was 53 percent in California. Oregon had the second highest MSW recycling rate of 38% in 2008, while Massachusetts was third nationally at 36%. Some of the data or goals mentioned from other states are very different than the Commonwealth's goals. For example, the 70 percent recycling rate goal in Florida counts waste to energy as "recycling", while other states and the BioCycle analysis do not count include this. According to the BioCycle report, Florida's MSW recycling rate in 2008 was 10 percent. Massachusetts had the highest MSW recycling rate in the Northeast in 2008. New York's 2008 MSW recycling rate was 22 percent.

MassDEP believes that a goal of a 30 percent reduction in disposal tonnage by 2020 is the maximum possible diversion that can be achieved in Massachusetts during this time period, particularly given the limited state funding and staffing available and the need for development and passage of significant legislative provisions as well as significant infrastructure and market development to enable this progress. The proposed goal to reduce disposal by 80 percent by 2050 would result in approximately 1.3 million tons of total disposal annually. Based on current waste generation, this would equate to an overall diversion rate of nearly 90 percent, which is generally considered to be effectively achieving zero waste.

11. Comment: MassDEP should not arbitrarily link the 80% waste reduction goal to the GWSA emission reduction goals, and instead should set waste reduction goals based on what is needed to achieve a healthy and sustainable future.

Response: This is not an arbitrary link. MassDEP believes that there are many connections between achieving the Global Warming Solutions Act goal of an 80 percent reduction in greenhouse gas emissions and reducing waste disposal by 80 percent by 2050, and that both would require similar changes in how materials are managed by 2050. Reducing waste disposal by 80 percent by 2050 would equate to an overall recycling rate of 90 percent based on current generation, which would effectively achieve zero waste by that year. Based on a review of waste composition data, and considering which materials are potentially recyclable and compostable, MassDEP believes that this waste reduction goal is an aggressive but feasible target for 2050. Progress towards this goal also will help to support the achievement of the GWSA for that year.

[1] *BioCycle* magazine, "The State of Garbage in America", October 2010, pp. 16-23.

12. Comment: Diversion goals must be more aggressive or it will be necessary to open new landfills or expand current ones since in-state landfills are expected to reach capacity by 2025.

Response: The Plan focuses on meeting Massachusetts' future waste management capacity needs in large part through a combination of reduced waste generation and increased recycling and composting. Given the lack of proposed new landfill disposal capacity in Massachusetts combined with the moratorium on additional municipal waste combustion capacity, if the Commonwealth fails to meet our waste reduction goals, then the most likely outcome will be increased disposal in disposal facilities in other states.

13. Comment: The proposed recycling goals are very aggressive. If these plans are successful, there will be a need for more in-state outlets to handle this increased amount of recycling. So far, there is yet to be a problem because recycling has not yet increased at the expected rate. What are the plans for managing solid waste generated prior to 2050 or if the waste reduction goals are not achieved? During this time, Massachusetts should have a balanced waste management system, so that it is managing the amount of waste that is generated in Massachusetts. Waste should be able to continue to flow between states, but Massachusetts should be able to manage the amount that it is generating.

Response: Massachusetts will need additional recycling and composting capacity in state to meet the Master Plan waste reduction goals. MassDEP has added analysis about the potential additional processing infrastructure needed in the Final Plan. However, we expect that Massachusetts will continue to be a net exporter of waste to other states for disposal for the foreseeable future.

14. Comment: The Solid Waste Master Plan does not mention why the goals of the previous plan were not met and how this current plan will be different. Disposal reduction goals should be based on possible funds available as well as what the MassDEP is capable of. What new approach will DEP take to make sure that goals are met in this plan, especially considering budget uncertainties?

Response: MassDEP agrees that it is important to understand why Massachusetts fell short of previous goals in order to develop improved strategies going forward. There is no one answer for why we did not reach our goals. MassDEP believes that is due to a number of factors, including:

- Insufficient processing and handling infrastructure for recovered materials, organics in particular;
- Limited end markets for some materials, such as asphalt shingles and carpet;
- Some sectors being underserved with recycling services such as small businesses, apartments and condominiums which results from some haulers not offering these services;
- Limited funding for recycling grants and technical assistance since 2002; and

- Need for additional legislation, including producer responsibility legislation such as the expanded bottle bill, electronics recycling legislation, and other producer responsibility legislative initiatives.

The Draft 2010-2020 Plan recommends strategies such as proposed legislative initiatives like the expanded bottle bill and increased grants that MassDEP believes will overcome these challenges and help to reduce waste and increase recycling and composting going forward.

15. **Comment:** The goal of reducing waste by 30% by 2020 is ambitious but achievable if sufficient staffing and funding resources are made available to MassDEP. The state will not be able to get to zero waste by 2020 because there are a lot of items that are just not readily recyclable or compostable.

    Response: MassDEP agrees with this comment and believes that progress on some initiatives will be affected, at least in the short term, by resource limitations. However, in other cases, the role of MassDEP staff is secondary, and significant progress can be achieved with targeted grant funding through the Sustainable Materials Recovery Program and through development of new legislative initiatives.

16. **Comment:** The SWMP identifies goal and objectives for the management of solid waste throughout the state, but lacks any serious analysis or justification as the whether the goals and objectives to maximize recycling are actually worth pursuing. This will most likely result in high-cost state-wide solid waste disposal methods, likely resulting in minimal yield or negative environmental benefits.

    Response: As explained in the Draft Plan, managing our waste through waste reduction, increased recycling, and increased recycling will provide better environmental and economic results compared with disposing of these same materials. This is primarily because these practices capture valuable material resources that we cannot afford to waste as a society. These benefits have been borne out in numerous studies in Massachusetts, in other states, nationally, and internationally. This information is discussed further in Appendix K: List of References Consulted.

17. **Comment:** The Solid Waste Master Plan goals should be legally binding and MassDEP should be subject to lawsuit if waste reduction goals are unsuccessful.

    Comment: As established by statute, the Solid Waste Master Plan is a policy document that establishes strategies to manage solid waste in Massachusetts in an environmentally and economically sound manner. MassDEP believes that managing our waste through an approach that maximizes waste reduction, recycling and composting is the best way to do this. The Draft Plan presents a number of strategies for achieving this outcome. However, it is important to understand that MassDEP has only a few leverage points over a solid waste and materials management system that is based on regional, national, and international markets. In attempting to change waste management practices, it is important that policy incentives and penalties are as closely related as possible to those that are making decisions

about how products and packaging are designed, distributed, used, and managed after use, including product manufacturers and distributors, residents, businesses, municipalities, and the solid waste and recycling industry.

Background Information

18. Comment: Section 1.2 "Why are waste reduction and waste management important?" should be the heart of the Plan and needs to be rewritten. It is only three paragraphs long, 2 and ½ of which are focused on greenhouse gas reduction. This section should be rewritten to provide more powerful and compelling arguments for why waste reduction and the goals of the Plan matter. For example, reducing waste may have significant energy consequences, possibly outside the state, that are being overlooked. Another comment stated that the plan provides no serious analysis demonstrating the benefits of maximum recycling or the detriments associated with alternative waste management options. It needs to include actual costs, emissions and discharges, and benefits using data for recyclable streams from specific communities.

Response: MassDEP agrees that this section provides the rationale for many of the Plan recommendations, so we have expanded this section to communicate these benefits more fully.

19. Comment: Several comments were received regarding Figure 2, C&D Debris Composition (p. 6):

- The sum weight of the materials totals roughly 66%. Is this intended and, if so, where is the remaining waste? Does the missing percentage relate to the asphalt and concrete from bridge and roadway construction, which, as stated on the bottom of p. 5, is not included?
- The title should include clarification that it is "Building Related C&D"
- Carpet, a major waste contributor during construction and demolition, is not listed.

Response: This figure was published in the 2007 Massachusetts Construction and Demolition Debris Industry Study, published May 16, 2008, and prepared by DSM Environmental Services. DSM was contracted by MassDEP to conduct an evaluation *"of the current and future status of construction and demolition (C&D) debris management in Massachusetts and the future status of wood, gypsum wallboard, and asphalt shingles."* DSM concentrated its efforts on building debris, excluding infrastructure debris (waste generated primarily from the construction and demolition of roads and bridges) and land clearing debris. The waste materials of primary concern to MassDEP – wood, gypsum, and asphalt shingles are found mainly in building debris. Figure 2 Construction and Demolition Debris Composition, only includes data on wood, roofing, drywall, concrete, metal, and plastics that DSM included in their report. It does not include other components of the C&D waste stream such as infrastructure debris, carpet, OCC, ceiling tiles, etc.

20. Comment: Is there any other available data to support the 2002 estimates mentioned in Section 2.2, What are the Priority Materials? (p. 17) and Figure 5, Potential Additional

Annual Recycling by Material Type by 2020 (p. 19)? Are these estimates still reasonable considering the many new developments made in the past 8 years and is it safe to assume they are still applicable for the future, particularly for 2030?

Response: This data analysis was updated with more recent Massachusetts waste generation data, as well as national waste composition data. MassDEP does not have more other data available at this time to support further analysis. However, because solid waste management trends in Massachusetts have been steady over the past decade, we do not believe that these potential additional diversion estimates have changed significantly and believe they are valid for program planning purposes. Looking ahead to 2030, we expect some changes in the composition of waste generated, including an increased percentage of plastic and some continued reduction in paper.

21. Comment: In Table 1, Massachusetts Solid Waste Management in 2000 and 2008 (p. 10), should the bold line between "Residential Composting" and "Commercial Composting" belong below "Commercial Composting"?

Response: In the Final Plan, MassDEP has updated the 2008 data with 2009 data. Because MassDEP did not collect residential solid waste and recycling data for 2009, the Final Plan does distinguish between residential and commercial tonnage in this section. A link to the 2010 Solid Waste Data Update is available in Appendix A.

22. Comment: What are some examples of green jobs, as mentioned in the Solid Waste Master Plan?

Response: Examples can be found in "Appendix G: Massachusetts Recycling Loan Fund: Summary of Loans Awarded", which lists Massachusetts companies that have received loans through the Commonwealth's Recycling Loan Fund, and the number of jobs created or retained at those facilities with the support of the Loan Fund.

23. Comment: Recycling efforts will help create more jobs and a more sustainable economy compared to waste disposal.

Response: MassDEP agrees with this comment.

24. Comment: The plan states that reuse, recycling, and re-manufacturing operations create more jobs than landfill and waste-to-energy operations. What this really means is that the operations are more costly than land filling and waste-to-energy and that these dollars wouldn't be spent if they weren't mandated by the state. Serious analysis is needed in order to determine whether maximum recycling is cost-effective or whether the dollars spent on recycling should be put to better use elsewhere, such as for schools, police, fire protection, or taxpayer relief.

Response: Recycling and composting for many materials are generally either cheaper or cost competitive with disposal because, while disposal facilities obtain their primary revenue from tip fees, while recycling and composting facilities receive their primary revenue from

products that they process and sell. There is cost to collecting and processing recyclable and compostable materials, but these processes are cost competitive because they generate products that have value. MassDEP has documented many examples of cities and towns and businesses that have saved money through recycling and composting and reducing their disposal, many of which are available on the MassDEP web site. In fact, many recycling initiatives reduce waste management costs on a net basis, so that funds that would otherwise be spent on solid waste disposal can be used for other local government services such as schools, police and fire services.

25. **Comment:** The 2010 draft plan does not provide the same level of detail regarding MSW vs. non-MSW disposal as did the 2000 *Beyond 2000 Solid Waste Master Plan*. Data shown for 2000 and 2008 for landfilled waste includes both MSW and non-MSW without breaking them out. Regardless, it is clear that the Commonwealth's stagnant diversion rate and increase in exports of MSW to out-of-state landfills is not due to energy-from-waste.

    Response: MassDEP provides more detailed 2008 solid waste data in the 2008 solid waste data update, available on the MassDEP web site at http://www.mass.gov/dep/recycle/priorities/08swdata.pdf. While net export for disposal increased slightly from 2000 to 2008, overall this trend was essentially flat. MassDEP believes there are several factors for why waste diversion did not grow during this time period. See the response to comment #14 for a further response about why diversion did not increase more during this time period.

Short-Term Priorities

26. **Comment:** More emphasis should be placed on PAYT as well as cutting down waste through composting and plastic recycling in order to reach reduction goals.

    Response: MassDEP agrees that increasing the number of pay-as-you-throw (PAYT) programs should be a priority in the short term and has made funding PAYT assistance a priority under the Sustainable Material Recovery Program grants for cities and towns. In fact, to date, every municipality that meets requirements and has requested PAYT assistance has been awarded a grant. MassDEP also is focused on increasing composting, especially of food waste, through increasing our organics processing capacity in Massachusetts and is focused on increasing recycling of plastic water bottles through an expanded bottle bill.

27. **Comment:** Zero waste strategies should be reflected in the short-term priorities so that Massachusetts begins making progress towards zero waste in the short term and does not put these strategies off until the future.

    Response: All of the strategies in the plan to reduce waste, promote reuse, or increase recycling and composting will contribute to a zero waste future to some degree. As far as strategies that will work more systematic changes, such as establishing regional approaches to extended producer responsibility and developing EPR legislation for Massachusetts, MassDEP has already begun to participate in discussions with other Northeast states and will

be working with the Legislature to renew efforts to pass key legislation such as electronics recycling legislation. MassDEP will continue to prioritize work on these initiatives, though getting legislation or regional approaches established will take several years.

28. **Comment:** Revenues from the waste to energy credits (WECs) program should be allocated to programs that focus on priority materials (such as paper and organics), have a high success rate (pay-as-you-throw), or have the potential to reach a broad audience (such as business technical assistance coordinators).

    Response: The 2010 MassDEP Sustainable Materials Recovery Program, funded by the waste to energy credits (WECs), awarded grants for a wide range of initiatives, with particular emphasis on development of new PAYT programs and grants for wheeled carts for residential curbside collection of recyclables. MassDEP believes that going after the large segments of the waste stream is an important strategy but sometimes a smaller segment can be diverted more effectively and efficiently and therefore should not be ignored. Therefore, the 2010 grant awards also supported recycling of other materials beyond paper and organics. MassDEP will be issuing subsequent grant applications to support commercial recycling and recycling market development and will focus those grants on both specific priority materials and on innovative approaches that could be replicated by other businesses or institutions.

Plan Implementation

29. **Comment:** "Education and enforcement" should be added to the first sentence of section 2.4, as these are critical strategies to emphasize.

    Response: MassDEP agrees and will add them to this sentence as suggested.

30. **Comment:** In order to significantly reduce waste across the state, more funds will be needed. The estimated $6 million currently available for waste reduction programs is insufficient for the additional infrastructure and programs needed. An expanded bottle bill could generate $5 million of additional funding each year which could potentially be put towards this plan. Citizens need to tell the Legislature that MassDEP needs to get more funding back. Over the past ten years, MassDEP has been provided less and less money and resources to work on waste reduction, recycling and buy-recycled issues. Some of this has been due to the general state of the state finances, but we are disheartened to see that the current administration is focused almost entirely on energy efficiency and renewable energy to the detriment of other environmental issues.

    Response: An estimated $5-6 million is expected to be available annually for the Sustainable Materials Recovery Program through the waste to energy credits. While this is insufficient to fund all of MassDEP's proposed initiatives in the short term, this funding represents a significant increase in the amount of funding available compared with recent years. The Patrick Administration has supported an expanded bottle bill that would increase recycling of water and sports drink bottles, and could provide additional funding to support recycling and waste reduction programs. Some of the critical proposals in this Plan rely

more on legislative action than on funding and, if passed, could be very important to increasing waste reduction and recycling in Massachusetts.

31. Comment: The fact that the recycling funding comes from renewable energy credits may create an incentive that encourages the burning of more waste. We suggest that any waste facility producing energy, be it a landfill, anaerobic digester or other, be subject to sharing renewable/alternative energy credit revenue with the Department.

Response: Because the renewable energy credits for municipal waste combustors are limited to facilities that were already in place before 1997, these credits will not provide an incentive to encourage more waste to energy facilities. Under current rules of the Renewable Portfolio Standard (RPS) Class II Waste Energy Program implemented by DOER, the existing MSW Units in Massachusetts are required to share 50% of the revenue they receive from selling Waste Energy Certificates with the MassDEP to support recycling programs. Any new generation units that utilize MSW as a fuel will not be eligible for qualification under the RPS program, and hence will not generate additional credit revenues. Landfill gas and anaerobic digesters are eligible for the RPS program, but credit revenue sharing is not contemplated. These revenues are important for the financial feasibility for these projects to move forward.

32. Comment: MassDEP needs greater authority to adequately implement the Master Plan.

Response: MassDEP has proposed several legislative initiatives in the Plan that would increase MassDEP's authority or make other changes to spur increased waste reduction, recycling, and composting. These include an expanded bottle bill, electronics recycling legislation, legislation for a framework producer responsibility system based on a regional model, legislation to strengthen MassDEP's authority to step in and clean up problem facilities such as landfills, and legislation to ensure a level playing field for solid waste haulers. In addition, statutory changes passed in 2010 provide MassDEP with new authority to require recycling conditions in facility permits.

33. Comment: The Plan does not provide a structure for keeping MassDEP accountable for effective implementation over the next ten years. The Plan should include interim goals, an implementation plan and timeline, and measures for continuous evaluation. Although the draft plan has many objectives, bullet points, ideas, goals, strategies, and more, there are too few places where they are specific, quantifiable, or measurable. More clarity is needed to understand how and when initiatives in the Plan will be implemented. The Master Plan could solve the lack of specifics by providing a matrix that shows, for each proposed recommendation, (1) what actions are needed to implement it---for example new regulations, laws or funding; (2) who will be responsible for implementing it---for example, DEP, the legislature, local communities and private contractors; (3) how it will be administrated and implemented; (4) what infrastructure is necessary in each region to implement it; (5) what

technical assistance is needed to achieve the recommendation; (6) what sequence of actions are needed to implement it; (7) when these actions will occur; and, (8) how it will be funded. In particular, the Plan needs to make perfectly clear what the DEP can itself carry out, versus what DEP can 'support'. Without that distinction, it is our view that the integrity of the Plan is compromised. MassDEP should clarify how it intends to work with the Legislature on legislative issues. MassDEP's commitment to measurable performance goals should go hand in hand with the Executive Office of Energy and Environmental Affairs' (EEA) commitment to give MassDEP the necessary resources to implement the Plan. For example, there should be a clear state plan for increasing recycling rates in larger communities paired with a funding plan to make these increases happen. EEA also should have more involvement to coordinate its respective departments and to work with MassDOT and DCAM to assist MassDEP and address these issues at the highest levels of state government.

Response: MassDEP plans to develop an implementation plan for the Solid Waste Master Plan and will discuss this Plan with the SWAC as well as with other state agencies to gain their support for key implementation commitments. Where resources are a limiting factor, this implementation plan would identify where actions need to be delayed due to resource constraints. This implementation plan will also identify which action items are within MassDEP's control to implement versus those that require legislation or steps by other entities.

34. Comment: One commenter disagreed with the assertion that "…we are approaching the limits of what can be recycled under our current approach…." (p. 14 of the Draft Plan). If the only action taken in year 1 of the 2010-2011 SWMP was getting compliance with 100% of current waste bans, somewhere between 20% and 35% of the current waste stream would be diverted from landfills and incinerators.

Response: MassDEP disagrees with this comment. Achieving 100% compliance with waste bans, or recycling or composting 100 % of waste ban materials, would require much more than enforcing waste bans, and would be a major accomplishment that has not even been approached by any other state or country. Even if there were full compliance with waste bans, we would likely not capture 35% of waste disposed, as waste bans do not cover all materials. Achieving waste ban compliance requires a number of complementary strategies beyond compliance and enforcement, including:

- extensive education and outreach,
- widespread adoption of municipal programs such as PAYT, local mandatory recycling, and single-stream recycling to increase residential participation,
- extensive technical assistance for small businesses,
- development of additional processing infrastructure, and
- growth of markets to support additional diversion.

Commercial Waste Reduction

Hauler recycling requirement (for both businesses and residents)

35. **Comment:** Hauler legislation should require that haulers and municipalities institute PAYT that charges more for trash than recycling or that provides recycling free of charge. For this requirement to work well, it is critical to have regular and consistent enforcement by MassDEP to ensure a level playing field. Private subscription haulers should be held to the same standard that municipalities are held to. This would in turn likely reduce the number of people opting out of municipal PAYT programs and, thereby increase the number of residents served by PAYT programs.

    Response: MassDEP agrees that it would be important for this requirement to be enforced effectively to ensure that it provides a level playing field. The specific requirements and approach require further discussion, however MassDEP's intent is to establish a minimum statewide performance standard for the provision of recycling services. .

36. **Comment:** Currently virtually every hauler in Massachusetts does offer recycling services. Adding a regulatory requirement that requires haulers to offer recycling simply is not an efficient use of the Department resources.

    Response: Most haulers currently offer recycling to their customers, but it is typically offered as an optional service for an additional cost. The Plan proposes requiring haulers to provide recycling service to their customers, not just to offer it. This would ensure that all haulers would be subject to a level playing field and, in turn, make it simpler for MassDEP to pursue enforcement against waste generators for disposing of banned materials.

37. **Comment:** All trash haulers should provide recycling. "Recycling only" companies, who may have difficulty competing, could potentially subcontract to trash haulers. However, organic materials would need to be addressed differently.

    Response: MassDEP agrees that organic materials would need to be addressed differently and may not be covered under this requirement. MassDEP also agrees that it would be important to develop a mechanism for allowing recycling only haulers to continue to service customers under this system.

38. **Comment:** We oppose any proposal to establish state-wide uniform licensing requirements for waste haulers. Although the prospect of one uniform set of standards has some appeal, local authorities must retain the ability to control collection practices in ways that are appropriate to local conditions. The hauler licensing process should be managed at the same level of government, and by the same entities, that oversee, manage and/or are involved in collection of solid waste and recyclable materials. In comparison, a statewide system would be less responsive, less flexible and less manageable, and might add administrative burdens and impose unfunded mandates on municipalities without any guarantee of impacts on recycling rates. A statewide system would be redundant, resulting in inefficiencies, additional costs and require more government involvement when businesses and citizens are calling for less. Instead, the Department should use its resources to document where recycling services

are lacking and recommend approaches to the solid waste management industry to address the issue on a geographical basis.

Response: Local governments can implement hauler recycling requirements now and some have done so successfully. However, it is inefficient for each city and town to adopt this type of ordinance. A statewide requirement would be much more efficient and would provide level playing field and consistent requirements. A state level requirement could also connect with MassDEP's enforcement of the waste bans.

39. **Comment:** Waste haulers should use clean vehicles and equipment to collect and move solid waste.

Response: MassDEP agrees with this comment. MassDEP recently awarded grants to retrofit 26 municipally-owned trash and recycling collection vehicles in seven communities to reduce their diesel emissions, and expects to fund similar retrofits in other interested communities.

Waste Ban Enforcement

40. **Comment:** A number of people submitted comments expressing support for expanded and more stringent waste ban enforcement. This enforcement should include automatic mandatory penalties entity to increase recycling rates.

Response: MassDEP agrees that increased waste ban enforcement is a critical factor in making progress towards our waste reduction and recycling goals. MassDEP has increased enforcement of waste bans and looks to continue to work with regulated entities and municipal governments to achieve greater compliance. MassDEP's strategy has been to raise the awareness with regard to waste bans through its education and enforcement efforts and, where necessary, to issue penalties to repeat violators.

41. **Comment:** Legislation should be passed to ensure that penalties from waste ban violations are dedicated to increased waste ban enforcement, waste reduction, or recycling programs administered by MassDEP.

Response: MassDEP does not intend to propose this legislative change. Enforcement penalties from all MassDEP programs go into the General Fund. Directing payments to fund the enforcement program could create the potential for a perceived conflict of interest.

42. **Comment:** A hauler that receives a notice of non-compliance can lose customers to a competitor that may be less compliant than it had been. A generator can use a notice of non-compliance as an excuse to back out of a business arrangement and migrate to a service provider based outside of Massachusetts. Such enforcement measures are ultimately counterproductive.

Response: Effective compliance and enforcement is a critical component for any regulatory program to be effective, ensure a level playing field, and achieve program goals.

43. **Comment:** The "level-playing field" for waste haulers, as stated on page 15, is not likely to happen. Waste bans of C&D were supposed to create a level playing field four years ago but it remains unfair across the industry. Millions of dollars have been invested by C&D processors have invested millions of dollars to recycle C&D, but transfer stations continue to dispose of banned materials with no enforcement.

    Response: MassDEP is committed to continuing to enforce waste bans aggressively and taking a "data-driven" approach by using annual reports from C&D processors to improve waste ban compliance plans. MassDEP will continue to make waste ban enforcement a high priority.

44. **Comment:** More enforcement is the wrong way to go. However, if the Department views enhanced waste enforcement as its preferred route, then that route should lead to enforcement against the waste generators that ultimately control whether materials are recycled or discarded. For example, large generators might demonstrate their compliance through reporting requirements or through development and approval of waste ban compliance plans and comprehensive recycling plans. Further efforts by MassDEP to have solid waste management service providers enforce waste bans at disposal facilities and transfer stations is a poor use of resources that could be more effectively spent elsewhere. There is no data to show that waste bans in Massachusetts have increased recycling rates.

    Response: MassDEP agrees that it is important to extend waste ban enforcement to waste generators and has already begun to do so under MassDEP's existing waste ban authority. However, MassDEP does not have authority to impose reporting or planning requirements on generators. Furthermore, waste haulers and solid waste facilities also have important roles to play in providing recycling services and helping to monitor waste ban compliance and MassDEP will continue to seek to ensure waste ban compliance by these entities as well. Waste ban enforcement alone will not be successful in increasing recycling and composting and reducing disposal. But, we believe that continued waste ban compliance and enforcement across waste generators, haulers, and solid waste facilities is a critical element in a comprehensive strategy to increase recycling and composting and reduce disposal.

Recycling for Small Businesses

45. **Comment:** Small businesses face problems of limited space and minimal budgets for managing their waste. Municipalities need to work cooperatively with these companies so that they can receive recycling services that are cost-effective given their small size. Business assistance coordinators to help with technology and recycling services are a good idea.

    Comment: MassDEP agrees that small businesses need assistance with setting up cost-effective recycling programs. In some cases, municipalities may be able to help provide cost-effective recycling services to businesses. In other cases, the RecyclingWorks in

Massachusetts program may be able to help small businesses start up and maintain cost-effective recycling programs.

Residential Waste Reduction

Single Stream Recycling

46. Comment: A number of questions and concerns were raised about single stream recycling:

- It is unfortunate that the MassDEP is telling communities to use this system. The overall goal should be a high diversion rate, through single stream or any other means available. There are studies that show that increases in participation similar to single stream can be reached in dual stream programs with larger bins.
- Single stream recycling causes problems with end markets for paper. This contamination costs paper mills significant financial resources and negatively impacts paper quality. The SWMP must acknowledge the well-documented reports on problems with material quality, (see the recent Norpac report or the CRI, 2009 report.) Single-stream recycling also prevents the recovery of glass separated by color that could be recycled back into glass packaging, which is a growing market due to programs by retailers such as Whole Foods to increase the amount of products packaged in glass.
- A study commission should be established to compare single stream recycling to other alternatives before this method is fully implemented throughout the state.
- Single stream recycling should not be advocated as a goal. Instead, the goal should be to collect high quality of materials for Massachusetts markets. MassDEP should establish a process and incentives to move municipalities towards improved separation of materials to preserve the value of those materials, allow them to be processed and used locally for higher value uses with less contamination, and increase recycling rates.
- Single stream recycling puts small haulers as well as small manufacturers at a competitive disadvantage. They can no longer send material directly to end markets without sending the material through large processing facilities run by competitors.

Response: Traditional dual stream recycling programs involve separate collection of two categories of recyclables, 1) all glass, metal, and plastic containers and 2) all paper. Single-stream recycling programs collect all of these materials mixed together into a single stream. There are pros and cons to single-stream recycling. The increased processing typically adds cost, which can mean reduced revenue share for municipalities. And, there may be increased residue from contamination. At the same time, single-stream recycling increases the efficiency of recycling collection, reduces collection costs, and increases the quantity of recyclables collected.

Data on single stream collection shows that well-run single-stream facilities generally produce the same levels of residuals (material that cannot be recycled) as dual-stream programs. Single stream MRFs have been able to market recyclable materials effectively and sorting technologies continue to advance improving the overall quality of material without decreasing efficiency. There are market challenges for glass collected curbside because most

of the glass breaks during collection and tipping, regardless of the collection or processing method. Optical sorting technologies for glass are improving which will increase the potential to recover broken glass at dual stream and single stream MRFs in the future.

MassDEP agrees that single-stream recycling should not be a goal itself, but rather is one of several means to achieving increased residential recycling rates. Single-stream collection is one of several effective tools to increase municipal recycling rates. Recycling companies are choosing to invest in single-stream MRFs nationally, haulers are pricing their curbside recycling services to encourage conversion to single stream collection, and municipalities are choosing to switch to single-stream collection without MassDEP assistance. MassDEP does not have the authority to stop this evolution in collection and processing technologies and is supporting both single-stream and dual-stream recycling programs. The state-owned Springfield MRF is a dual stream facility and MassDEP's municipal grants for wheeled recycling carts are available for both dual stream and single stream recycling. We agree that the larger the recycling container, the more material that is captured from households, whether it be single or dual stream collection. Other approaches that have been demonstrated to successfully increase recycling include establishing PAYT programs, implementing mandatory recycling on a local basis, improving recycling and solid waste contracts, providing comprehensive collection for a wide range of recyclable materials, and conducting extensive program outreach. While separating materials into more categories may enable more local markets, it also makes recycling less convenient for residents, which often translates to lower capture rates.

47. Comment: Single stream recycling programs should be expanded in residential areas. The single stream approach makes it easier for waste generators to recycle, thus resulting in increased participation and recovery rates in these programs. Experience shows that a switch to a single-stream recycling program typically increases local recycling rates by up to 50 percent, and does so with lower collection costs. Moreover, the experience shows that the material outputs recovered from the single-stream programs can be marketed on the same basis as materials recovered from programs involving more source separation and higher collection costs.

Response: MassDEP agrees that single-stream recycling using one large container can help to increase residential recycling rates. Experience in a number of Massachusetts municipalities has resulted in double digit percentage increases in recycling tonnage, with only minimal increases in residual rates from single-stream MRFs.

48. Comment: MassDEP should exclude paper delivered in single-stream loads from the 100 tpd permitting limit on recycling facilities, so that it is treated the same way as paper collected through a dual-stream program. The language of the regulations does not make clear whether paper commingled with other recyclable materials in a single stream counts toward the 100-tpd limit. MassDEP should clarify the regulations so that this paper would be considered exempt, like any other paper delivered to a recycling facility.

Comment: Paper is not counted toward the 100 tons per day limit for conditionally exempt recycling facilities, regardless of whether it is collected in a single-stream or dual stream program. In November 2012, these regulations were amended to increase this limit from 100 to 250 tons per day, excluding paper. More information on these regulations is available at http://www.mass.gov/dep/recycle/laws/regulati.htm#sw.

PAYT

49. Comment: Pay As You Throw **(**PAYT) is the most effective program to reduce waste. Its success has been proven based on financial incentive, prompting individuals to make better decisions in exchange for less cost. Towns such as Nantucket and Worcester have reduced their average waste disposal by 350 lbs/capita. Every person should be involved in PAYT. By treating trash as a utility, people will pay more attention to what they throw away versus recycle.

Response: Data from over 100 PAYT programs in Massachusetts and many programs in other states has shown that establishing a PAYT program, in combination with providing comprehensive recycling and composting services, is the single-most effective initiative to reduce waste and increase recycling and composting. MassDEP has made PAYT program assistance to municipalities a top grant priority and will continue to do so.

50. Comment: In 2008, the average disposal in non-PAYT municipalities was 800 lbs/capita, while the average per capita disposal in PAYT municipalities was 550 pounds. If the non-PAYT communities had averaged 550 pounds per capita, that would have reduced MSW disposal by more than 500,000 tons. Legislation should be established to establish a requirement for municipalities to achieve a benchmark of 550 pounds of disposal or less per capita or a recycling performance standard. Municipalities should be given the option of 1) meeting the new per capita benchmark or 2) implementing a Mass DEP approved PAYT program. This type of legislative mandate (with consequences for non-compliance) would provide local officials with the necessary incentive to meet the per capita benchmark. Adding incentives, such as Green Community credits for municipalities that reduce their trash disposal, could also help to get better results.

Response: MassDEP is interested in working with municipal officials and legislators to discuss new approaches and incentives to increase residential recycling and will include this type of approach in this dialogue.

51. Comment: PAYT should be added to the executive summary of the Draft Plan, as it is one of the most effective strategies to increase recycling. If PAYT is not strongly backed by the state, municipalities can easily dismiss it.

Response: MassDEP agrees and has added PAYT to the Executive Summary to indicate that it is a top priority within the Solid Waste Master Plan.

52. Comment: PAYT program analysis sometimes uses lbs/capita data which can distort results since not all households participate. These calculations should be based on participating households only.

Response: When MassDEP works with municipalities to conduct PAYT analysis, we typically calculated lbs/capita or lbs/household data for participating households only to address this issue.

53. Comment: PAYT is an impractical system for those who buy very little and recycle aggressively and are unable to fill a PAYT bag quickly. The needs of households that generate very small amounts of trash need to be accounted for.

Response: PAYT programs are very flexible and can be developed to include different size bags or containers to provide options for different sized households, as well as households that generate very little waste. The Massachusetts state contract for PAYT bags includes 15 gallon bags and 30 gallon bags for this reason. Many communities offer small and large bags in their PAYT programs. A PAYT approach is much more equitable for these households than programs that pay for solid waste services out of tax revenue or through a flat fee.

54. Comment: According to the graph on p. 29, Dartmouth decreased its trash by 45% but the recycling tonnage increase was not equal. Part of this decrease was due to trash being disposed of elsewhere. Continued expansion of PAYT communities is supported even though part of the change in decreased trash is due to trash shifting.

Response: Shifting disposal to other jurisdictions is only one reason why disposal tonnage drops when PAYT is implemented. Recycling generally accounts for one third of the materials that are diverted from trash disposal. The other two thirds of the tonnage is reduced by a combination of factors including:

- Composting may increase in addition to recycling, either through increased collection of leaves and yard waste or increased backyard composting;
- Residents may increase their donation of household items to charity or reuse options;
- Residents may change their buying habits to reduce waste;
- Residents may hold on to products longer before discarding them;
- Residents who own a small business in another town may stop bringing office trash home once PAYT is implemented; and
- Residents may switch from the municipal program to a private subscription hauler.

55. Comment: MassDEP should set a more aggressive goal for increasing the percentage of residents served by municipal PAYT programs. This percentage should be increased from 50 percent to at least 60 percent.

Response: MassDEP believes that the 50 % goal as written in the Draft Plan is an aggressive, yet feasible, goal for expanding PAYT programs by 2020. While MassDEP would like to see this goal exceeded, we believe that the 50 % goal is the best choice given the rate of growth in PAYT programs over the past decade.

56. Comment: Programs that limit residential trash or charge on a unit basis are unjust because they make residents pay for extra trash removal.

Response: Paying for trash disposal on a per unit basis is actually the most equitable way to pay for trash collection and disposal services. Under a flat fee or tax-based approach, all residents pay the same amount regardless of how much or how little they throw out and how much their trash costs the municipality to manage. In a unit-based system, the more trash that a resident throws out, the more that they pay and, conversely, the less they throw out, the less that they pay. Charging for trash services in this way ensures that residents pay only for the cost of the trash they dispose, rather than subsidizing the disposal of other residents through flat fees or tax revenue.

Education

57. Comment: MassRecycle should help with education efforts regarding the benefits of recycling.

Response: MassDEP agrees that partnerships are very important to advancing education efforts and will continue to work with MassRecycle through programs such as the MassRecycles Paper Campaign to improve recycling education.

58. Comment: Partnering with the waste management industry may make sense for some educational programs, but it is important to remember that they have their own interests, which may not always be compatible with zero waste. It is important for MassDEP to take the lead in developing any public education messages.

Response: MassDEP recognizes that different stakeholder groups have different interests, which can affect education and outreach messages. However, the solid waste and recycling industry and the business community, such as retailers, are often well-positioned to deliver messages to their customers on reducing waste and increasing recycling and often have common ground with MassDEP on public education messages.

59. Comment: Education initiatives will not progress beyond voluntary efforts unless they are adopted on the statewide level. MassDEP should work with the Department of Education at a high level to improve integration of recycling education into school curricula. More focus should be placed on K-12+ education regarding the value and applicability of an integrated solid waste management system, beginning with the waste management hierarchy of waste

reduction, reuse, recycling and composting, recovery of energy and, as a last resort, landfilling.

Response: MassDEP has worked with the Department of Elementary and Secondary Education (DESE) to integrate recycling and composting education into school curricula and to advance recycling education through the school Green Team Program (www.thegreenteam.org). The Green Team reaches over 30,000 students in grades K-12 each year by providing teachers with classroom activities, teaching tools and lesson plans on recycling, composting, air quality and climate protection. MassDEP has developed curriculum activity sheets that address the different levels of the waste management hierarchy. The Green Team aligns recycling and composting educational activities with the Massachusetts Curriculum Frameworks and focuses on developing recycling projects under the DESE Community Service Learning Grant Program. MassDEP participates in quarterly meetings with representatives from DESE as part of the Secretary's Advisory Group on Environmental Education, convened by the Secretary of Environmental Affairs and the Secretary of Environmental Education in mid 1990s. MassDEP agrees that integrating recycling into school curricular is valuable and will continue to work with the DESE to advance this goal within broader curriculum development efforts.

60. **Comment:** One of the main goals for recycling education should be to increase recycling by making it popular. There are many children's gatherings, adult meetings, and performing groups that could help to provide more positive exposure for recycling.

Response: MassDEP agrees that partnering with other groups and events to advance recycling education can be an effective approach. MassDEP is also exploring how to make better use of social networking applications to advance public awareness about recycling and composting.

Other Residential

61. **Comment:** Littering in neighborhoods and parks is still a major problem. Every town in Massachusetts should have public recycling bins that provide a means for people to recycle in public places. These collection stations should be primarily recycling collection containers with trash collection secondary. In addition to reducing litter, research should be conducted and systems should be established to capture plastic and other non-biodegradable items from storm water systems before they flow out to rivers and oceans.

Response: MassDEP agrees that there are opportunities for local governments and other entities to increase recycling and reduce litter through public space recycling programs. MassDEP's "small scale initiatives" grants provide cities and towns with funds to purchase public space recycling bins and other resources to increase recycling. In addition, initiatives such as the expanded bottle bill can provide important financial incentives to capture items such as plastic water and sports drink bottles that are commonly discarded as trash or litter in public spaces.

62. Comment: The focus on regional program approaches, especially for hazardous products, is an excellent component of the Plan. It just needs to be paired with strong public education programs. In particular, MassDEP should continue to expand its work with regional programs for smaller communities that do not have economies of scale to implement cost-effective programs and transport materials on their own. This could include resource parks that serve a group of communities, rather than being bound to the geographical boundaries of individual towns. Examples in the draft plan are not focused on small rural communities which are the majority of Massachusetts communities. More recycling programs focused on smaller more rural communities are needed. These communities need help to consolidate materials for more efficient transportation costs.

Response: MassDEP agrees with this comment and will continue to make support of regional initiatives a priority for grant and assistance programs, particularly for smaller municipalities. The Draft Plan included an action item for developing regional initiatives, which MassDEP will maintain in the Final Plan.

63. Comment: In addition to incentives for increased recycling tonnage, MassDEP should consider incentives for reduced disposal tonnage.

Response: PAYT programs are the best approach to providing direct financial incentives for residents to reduce trash and increase recycling and composting. MassDEP may consider incentives for municipalities to reduce trash as part of a municipal performance based grant program, either in addition to or instead of incentives for increasing recycling. The key to making this type of incentive work is ensuring complete and accurate reporting of trash tonnage. It would be easy to under-report trash tonnage and difficult to verify missing tonnage when evaluating data showing reduced disposal tonnage.

64. Comment: Support was expressed for the efforts of municipalities to make recycling mandatory on the local level and implement enforcement directed at waste generators. MassDEP should support and expand such efforts by municipalities that go beyond the requirements of the Department Approved Recycling Program (DARP).

Response: MassDEP agrees that implementing mandatory recycling on the local level can be an effective approach to increasing recycling and reducing disposal, and is supporting municipal efforts to implement mandatory recycling on the local level in several ways. This includes providing grants to hire local enforcement coordinators, providing model ordinances, and holding workshops for municipal officials.

65. Comment: Cambridge serves as an excellent model for diverting waste. They recycle a large variety of materials, including electronics and metals, and residents can bring their food and yard scraps to the public works grounds for the city to compost.

Response: A number of Massachusetts municipalities, including Cambridge, have implemented innovative approaches to increase recycling and composting and reduce waste. Both the Final Plan and Draft Plan include initiatives to work with municipalities to develop

new approaches and spread the adoption of successful programs through grants, municipal coordinator assistance, and workshops and guidance for municipal officials.

66. Comment: The plan should focus more on residential organic waste such as food and yard waste, which makes up more than 1/3 of the waste stream.

Response: Both the Draft Plan and the Final Plan include supporting programs to increase residential food waste diversion in addition to focusing on increased diversion of organics from businesses and institutions. MassDEP has awarded grants for pilot programs to collect residential food waste at the curbside.

67. Comment: More emphasis should be placed on reusing items, such as through swap shops or online reuse options. There are many opportunities to increase local reuse and repair options for clothing, other textiles, furniture and other durable products. There should be incentives and promotion of reuse options such as Freecycle and yard sales to increase reuse. The Boston Building Materials Coop seems like an optimal solution – why is there only one? There should be more building materials reuse centers around the state.

Response: MassDEP agrees that increasing reuse is an important contributor to Massachusetts waste reduction goals. Massachusetts has sought to promote reuse options through the MassDEP web site and by improving networking among different groups that provide reuse options. The Sustainable Materials Recovery Program grants offer funding for regional reuse centers. MassDEP is currently funding Habitat for Humanity's ReStore (for used building materials and furniture) in greater Worcester. There are six building materials reuse centers in Massachusetts, three of which have received funding from MassDEP for start-up and expansion. MassDEP will add an action item to the residential waste reduction strategy on promotion and expansion of reuse options.

68. Comment: MassDEP should place a greater priority on helping local groups to reduce waste and recycle.

Response: Under the Sustainable Materials Recovery Program, MassDEP can award grants to non-profit organizations for projects to increase recycling and composting and reduce waste. Habitat for Humanity received a grant from MassDEP this year to expand its ReStore (for used building materials and furniture). In addition, MassDEP will look for opportunities to partner with non-profit groups to promote reuse, recycling, and composting programs.

69. Comment: Junk mail is a huge contributor to residential waste and is largely unwanted. At one point, the Legislature considered a junk mail opt-out option much like that for telephone calls. Implementing a comprehensive system to opt out of junk mail, especially bulk mail deliveries, could be very beneficial in reducing waste.

Response: MassDEP has prepared and distributed a Junk Mail Reduction Kit that provides information for residents on how to reduce their junk mail. MassDEP is providing funding to the Product Stewardship Institute for a pilot "opt-out" program that allows residents to utilize an online tool to remove themselves from mailing lists.

70. Comment: Local neighborhood Green Corps programs could be set up to help the elderly with handling materials for recycling and yard waste collection and provide part-time jobs for high school students.

Response: MassDEP would consider funding an initiative like this through future rounds of the Sustainable Materials Recovery grants for municipalities and non-profit groups.

71. Comment: In tight economic times, the cost of 'trash disposal' becomes a significant waste of hard-earned taxpayer dollars that might save teachers' jobs or allow a fire station to remain open to protect the public. The state should require municipalities to reduce their solid waste management costs. However, some communities are paying as much, if not more, to dispose of recyclables as they pay for trash disposal, leaving no financial incentive to recycle.

Response: While trash and recycling costs vary from one community to another, MassDEP agrees that in most cases, municipalities can reduce their overall waste management costs by increasing recycling and composting and realizing savings on avoided disposal costs. There are exceptions to this in a small number of municipalities that have contracts or host community benefits that provide for below market tip fees. While the state has no authority to compel municipalities to reduce disposal costs, MassDEP has implemented a number of programs to help municipalities reduce their solid waste management costs, and is interested in pursuing new strategies and approaches to help municipalities to reduce their solid waste management costs, including legislative approaches.

72. Comment: Community-specific waste audits should be conducted, as waste may differ from one community to another.

Response: Waste composition studies are typically very expensive and not cost-effective to conduct for individual communities. MassDEP believes that this would not be a good use of limited resources. While there will be some variation in waste composition among different types of municipalities, MassDEP believes that state-wide waste composition data is sufficient to inform program planning and prioritization. MassDEP expects to have waste composition data from studies conducted by municipal waste combustors under the renewable energy credit requirements of the Green Communities Act available in early 2011.

73. Comment: The plan should examine the actual costs, actual emissions and discharges, and actual benefits using recycling data from specific communities, such as the cities Boston, Worcester, and Springfield; a town on the Cape; towns 30 miles away from each city; a town on Cape Ann; and a town in the Berkshires. The evaluation should include each normal recycling stream, such as metals, glass, office paper, newspapers, and individual

thermoplastics, but also the incremental streams that the plan wishes to capture. Without this specific analysis (as opposed to generic analysis), mandates for the recycling of these waste streams are wholly without justification and should be eliminated from the plan.

Response: Community specific cost and tonnage data is very important in program planning and establishing contracts and MassDEP's municipal assistance coordinators work closely with municipal officials to consider this data when working on improving municipal solid waste, recycling, and composting programs. However, MassDEP disagrees that customized analyses for individual municipalities are necessary to justify the benefits of recycling and to justify policies to increase recycling and reduce waste. There are cases where these benefits and costs need to be more closely examined for specific materials, for example, recycling polystyrene may not be cost-effective given its light weight and low density. However, the environmental and economic benefits of recycling and composting programs for commonly accepted materials are clear across all Massachusetts municipalities and do not require specific analysis on a community basis.

Extended Producer Responsibility (EPR)

74. Comment: Extended producer responsibility (EPR) programs are one of the most effective and economically-sound means for reducing waste generation and increasing diversion. Product stewardship can save Massachusetts local governments as much as $50 million in annual waste management costs by shifting from taxpayer-funded government programs to programs funded by producers and consumers and requiring manufacturers to internalize the costs of managing products throughout their lifecycle. Product stewardship corrects market failures and accounts for lifecycle impacts in public policy, making it clear that source reduction, reuse, recycling, and composting are the best management options. At the same time, building a take-back collection infrastructure for products can help to spark local business and job creation. MassDEP should provide more assistance to the Legislature with developing producer take-back and safer alternatives legislation so that producers pay the cost of managing products and packaging after use. More attention needs to be paid to product manufacturing, especially product life-span and biodegradability. Many products end up in the environment due to improper disposal and remain there, having adverse effects on environmental health.

Some items that would be good candidates for EPR are: compact fluorescent lights, medical sharps (primarily needles), pharmaceuticals, other household hazardous waste, e-waste, carpet, phone books, and packaging. Waste audits that measure the amount of waste in the waste stream by product category (e.g., electronics, food and beverage containers, etc.) would help to understand the potential benefits of producer take-back programs as well as establishing priorities for EPR legislation. These laws need to be much stronger than voluntary initiatives such as the memorandum of agreement on disposable bag reduction.

Response: MassDEP agrees that establishing EPR systems can achieve several important benefits, including reducing waste management costs for local governments and taxpayers, while providing incentives for manufacturers to design and produce products that are more durable, have reduced toxicity, and are generally less expensive to manage after use. Manufacturers have the ability to change the way their products and packaging are designed,

distributed, sold, and used and, thereby, reduce the costs of managing the products and packaging after use. MassDEP supports developing extended producer responsibility systems and requirements and expects to work with legislators, officials from other Northeast states, manufacturers and retailers, and EPR advocates to develop EPR requirements. MassDEP agrees that these products and packaging categories are good candidates for EPR systems. In particular, MassDEP has supported legislation that would require electronics manufacturers to be responsible for managing their products after use.

75. Comment: EPR needs to be applied on a national basis. In-state businesses also may be at an economic disadvantage if they have compliances to follow that other non-Massachusetts businesses do not. Another commenter urged caution about developing federal EPR initiatives, as these are likely to be weaker than state laws.

Response: MassDEP agrees that EPR would be best developed and implemented on a consistent basis nationally. However, in the absence of national leadership on this issue and no apparent national systems in development, MassDEP believes that it is important for states and regions to take the initiative to establish EPR requirements on the state level. Whenever possible, these state requirements should be made consistent across New England and Northeast states. Any state level requirement would apply to businesses the same way so that out-of-state businesses selling products in Massachusetts would be held to the same requirements as businesses located in Massachusetts.

76. Comment: Twenty-three states have passed e-waste producer responsibility laws and these programs are safely collecting and recycling e-waste. Massachusetts and New Hampshire are the only northeast states that do not have EPR legislation for electronics. The recycling of electronics is supported but there is a concern with their export to Africa, India, and China. Health regulations for people working on these products are minimal and there appears to be little effort towards providing protection from any hazardous material found inside these products. MassDEP or a similar agency needs to perform more extensive research on electronic recycling and where these products are going.

Response: State contracts for recycling electronics have been developed to ensure that electronics collected and sent to these companies by state and local governments for recycling are safely and responsibly recycled. MassDEP agrees that electronics producer responsibility legislation should include provisions to ensure that products collected for recycling are safely recycled.

77. Comment: It is important to develop and pass framework EPR legislation in Massachusetts as soon as possible. Developing a regional framework EPR approach is a valid policy if it moves quickly enough, but the state should step in with a Massachusetts only requirement if regional action does not move quickly enough. The Administration should show more leadership with EPR as they have done with energy efficiency and renewable energy. Framework EPR legislation should be a priority for the next legislation session, sending a signal that this is needed. Another comment added that coordinating a

framework EPR approach across the region would result in consistency for manufacturers, reduced implementation costs for states, reduced overall system costs (due to economies of scale), and economic development. Massachusetts should set a 3-5 year timeline for determining product categories to cover under a framework approach, as this is similar to what other states are implementing.

Response: MassDEP believes that EPR would be most effective if implemented consistently across the Northeast, if not nationally. A good example of this is the IMERC system for registering mercury containing products sold in Northeast states. Implementing this system regionally is much more efficient than conducting this work on a state by state basis. Approaching framework EPR on a consistent basis across the region and sharing administrative work such as registering manufacturers and tracking compliance could be a critical need in order to ensure that states have the resources to implement these requirements.

Bottle Bill

78. Comment: Many commenters support an expanded bottle bill that would cover other beverage containers such as water, juices, and sport drinks. MassDEP needs to hold businesses responsible for their share of waste management costs. The bottle bill will reduce the presence of plastics in the environment, including oceans, where they cause ecological problems.

Response: MassDEP will continue to support an expanded bottle bill to increase the recycling of containers for beverages such as bottled water and sport drinks that are not covered under the current bottle bill.

79. Comment: It is unfortunate that the expanded bottle bill is still being discussed now and suggests that DEP does not have sufficient authority to advance recycling and waste reduction. MassDEP should have the authority to implement something like this without legislative approval. MassDEP needs stronger authority to establish these types of requirements.

Response: MassDEP's role and responsibilities are defined by state laws and we must operate within those statutory parameters. MassDEP has proposed several initiatives in the Plan that would provide MassDEP with more authority to increase recycling, including the expanded bottle bill.

80. Comment: On page 23, the Draft Plan states that an expanded bottle bill would double the capture rate of bottles and cans when it would actually triple it.

Response: MassDEP's most conservative estimates are that the recycling rate for bottle bill containers is just over two times that of non-bottle bill containers. MassDEP will have a more accurate picture of the disparity in the recycling rates of deposit containers and non-

deposit containers after the completion of a waste characterization study being conducted by six waste-to-energy facilities in the state.

81. Comment: The expanded bottle bill should include a provision to re-direct all proceeds from the existing and expanded bottle bills to support recycling programs administered by MassDEP.

Response: The appropriation of funds under the bottle bill is made by the State Legislature, not MassDEP.

Packaging Reduction

82. Comment: A large amount of money is wasted to pay for product packaging, most of which never gets recycled. The packaging of products found in grocery stores is also inefficient. Items such as cereal and chips are sold in packages that contain mostly empty space. Reevaluating this packaging and designing more efficient packaging could significantly reduce waste. Businesses simply want to maximize their profits while governments do little to reduce the trash they create in the process. Disposal of packaging needs to be analyzed and subsequent regulations need to be placed on manufacturers to reduce use of materials used in packaging. The use of Styrofoam packaging, which litters streams and lakes, should be decreased, if not eliminated. Restaurants should eradicate their use of Styrofoam take-out containers and cardboard alternatives to Styrofoam should be implemented.

Response: Establishing regulations to require manufacturers to reduce or eliminate packaging would require legislative action, as MassDEP does not currently have this authority. In addition, it is important to recognize that there are many objectives that manufacturers attempt to meet in designing packaging, including protecting the product and preventing spoilage during distribution and prior to use, making the packaging visually appealing, and reducing packaging cost. However, many businesses are interested in reducing packaging material volume and weight, as this material costs them money to purchase and transport. MassDEP proposes to work with Massachusetts businesses to implement resource management contracting and supply chain management practices that examine how businesses are using materials and look for up-stream opportunities to reduce materials use for packaging and other purposes.

83. Comment: Plastic containers that do not degrade are a large issue that is being overlooked.

Response: MassDEP supports the expanded bottle bill, which would require beverage companies to add water and spot drink containers to their recycling systems. This measure would increase the recycling of plastic beverage containers, particularly water and sports drink bottles that are consumed away from home.

Organics Diversion

84. **Comment:** MassDEP is correct to identify organic waste as a priority material category. Commenters also expressed support for increasing compost sites, increasing diversion from organics generators and developing green job opportunities in Massachusetts.

Response: MassDEP agrees with this comment and maintains organics diversion as a priority in the Final Master Plan with strategies focused on increasing composting infrastructure and diversion and creating green job opportunities in the process.

85. **Comment:** On page 35, a sentence reads: "Food waste diversion is currently limited in large part by the capacity of processing facilities and available end markets." That seems stunning, that we would be short on end markets for compost. We request some further supporting facts here.

Response: Massachusetts has a shortfall in processing capacity for organic materials beyond leaves and yard waste. As specified in the Draft Plan, Massachusetts needs annual processing capacity of approximately 250,000 - 300,000 tons per year to meet our organics diversion goals for 2020. While sufficient markets exist for compost materials produced from existing facilities, end markets to support this large amount of additional compost material will need to grow. MassDEP believes that there will be sufficient demand and need for compost products to drive these markets, as there are many untapped uses. Compost purchasing commitments from state agencies for uses such as erosion control would go a long way towards ensuring stable, viable markets for compost products.

86. **Comment:** Composting should be the standard procedure for managing all organic waste. Massachusetts has many restaurants located near farms which provide a good opportunity to mix food waste with agricultural manure management.

Response: MassDEP has established a food waste density mapping system that can help to match compost site locations with restaurants and other food waste generators. This tool is available on the MassDEP web site at http://www.mass.gov/dep/recycle/reduce/composti.htm#commercial.

87. **Comment:** The suggestion for composting commercial paper that is not recyclable is a good opportunity to compost additional organic wastes.

Response: In working with supermarkets and compost sites to establish composting programs, MassDEP has found that they successfully diverted compostable paper for composting along with food waste and this can be a good way to capture value from soiled paper and paper towels that are not recyclable.

88. **Comment:** There should be a new level of technical review and enforcement at composting facilities to ensure that these facilities are effectively designed, sited, and operated to prevent operational issues such as odor. More staff and training is needed to accomplish this. If MassDEP is unable to provide the staff, LSP type professionals could

be used. Agreements between communities and facility developers would also help ensure success of siting and operating organics processing facilities.

Response: MassDEP agrees that additional organics processing capacity needs to be designed and built well and operated as intended to prevent nuisance and odor issues. The level of permit review and oversight of these facilities will depend in large part on the size of the proposed facility and the types of materials to be handled. For example, large units will receive more review and oversight than very small farm-based units.

89. Comment: In order to develop the infrastructure needed to achieve zero waste goals, it is critical to have a rapid and reasonable permitting process that provides clear requirements for technologies and management methods that are not clearly addressed in existing regulations. Regulatory certainty on the permit process and permitting criteria is important to limit the development effort of the processing facilities and provide the necessary assurances to finance the ventures commercially.

Response: MassDEP recognizes the importance of establishing a clear permitting process for different types of organics processing facilities. MassDEP promulgated revisions to these regulations in 2012 as an early step in the Master Plan implementation process. See http://www.mass.gov/dep/recycle/laws/regulati.htm#sw for more information.

90. Comment: There may be some merit to siting regulation modifications for farm composting, particularly for anaerobic digestion. However, size limits for the amount of food waste accepted by community facilities should not be raised.

Response: MassDEP appreciates that there are important concerns to address with local food waste composting facilities, particularly odor concerns. Ensuring that these facilities are well-designed and operated and in locations where they are less likely to cause problems is important. MassDEP worked with stakeholders to develop regulation revisions that set standards for how composting, anaerobic digestion, or other organics processing facilities will be regulated and overseen.

91. Comment: MassDEP should encourage, sponsor and support small-scale demonstration projects and programs for organics processing. These will provide the following benefits:

- Enable MassDEP to develop proper regulatory requirements to protect the public from environmental impacts from these programs and facilities;
- Allow the value and marketability of the products to be understood, and develop local markets;
- Enable residuals from the diversion programs and conversion technologies to be assessed to determine the degree of disposal required by these programs and facilities; and
- Allow the economics of the programs to be determined so that competitive and sustainable commercial level programs and facilities can be developed.

Response: MassDEP agrees that small-scale demonstration projects can be an effective approach to learning more about and testing different technologies and approaches for processing food waste. This testing could help ensure more successful operation of commercial scale facilities. However, applications for demonstration projects are often limited, as they are costly and have a limited life. MassDEP is willing to work with interested applicants to permit demonstration projects as proposed.

92. Comment: Commenters supported implementing a waste ban on commercial and institutional food waste by 2014, but also supported a disposal ban on residential food waste by 2020.

Response: MassDEP continues to support development of a waste ban on commercial and institutional food waste by 2014, with the caveat that this date will be dependent on the development of sufficient processing, hauling, and end market infrastructure to provide adequate market outlets for this material. And, this waste ban will require a regulatory revision that will go out for public comment and hearing. However, MassDEP believes that are additional issues that need to be addressed before a waste ban can be successfully developed on residential food waste and that it is premature to specify a date for that ban.

93. Comment: Some commenters are not convinced that a waste ban on organics would have net environmental benefits, and oppose a waste ban on food waste in the near term. Increasing the overall waste diversion rate for merely its own sake is not a sufficient justification for a new waste ban. We. There are too many challenges and questions about whether the ban would be worthwhile. Food waste delivered to existing solid waste facilities could not readily be separated from other wastes. A ban on food waste disposal would need to be implemented through a new level of source separation by the waste generators. New collection vehicles and approaches will be needed. New facilities would be needed for digestion or composting. Markets will need to be developed for the products of processing. Due to the putrescible nature of food wastes, care will be required at each step to avoid nuisance impacts. The environmental impacts of future food waste processing or composting facilities are not yet known or understood, although, at a minimum, significant additional transportation will be required for separate hauling of food waste and its products.

Response: To be successful, a ban on disposal of food waste cannot be implemented until infrastructure is in place to collect, process, and recycle or compost this material. MassDEP believes that an adequate infrastructure can be in place to support a waste ban adopted in 2014. MassDEP believes that the environmental benefits of diverting source separated organics are well-established. In addition to diverting this material from landfills and avoiding the associated methane emissions, diverting food waste from disposal facilities to composting or anaerobic digestion facilities would free up limited disposal capacity for other materials that cannot be diverted. While this would require separate collection routes and additional trucks to collect this material, the frequency of trash collection at commercial and institutional facilities can be reduced which will reduce the truck traffic required to collect and dispose of trash. Reducing trash container pulls and

trash tip fees can enable generators to manage their source separated food waste cost-effectively. And, various methods of organics processing can generate compost or similar material that can provide a series of benefits including improved soil quality and productivity, reduced fertilizer use, reduced surface water runoff, and reduced water use. And, anaerobic digestion can generate and capture methane gas from food waste that can be used as an energy source.

94. **Comment:** The plan ignores the collection infrastructure aspect of organic diversion, including storage containers and collection vehicles. Organic collection, especially if it includes food material, will require a whole new infrastructure. MassDEP needs to consider how to best way foster the development of this new infrastructure.

Response: While additional hauling capacity will be needed to transport food waste to composting and processing facilities, waste haulers have indicated that they are willing and able to provide this service as the processing infrastructure grows and are increasingly offering food waste collection services.

95. **Comment:** MassDEP needs to be more involved in local planning and zoning requirements to support the siting of additional composting facilities.

Response: MassDEP's role with composting facilities is to oversee those facilities to ensure that they comply with state permitting requirements and do not cause nuisance and odor concerns. While MassDEP supports development of additional organics processing capacity on a statewide basis and has modified and clarified state regulations governing composting facilities, MassDEP does not have the authority to get involved with local planning and zoning decisions, which are a local government matter.

96. **Comment:** By modifying the solid waste siting regulations to remove barriers to the siting of facilities that process organic materials, the Department is opening the door for the disproportionate siting of such facilities in environmental justice communities, which is demonstrated by the disproportionate share of other solid waste facilities in environmental justice communities. The Department must develop criteria to ensure that the siting of new facilities or expansion of existing facilities do not result in a greater burden on communities of color and lower income communities. MassDEP needs to provide a more detailed explanation of how it proposes to change siting processes and ensure that there is public participation in these processes. Any applicant proposing to construct a new facility to process source separated organics must be required to identify and address any impacts on environmental justice communities. The law should be revised to put the burden of proof on the applicant that a facility would be safe.

Response: MassDEP considered these comments in developing revisions to the site assignment regulations.

97. **Comment:** Facilities that receive large amounts of food waste in commercial packers or transfer trailers should be regulated the same way as any other solid waste facility. Even if

they receive source separated food waste, they still pose the same kind of problems as other solid waste facilities.

Response: MassDEP appreciates these concerns with facilities that accept food waste for composting or other processing. MassDEP promulgated regulations that attempt to balance these concerns while promoting the development of additional composting and organics processing capacity.

98. Comment: The primary goal of a composting program should be to produce a compost of sufficient quality that it can be used to replenish agricultural soils, preferably those used in organic agriculture. The plan, however, views the value of composting only in terms of keeping waste out of the landfill, not the value of having quality finished compost, which will hinder the ability to expand composting efforts.

Response: MassDEP agrees that this comment raises an important issue. Ensuring that source separated organics can produce of high quality compost products is an important component of a sustainable and effective composting infrastructure.

99. Comment: Composting of organics should include food and yard waste only and anaerobic digesters should follow strict regulations as well as environmental justice criteria. Sewage sludge should not be included.

Response: Anaerobic digestion is already a commonly used management method for wastewater treatment facility sludge and can provide important benefits in managing this material compared with other alternatives. In some cases, adding source separated organics to wastewater treatment plant sludge may help to improve the operation of these facilities. Any compost products produced from these facilities would be regulated under MassDEP's Land Application of Sludge and Septage Regulations, 310 CMR 32.00. Other anaerobic digesters that manage organics will be regulated by the solid waste program.

100. Comment: Co-composting facilities generate an inferior compost product that can be difficult to market. These facilities also require a lot of energy in order to operate properly. While their efforts are laudable, they may not be suitable for many locations, and alternatives such as anaerobic digestion that create energy should be considered.

Response: While MassDEP has approved two co-compost facilities in Massachusetts, MassDEP generally agrees that is preferable to separate food waste and other organic materials at the source to ensure that a high quality compost product is produced with minimal contamination.

101. Comment: MassDEP should use the Master Plan as a means to better define and coordinate inter-agency coordination between MassDEP and the Department of Agricultural Resources. MassDEP should consider including the following elements into the Master Plan to provide more flexibility for farms to manage on-farm organic waste:

- MassDEP current groundwater regulations of 314 CMR 5.00 conflict with many widely accepted agricultural practices including those accepted and funded by the

USDA Natural Resource Conservation Service. MassDEP is applauded for proposing revisions to the regulations, which will exempt many agricultural activities from 314 CMR 5.00, provided they comply with NRCS standards.

- provisions by which additional and ongoing conflicts can be addressed in a timely and efficient manner, and
- provisions for addressing slaughter waste as its expected that growing interest in locally produced meat will lead to issues regarding disposal of offal and slaughter waste water.

Response: MassDEP and MassDAR meet regularly to discuss regulatory issues that affect farms and other agricultural activities. This forum is the appropriate one in which to raise these types of issues. Furthermore, MassDEP is an active participant in the Farm Technology Review Commission, another forum for addressing farm-related regulatory issues.

MassDEP has already addressed a number of issues raised regarding farms, is proposing to modify its solid waste and groundwater regulations to address others, and has permitted new farm anaerobic digesters that will improve farm waste management and provide a significant market for source separated organics. MassDEP expects to see more of these types of permits in the near future.

102. Comment: Anaerobic digestion is the most effective way to manage organic materials. However, it is difficult to find an area to place a facility due to community opposition and facilities are expensive to run. Funding is needed from some source. Taxing GHG emissions produced from landfills could help alleviate this lack of resources. In addition, anaerobic digestion, as well as other waste reduction, should be eligible for GHG reduction credits.

Response: MassDEP agrees that anaerobic digestion is a promising option for managing organic materials such as food waste. MassDEP would consider applications under the Sustainable Materials Recovery Program for funding assistance for development of anaerobic digestion processing capacity for organic materials. Anaerobic digestion facilities receiving food waste are currently eligible for renewable energy credits.

103. Comment: State assistance, in the form of state land and state purchasing commitments, could help to stimulate greater private investment in Massachusetts' organics processing infrastructure.

Response: MassDEP proposed state agency purchasing commitments for compost materials in the Draft Plan and will continue to work with state agencies through the Environmentally Preferable Products purchasing program to develop these commitments. MassDEP also will work with other state agencies to assess opportunities to use available state owned land as locations for anaerobic digestion facilities.

104. **Comment:** Neighborhood compost bins for yard waste and food scraps in city parks could be used to generate compost for use in the parks or to be given away to neighborhood residents.

Response: MassDEP would have concerns about un-staffed collection bins for food waste in public parks, as these could easily result in problems with contamination and odor. However, MassDEP is interested in working with municipalities to develop pilot approaches to collect and compost food waste from residents, schools, and municipal buildings. MassDEP has modified regulations to enable this type of small scale collection system.

105. **Comment:** There needs to be more focus on residential food and yard waste which makes up nearly 1/3 of the waste stream from these areas. Presently, residents in Boston cannot compost food scraps unless they use an indoor worm bin. Cities such as Vermont and San Francisco should be looked at as examples.

Response: MassDEP has supported residential food waste composting in the past through subsidized home compost bin distribution programs. MassDEP also is supporting several municipal pilot programs for residential food waste composting. MassDEP's general approach is to establish a collection and processing infrastructure for businesses and institutions that generate larger amounts of food waste first, before focusing on diverting residential food waste. MassDEP believes that this approach will result in more cost-effective residential composting programs.

Construction and Demolition Debris Diversion

106. **Comment:** Section 3.5, C&D Materials Diversion and Market Development (p. 37) mentions that when ABC is excluded from the C&D data, the recycling rate for other C&D material is only 14%. Is MassDEP confident that these figures are correct or could there have been any under-reporting of diverted material?

Response: These figures are accurate to the best of MassDEP's knowledge.

107. **Comment:** Several people expressed support for the proposed goal of increasing the diversion of non-ABC materials from 14 percent to 50 percent, with particular support for increasing diversion of wood, roofing materials, and gypsum wallboard. However, MassDEP needs to be more specific about how it will grow recycling outlets for C&D materials.

Response: MassDEP relies on a combination of several approaches to developing markets for C&D materials. These include working with the C&D Subcommittee and workgroups to identify potential markets, facilitating networking among these market outlets, C&D processors, and contractors, and providing financial assistance in the form of grants or loans to support development of new market outlets. In some cases, MassDEP has and will use waste bans in combination with market development work to encourage investment in growing these recycling markets.

108. Comment: There should be mandates established that require building material, such as plastic and vinyl siding, windows, railings, and decking, to go to a recycling plant instead of being sent to disposal facilities. Recycling rates also need to be increased for non asphalt, brick, and concrete materials to about 40%.

Response: In addition to construction materials that were banned from disposal in 2006 (asphalt paving, brick, concrete, metal and wood) MassDEP has promulgated a regulation to establish a waste ban on clean gypsum wallboard and is considering subsequent bans on asphalt shingles, carpet, and ceiling tiles. These bans will be proposed and developed in concert with recycling market development efforts.

109. Comment: There need to be stronger incentives and assistance for deconstruction, sorting, and recycling of building material. Fostering building deconstruction could be paired with developing more building materials reuse outlets. Another commenter proposed establishing mandatory deconstruction plans for demolition projects. MassDEP should require that anyone demolishing an existing structure to submit a waste diversion plan that provides for source separation and a minimum of 65% diversion of the material from incineration or landfills. Source separation of construction and demolition materials should be required on site. Haulers should not pick up non-segregated loads.

Response: In some cases, sending mixed C&D materials to processing facilities can work well and source separation at the job site may not be necessary. MassDEP will work with the construction industry and municipalities to promote building deconstruction practices where they prove to be cost-effective and can help improve the quality and value of the separated building materials. MassDEP has supported several project case studies that have separated recyclable C&D materials at job sites, which are available on the MassDEP web site at http://www.mass.gov/dep/recycle/reduce/managing.htm#data.

110. Comment: Incoming loads at C&D facilities are not being properly sorted or processed by employees in accordance with the waste ban. MassDEP needs to establish a strong waste ban inspection protocol for C&D processing facilities and transfer stations, expedite inspections, and ensure facility compliance with waste ban plans. MassDEP needs to enforce C&D waste bans more aggressively. Support was expressed for waste bans for additional materials, but not until existing waste bans are effectively enforced.

Response: MassDEP agrees that strong compliance and enforcement is an important aspect of successfully implementing waste bans. MassDEP is and will continue to conduct inspections at C&D handling facilities to monitor facility compliance with waste ban plans and, where necessary to require modifications with waste ban plans to ensure facility compliance with the waste ban requirements. MassDEP is proposing to develop a draft policy advisory for distribution to stakeholders. That draft advisory would affect all C&D Handling Facilities that have Facility Permits and Waste Ban Compliance Plans and would require the following measures be taken with respect to clean gypsum wallboard in order to maintain compliance with Facility Permits:

A. Loads that include clean gypsum wallboard must be sorted to remove clean gypsum wallboard to the greatest extent possible prior to mechanical processing and prior to further transportation of the materials.
B. Facilities would not be allowed to transfer mixed waste loads containing clean gypsum wallboard without first separating the clean gypsum wallboard.
C. In order be eligible to receive mixed loads including clean gypsum wallboard, the C&D handling facility will need to demonstrate that they have procedures, equipment, space, and/or personnel to effectively separate clean gypsum wallboard and other waste ban materials.

MassDEP will develop a draft policy advisory reflecting these requirements, which will be distributed to stakeholders for comment. Any final policy would be based on stakeholder feedback.

111. Comment: MassDEP should recognize that most facilities are not designed or equipped to comply with bans. Permits should be modified for facilities, requiring that they either modify their facilities to better sort and process materials, accept for disposal only loads which they have the capacity to process, or only accept loads which have already been processed.

Response: Solid waste facilities can comply with waste bans in several different ways. For each individual facility, this compliance is determined based on whether the facility complies with its waste ban compliance plan approved by MassDEP. These requirements include ongoing monitoring and comprehensive inspection requirements for incoming loads. For facilities that generally accept loads of mixed C&D materials, they must either process those materials to separate banned materials or send them to another facility that can demonstrate that it is not disposing of the banned materials. MassDEP is reviewing and analyzing data from facility annual reports to determine how well facilities are diverted materials for recycling and using this data to inform future changes to facility waste ban compliance plans.

112. Comment: Asphalt shingles and wallboard could be good candidates for waste bans, but not until stronger market commitments and multiple market outlets are in place. And, since asphalt shingles are typically generated during construction and re-roofing projects, and clean wallboard is generated from construction projects, regulating their management would be best implemented by working through local building code officials and waste generators, with minimal involvement from the solid waste industry. The ban on clean gypsum wallboard will be difficult to implement because of confusion between clean and demolition wallboard.

Response: In December 2010, MassDEP promulgated regulations to amend 310 CMR 19.017, Waste Bans, to add clean gypsum wallboard to the list of restricted materials, and 310 CMR 19.006 to add a definition for clean gypsum wallboard. MassDEP's Source

Separation Workgroup is evaluating methods to encourage source separation of C&D materials at job sites. MassDEP also is working with a workgroup to improve markets for asphalt roofing shingles.

113. Comment: Eliminating ceiling tiles from the waste stream altogether seems like an example of something that MassDEP could, if it saw fit, simply do. Per 310 CMR 19.017, The Department may restrict or prohibit the disposal, or transfer for disposal, of certain components of the solid waste stream when it determines that:
(a) disposal of the material presents a potential adverse impact to public health, safety or the environment; or
(b) a restriction or prohibition will result in the extension of the useful life or capacity of a facility or class of facilities.
The DEP could simply ban ceiling tiles from the waste stream, if its finding showed (a) or (b) above, and the change would be made. This would not be subject to the actions of the Legislature, the cooperation of an industry, or other contingencies.

Response: MassDEP has the authority to ban additional materials from disposal through regulation. However, just promulgating these regulations does not ensure that these materials will be diverted from disposal. A successful waste ban requires adequate markets for the banned materials. The solid waste and recycling industry, investors in recycling markets, municipalities, haulers, and construction and demolition companies all need to be involved to ensure effective implementation.

114. Comment: While increased recycling will help to reduce fines and residuals, MassDEP should recognize that low value fines and residuals are necessary by-products of modern C&D processing facilities. Standardized criteria for reuse of fines and residuals as well as strictly controlled reuse of these materials as grading and shaping and alternative daily cover at landfills should be considered as part of the overall effort to increase recycling rates.

Response: MassDEP agrees that some level of C&D fines and residuals will always be produced by facilities that process mixed C&D materials. However, the effective recycling rates of C&D processing facilities varied widely in 2009. In some cases, facilities have ground up most of the mixed C&D materials they received so that virtually all of the mixed material became fines and residuals. During this past year, MassDEP has worked to establish uniform, consistent reporting of C&D material categories and uses, allowing consistent comparisons of C&D handling facilities' recycling rates which do not include C&D fines and/or C&D residuals.

115. Comment: MassDEP should work with the US Green Building Council to establish C&D recycling standards for processing facilities needed for LEED certification credits. This would then drive the design of processing facilities that could achieve these recycling rates. LEED credits could also be used to provide incentives for source separation of construction and demolition debris materials.

Response: The US Green Building Council recently proposed revised LEED standards that include a credit requirement focused on recycling standards for C&D processing facilities. MassDEP agrees that this type of LEED credit requirement could drive construction companies to send their C&D materials to processors with higher documented C&D recycling rates. By establishing consistent reporting from C&D processing facilities, their recycling performance can be more clearly evaluated relative to LEED criteria.

116. Comment: Massachusetts should do more to increase state purchases of recycled products, particularly for asphalt shingles, and asphalt, brick, and concrete. These efforts should focus on purchases from local companies that produce products from materials recovered locally. MassDOT should be required to use recycled asphalt shingles, glass, and compost in their operations to help support the diversion plans by MassDEP.

Response: The C&D industry, through Environmental Business Council of New England's C&D committee, is approaching MassDOT to request changes in their specifications that would allow the use of post-consumer asphalt shingles in road applications. MassDEP is supporting this initiative. In addition, the state Operational Services Division has established numerous state contracts for purchasing recycled and composted materials. These contracts are available to state agencies, and can also be used by cities, towns, and other political subdivisions.

117. Comment: There should be encouragement for construction companies to use porous pavement instead of regular pavement because it has a longer lifetime leading to less materials used.

Response: Alternative paving materials (beyond recycled asphalt pavement) could be evaluated by MassDOT or by the state's environmentally preferable products purchasing system.

118. Comment: MassDEP should not allow any C&D materials to be burned for energy. Incineration of C&D material in NH was banned because it was too dirty. Why then is it still allowed in Massachusetts? There should be a ban on incineration of C&D waste until a sorting process is established through which it can be proven clean. Safe incineration of such materials depends on proper sorting and consistent enforcement. Chips for use as fuel may come from out-of-state unregulated private facilities that are typically not subject to MassDEP monitoring. Therefore the solid waste plan should ban any C&D waste combustion until permanent intensive regulation is established.

Response: MassDEP currently has a moratorium on the use of C&D derived materials to create energy pending the completion of a study on the health and environmental impacts of burning pre-sorted or segregated materials. This study will be conducted when funding allows or an actual proposal is presented. This study would develop a protocol to evaluate health risks from proposed energy facilities using segregated (pre-sorted) waste as a fuel source. The protocol that is developed will be used by any facility proposing to use segregated or pre-sorted materials derived from waste to further examine potential health risks of such a facility and mitigation strategies.

119. Comment: Not all C&D wood poses the same risk. Using certain C&D wood (such as broken and unusable pallets and clean lumber scraps) should be allowed. This material has high energy value because it is dry and can serve as a good energy source to offset use of fossil fuels.

Response: MassDEP agrees that the health and environmental impacts of using wood for fuel may vary depending on the type of wood, assuming that clean wood can be separated and sorted effectively and the wood to be burned is only minimally contaminated. A pilot study conducted at one C&D processing facility in Massachusetts demonstrated that clean wood can be separated from mixed C&D waste, although it may not be economical to do so depending on the end market for the separated wood.

120. Comment: Shipping material out of state has serious adverse effects to the environment, including increased GHG emissions, as well as draining the state's economy. Where are the in-state outlets for wood generated from C&D recycling? Currently, there is a lot of wood being shipped to Canada, which creates increased greenhouse emissions. A biomass plant in Massachusetts is needed to receive and manage C&D wood and reduce these transportation costs and impacts. This would also help create jobs and tax revenue.

Response: MassDEP supports the development of local recycling outlets for C&D wood or other C&D materials in general. In the case of using C&D wood for fuel at Massachusetts facilities, MassDEP believes that additional understanding of the health and environmental impacts of burning C&D wood is needed before proceeding further with permitting such facilities.

121. Comment: Currently, C&D wood is being reused as fuel at combustion facilities. MassDEP doesn't consider this use at in-state facilities to be recycling but does for out of state facilities. There is a need for better coordination with both in and out of state facilities and MassDEP needs to clarify whether or not it considers use of C&D wood for fuel to be recycling.

Response: MassDEP considers any material burned in a municipal waste combustion facility to be "disposal," regardless of the type of material or whether the facility is located within or outside of Massachusetts. MassDEP classifies wood that has been separated from waste and used as a fuel at a biomass power plant to be "other diversion" (which is neither recycling nor disposal), regardless of where the biomass plant is located.

122. Comment: MassDEP should complete its study of construction and demolition wood chips and their use as a biomass feedstock in Massachusetts before any proposal to burn construction and demolition waste is considered. The assessment should be thorough and objective. MassDEP should also take into account the relative cost of conducting such an assessment as well as properly overseeing and managing waste-to-energy facilities. This could be a potential opportunity in terms of allocating limited state funds which may be better spent increasing recycling and re-use.

Response: MassDEP will continue to assess the potential for using source-separated materials as fuels, including their air emissions and the environmental and health risks that each type of facility may pose. An assessment of the environmental and public health impacts of burning C&D materials for energy generation will be conducted when funding allows or an actual proposal is presented and other materials will be assessed over time as needed.

123. **Comment:** MassDEP is urged to include policies and plans regarding the clearing of woody waste cleared from roadsides and utility lines prior to combustion in its regulations for the governance of biomass use for renewable energy. If such materials can be composted or chipped into mulch for productive re-use, this may be environmentally preferable to burning for energy.

Response: Clean wood waste cleared from roadsides and utility lines is not regulated as solid waste. The solid waste regulations includes an exemption from site assignment and permitting for operations that chip this type of clean wood waste, which promotes using the material in a productive fashion.

Recycling Market Development

124. **Comment:** The Draft Plan contains two objectives for market development, but should include these three additional ones:
    - Help reduce environmental impacts associated with shipping recyclables long distances
    - Help reduce the impact of commodity fluctuations by supporting local uses of secondary materials
    - Retain recycled product manufacturers and associated jobs in the state.

    Market development of local markets should help to reduce the environmental impacts associated with shipping recyclables long distances as well as the impact of commodity fluctuations by supporting local uses of secondary materials.

    MassDEP should work with local companies to invest in smaller scale mills that can make new products from materials (paper and colored glass in particular) collected in Massachusetts. This will keep the economic development and job creation from these materials locally.

    Response: MassDEP will modify these objectives to emphasize the development of local markets that can provide alternatives to export markets and support local economic development and jobs. MassDEP believes that while developing local markets is beneficial, reducing transportation distances of recyclables is not a priority. Analysis of the greenhouse gas impacts of recycling has shown that transporting recyclables long distances is a relatively minor impact compared with the value of capturing recyclable materials and

returning them to productive use[2]. While MassDEP supports the development of local recycling markets where possible, sending recyclables to regional, national, and international market outlets is clearly preferable to disposal.

125. Comment: Metals such as copper, aluminum, brass, and steel do not create a litter problem because they can be exchanged for money. If plastics were given similar value, it is likely that they too would be treated in the same regard. Companies should be required to pay premiums for using plastics as a form of security.

Response: In most cases, plastic does have a high per ton value. But, because plastic is so light and has low density, the economics of plastics recycling can be more challenging than for other materials. The other issue is that a lot of common plastic litter is containers or packaging used away from home, so that, unlike scrap metal, it has a tendency to be disposed of along roadways, in parks, etc. With the exception of containers covered under the bottle bill, individuals have no direct economic incentive to recycle these materials, even though they have value. That is why MassDEP supports an expanded bottle bill for water and sports drink containers consumed away from home.

126. Comment: The plan presents clear evidence that the waste diversion industry is profitable and that waste diversion saves money for municipalities. Why, then, can't money be reallocated from other state programs intended to promote economic development and job creation to these waste diversion businesses? State programs designed for economic improvement should be investing more into waste diversion.

Response: Massachusetts has supported and continues to support a number of recycling and composting companies through the state's Recycling Loan Fund. In prior years, MassDEP has had funding to award Recycling Industry Reimbursement Credit grants and plans to award additional grants to support recycling market development through the Sustainable Materials Recovery Program. MassDEP also will continue to work with state business development agencies to support recycling and composting market development in Massachusetts.

127. Comment: More effort needs to be put into state support of recycling businesses. Currently, the plan is very weak for market development. The funding proposed to stimulate private sector development in waste management is not adequate enough. MassDEP should use a portion of the funding provided through waste to energy credits to support projects by local manufacturers to test and incorporate recovered materials to produce end-products to be sold in local markets; and (2) by local end-use markets to test and use recycled end-products manufactured by local businesses.

Response: MassDEP plans to use a portion of the funding provided through waste to energy credits to support the development of markets for recyclable and compostable

[2] *Materials Management, Climate and Waste: Making the Connections*, David Allaway, Oregon DEQ, June 26, 2008, part of webinar on *Climate Change and Materials Management Introduction: State and Local Government Perspectives Webinar #1*, see slide 26.

materials in the Commonwealth. It is also worth noting that recycling and composting market development action items in the Master Plan are included in multiple sections, including Section 3.4 *Organics Diversion and Market Development*, *Construction and Demolition Debris Materials Diversion and Market Development*, Section 3.6 *Build Local and Regional Recycling Markets*, and Section 3.7 *Commonwealth Leading by Example*.

128. Comment: The plan fails to list low or no cost recommendations previously recommended through a survey of recycling manufacturers that MassDEP commissioned. Cheap yet effective measures, such as bringing together researchers, manufacturers, and trade associations to talk about how they can better cooperate or talking with purchasers about products that could be made by in-state companies with in-state material, need to be considered. MassDEP should engage colleges and universities to provide research and development work to support this local economic development.

Response: In the Plan, MassDEP proposes a Regional Recycling Market Development Center, which is intended to play this role in coordinating among state agencies, manufacturers, and researchers to identify new uses and markets for materials that are currently disposed.

129. Comment: MassDEP needs to work with groups like the Green Roundtable to encourage use of locally sourced building materials.

Response: This action item was included in the Plan (see Section 3.5).

130. Comment: Recyclables should be graded by material quality.

Response: Many recyclables are currently graded by material quality, for example different grades of paper. MassDEP is interested in working with other states, processors, and end markets to develop specifications for materials where they are lacking, for example, different categories of wood.

131. Comment: A better use for recycled glass is needed. Generally, the product is ground up and used for road beds or landfill cover, which are low value uses.

Response: Glass is one of the materials that could be addressed by the regional recycling market development center mentioned in the response to comment #128. Please note that glass collected through the bottle bill is typically used for higher value uses because it is of very high quality.

132. Comment: Improving economic development through recycling would help people better understand its benefits.

Response: MassDEP agrees that the economic benefits of recycling (including economic development, job creation, and avoided disposal costs, as well as the resource savings achieved through recycling) are important to emphasize when explaining the benefits of recycling. MassDEP will continue to seek opportunities to highlight businesses in Massachusetts that are supported by recycling.

133. Comment: Recycling and composting are ultimately a manufacturing process more than they are a waste management strategy. The draft plan places too much emphasis on diverting material from landfills, rather than on providing valuable, high quality feed stocks to manufacturing. The ultimate goal of recycling should be to provide environmentally preferable feedstock to Massachusetts manufacturers. Supporting these local manufacturers and mills in this way helps not only improve the environment but also bolster the economy and provide tax revenues needed to fulfill waste planning goals. Developing these programs will also help draw materials out of the waste stream naturally through market forces rather than trying to force it through regulation which is not enforced.

Response: MassDEP agrees that the most important benefits of recycling and composting are the result of capturing and returning materials to productive uses, rather than simply diverting them from disposal. For example, MassDEP is focused on increasing the quantity of C&D materials diverted to recycling outlets. The Draft and Final Plan include a specific goal on increasing the recycling of these materials. While the overall goal is defined as a waste reduction goal, MassDEP's intent is to increase the use of recyclable and compostable materials as manufacturing feedstocks or, in the case of compost, as products that will improve soil quality and reduce the use of water and fertilizers.

134. Comment: MassDEP needs to work more diligently to assist the state's waste and recycling industry to find markets and uses for the materials they collect via recycling, recovery, or other diversion methods. MassDEP could do more in means of assistance in the markets by aggressively promoting incentives for certain kinds of activities, by reforming and expediting the beneficial use determination (BUD) process, and by standing behind industry efforts to manage waste and discarded materials in new and different, but higher use, fashion compared to traditional disposal.

Response: MassDEP has proposed a number of initiatives to support market development for recyclable and compostable materials, including grant and assistance programs, regulatory drivers such as waste bans, changing regulations governing composting and other organics processing facilities, and state purchasing commitments. MassDEP will continue to work with other agencies to support efforts by recycling and composting companies and municipalities to capture and divert materials to higher value recycling and composting uses. MassDEP completely revised the BUD regulations in 2005 and developed standards to ensure that use of solid waste materials will protect public health, safety and the environment. MassDEP believes these regulations respond to different types of uses to which materials can be put and are no longer "one size fits all". There is an

applicability review process available for a proponent to ask MassDEP whether a specific use of a solid waste material needs to go through BUD review or not.

135. **Comment:** As an alternative to single-stream collection, MassDEP should offer incentives for innovative source-separated collections for materials such as small plastic items, glass separated by color, wood products, clothing and textiles and other reusable items. Collecting these materials as separate streams could help retain the value of these materials to support the Massachusetts economy. These collections could support small local businesses focused on reuse and repair that could be integrated into Resource Recovery Parks.

    Response: MassDEP would be interested in the development of a local or regional resource recovery park as part of the integrated waste management systems discussed in Chapter 5 and would consider providing technical assistance or funding for a regional pilot project for this type of facility.

Keep Toxics Out of Waste Stream

136. **Comment:** It would be beneficial to have monthly collections by towns instead of a few times a year, especially since people are constantly moving in and out of towns and relocating.

    Response: A number of Massachusetts towns and regional groups have established successful approaches to household hazardous waste collection, ranging from local and regional permanent collection centers with frequent events, to shared one-day collection events among neighboring towns.

137. **Comment:** MassDEP should work with the Toxics Use Reduction Institute (TURI) to reduce toxics in the waste stream.

    Response: MassDEP works closely with TURI and with the Office of Technical Assistance and Technology to reduce toxic chemicals use and byproduct from Massachusetts companies through the Toxics Use Reduction Act program.

138. **Comment:** There is a need for disposal sites for old pharmaceuticals.

    Response: MassDEP provides guidance on management of pharmaceuticals and personal care products through its web site, and provides waivers from household hazardous waste collection requirements that allow waste medications collected at one-day events to be managed as solid waste (rather than hazardous waste. In October 2010, President Obama signed the Secure and Responsible Drug Disposal Act of 2010 into law, which will allow people who have excess prescription medications to return them through programs similar to those which hospitals and pharmacies use to send their excess drugs back to the manufacturers. MassDEP will monitor the development of this expanded program, and will

see whether additional state action is needed to encourage safe management of waste medications.

139. **Comment:** MassDEP should support passage of the "Safer Alternatives" bill to replace toxic chemicals with available alternatives.

Response: MassDEP did support passage of the "Safer Alternatives" bill in the Draft Plan and has maintained this support in the Final Plan.

Improve Environmental Performance of Solid Waste Facilities

140. **Comment:** The inference in the Draft Plan that Massachusetts solid waste facilities prevent air and water pollution and avoid potential public health concerns is misleading. The SWMP should acknowledge that there are still reasons for concern about emissions from both incinerators and landfills. Both disposal technologies release emissions that contribute to climate change and pose threats to public health. In the case of landfills, not all emissions of methane and toxic gases are captured by collection systems. In addition, landfills will leak and potentially endanger community drinking water supplies, especially in Worcester County and the Quabbin Reservoir, which are in close proximity to solid waste disposal facilities. Commenters also raised concerns about specific disposal facilities. Both disposal technologies are drivers of climate change as well as threats to public health. The public should not have to fight waste facilities for the right to clean air.

Response: Massachusetts regulation of solid waste facilities is typically more stringent than federal regulations and is among the most stringent state regulation of solid waste facilities. The Solid Waste Master Plan includes a number of initiatives to further improve the environmental performance of solid waste facilities. In addition, MassDEP strives to reduce the need for disposal facilities through aggressive recycling, composting, and waste reduction programs. The comments regarding specific facilities are outside the scope of the Plan, but MassDEP will share these with the applicable regional office.

141. **Comment:** The Department should work in coordination with the Department of Public Health and public health professionals to evaluate existing emissions limitations and establish new emissions performance standards for these facilities to ensure maximum protection of public health.

Response: MassDEP is drafting revisions to the regulations that apply to municipal waste combustors (MWCs) to respond to recent federal changes to the MWC regulations. MassDEP meets with the Department of Public Health on a regular basis to address public health issues related to MassDEP regulations, policies, and permitting, including many issues relative to solid waste policy. MassDEP will continue to work with DPH to address public health concerns related to solid waste facilities.

142. Comment: Massachusetts has already implemented regulations for waste-to-energy facilities that provide the most significant tightening and significant reductions of such emissions over the past twenty years of any combustion technology in the United States. USEPA and other project-specific health risk assessments, which conclude that waste-to-energy facilities are environmentally safe and do not adversely impact public health. MWC emissions are far lower than those of coal and oil fired power plants and are lower than landfills for GHG emissions. Indeed, given their benefits in avoiding the impacts of exporting solid waste long distances, Massachusetts's waste-to-energy facilities result in overall environmental and public health benefits. Further requirements to tighten emission and air pollution control systems for waste-to-energy facilities would likely have little or no additional benefits in reducing emissions. In fact, if MassDEP continues to tighten regulations on in-state disposal facilities, this will raise the cost of sending waste to these facilities and drive more waste to be sent to out of state landfills, which will have worse environmental impacts than managing that waste at existing in state municipal waste combustors.

Response: MassDEP agrees that municipal waste combustors have achieved dramatic reductions in emissions over the past twenty years and that these reductions have greatly improved environmental performance of these facilities. However, emissions control technology has improved over time and future improvements may be feasible as technology improves. MassDEP will continue to update these requirements to conform to new EPA rules and new scientific information.

143. Comment: The final plan should include a specific inventory of facilities listed by the material type they receive and their respective capacities matched against generation to offer a better gauge of what Massachusetts generates, how it is currently managed, and what future capacity needs may be.

Response: MassDEP included GIS maps showing the locations of solid waste disposal facilities, transfer stations, and composting facilities in the Draft Plan appendices and these will remain in the Final Plan. MassDEP also publishes listings of these facilities on the MassDEP web site at http://www.mass.gov/dep/recycle/solidwas.htm. MassDEP has included web links to these reports in the Final Plan. In addition, for organic wastes, for which MassDEP has defined a particular capacity need, MassDEP has provided analysis about the number and type of facilities that are needed. Recycling facility capacity is much more flexible because these facilities are not bound by permit limits and can readily add capacity by adding a shift if needed. In addition, significant recycling capacity comes from brokers that collect and ship recyclables to out of state or export markets.

144. Comment: Concern was expressed about Massachusetts continued reliance on waste export, particularly given the 2007 Supreme Court decision in United Haulers Assn., Inc. vs. Oneida-Herkimer Solid Waste Mgmt. Auth. striking down an interstate commerce clause challenge to a flow control ordinance. The Plan fails to address the risk of states receiving Massachusetts waste passing a ban on waste imports, especially given the possibility of doubling exports. The Draft Plan fails to identify the facilities needed to

manage Massachusetts waste as specified in the Solid Waste Act of 1987. In addition, the export of solid waste from Massachusetts to out-of-state facilities for disposal has significant adverse impacts on the environment and presents an increasing drain on the Massachusetts economy. The commenter listed specific estimated environmental and economic impacts of out-of-state disposal, including fuel used, transportation emissions, and loss of job opportunities in the Commonwealth.

Response: In the 2006 Solid Waste Master Plan revision, MassDEP dropped a specific goal for achieving no net export recognizing that MassDEP has limited ability to affect this goal. Therefore, MassDEP has acknowledged that we expect Massachusetts to be a net exporter of waste for the foreseeable future. MassDEP does not propose disposal capacity and cannot force other entities in Massachusetts to develop and site disposal facilities. While MassDEP acknowledges that there are some benefits to achieving no net export, it is unlikely that out of state disposal markets will be cut off. Waste management is a regional and national market and MassDEP expects this trend to continue. MassDEP believes that the best way for us to address solid waste management capacity is by increasing Massachusetts waste reduction, recycling, and composting capacity.

145. Comment: There are concerns with decreasing the number of landfills too much, which, on top of handling solid waste, also take disaster debris and special wastes.

Response: MassDEP agrees that there is some benefit to having landfill capacity in state for managing these types of materials, and some landfill capacity exists. The siting and permitting of any new or additional capacity would be governed by existing statutory and regulatory requirements.

146. Comment: Once a site assignment is made, it is easy to increase the tonnage/day, leading to increased quantity and types of landfills and transfer stations. There is no provision for closure or for ending landfill and transfer station site assignments once established. Shifting the burden and obligation of site assignment from the state level to local Boards of Health like the MassDEP proposes, is irresponsible waste management.

Response: Boards of Health have always had the responsibility to review site assignment applications and issue site assignment determinations. This change to eliminate MassDEP's responsibility for issuing a site suitability report was a legislative change that occurred outside the scope of the Draft Plan and was enacted after the Draft Plan was published. Boards of Health retain the responsibility to issue site assignments. This legislative change has since been reversed and the responsibility for site suitability reports has been shifted back to MassDEP.

147. Comment: Cover materials need to be included in landfill siting and permitting review.

Response: MassDEP regulates the use of cover materials at landfills under the solid waste regulations (310 CMR 19.000) and the use of cover materials requires MassDEP permitting approval.

148. Comment: MassDEP should eliminate the 15 percent maximum residue limit, above which processing operations are required to be site assigned and permitted as solid waste facilities. Instead, MassDEP should rely on a performance standard and, as long as recycling facilities operate according to best management practices and do not result in nuisance conditions, they should not be regulated as solid waste facilities.

Response: In recent revisions to 310 CRM 16.04, MassDEP revised these maximum residual limits to 15 percent for a single stream recycling operation or 10 percent for any other recycling operation governed by a general permit. See http://www.mass.gov/dep/recycle/laws/regulati.htm#sw for more information.

MassDEP established residual limits to aid in determining when a recycling facility is conditionally exempt from site assignment regulations and to ensure that the sorted materials that come to a recycling facility are not mixed with solid waste that cannot be recycled. For facilities that are recycling materials but generating more than 15 percent residuals, MassDEP may permit such facilities under a recycling permit, if the residuals limits are within common industry standards for that type of recycling facility.

149. Comment: MassDEP's regulations governing occasional layover of trucks destined for recycling facilities is overly stringent. These sites should not be limited to overnight or weekend layover and, instead, should be added to the list of conditionally exempt operations.

Response: This exemption is intended to be limited and to address only the occasional situation when a hauler cannot deliver solid waste to a disposal facility or transfer station at the end of the day on which it is collected. On-going storage of waste in trucks is regulated as a transfer station. It should not be necessary for haulers to store solid waste in trucks beyond this occasional layover provision before delivering to a solid waste management facility. If the trucks being held are holding recyclables, then this facility may be treated as a conditionally exempt recycling facility under 310 CMR 16.05.

150. Comment: The site assignment process should be changed in the following ways:

- MassDEP should eliminate the regulatory provision to allow any 10-citizen group to intervene in a site assignment process. Such interventions, which are not mandated by statue, provide opponents too many opportunities to delay hearings and raise costs for applicants in pursuit of agendas not related to site suitability. Instead, the right to intervene should be limited to those entities and persons that can show they are actually aggrieved and should be directed to specific site assignment criteria.

Response: M.G.L. c. 30A, the Commonwealth's Administrative Procedure Act allows state agencies to provide a right to persons that are substantially and specifically affected by proceedings to intervent MassDEP has defined one class of persons substantially and specifically affected to be 10-citizen groups in 310 CMR 16.20(9). The right to intervene for ten persons group was based upon the requirements of M.G.L. 30A, Section 10A giving such groups the statutory right to intervene in matters involving damage to the environment. However, the regulations also limit such intervention to "the issues of impacts to public health, safety and damage to the environment and the elimination or reduction thereof"

The Supreme Judicial Court recently affirmed MassDEP's right to provide a right to intervention to ten persons groups in its decision Board of Health of Sturbridge v. Board of Health of Southbridge, 461 Mass. 548 (2012). However, the Supreme Judicial Court also clarified that this right for ten persons groups to intervene in board of health proceedings on site assignment does not confer upon ten persons groups automatic rights to further appeal a site assignment decision by the board to court. The Supreme Judicial Court held as follows:

> The grant of full party status to citizen groups under 310 Code Mass. Regs. § 16.20(9) presumably is designed to enable the board to receive relevant information about environmental impacts of proposed siting decisions from a broad array of persons. But the regulation and its purpose do not themselves entitle the plaintiffs to seek judicial review of the board's final decision as persons "aggrieved." *See* Ginther v. Commissioner of Ins., 427 Mass. at 324 ("Mere participation in the administrative process does not confer standing to raise a claim in the Superior Court"). Rather, it is necessary to determine whether any of the plaintiff citizen groups, or, more particularly, any individual members of the citizen groups, have shown or even alleged prejudice to their own substantial rights. *See* Duato v. Commissioner of Pub. Welfare, 359 Mass. at 637.
>
> **Bd. of Health of Sturbridge v. Bd. of Health of Southbridge, 461 Mass. 548, 559 (Mass. 2012)**

As noted by the Supreme Judicial Court, M.G.L. c. 111, § 150A provides standing to: "Any person aggrieved by a decision of a board of health in assigning or refusing to assign a place as a site for a new facility, or expanding or refusing to expand an existing facility, except a resource recovery facility in operation or under construction prior to July first, nineteen hundred and eighty-seven, may, within thirty days of the publication of notice of such decision, appeal under the provisions of section fourteen of chapter thirty A." Therefore, the Commenter is incorrect in stating that a ten persons groups rights to intervene and further appeal are not set by statute. Such rights are governed by statute, M.G.L. c. 30A, § 10A, which gives a right to intervene in the original proceedings, and M.G.L. c. 111, § 150A, which gives a right to appeal, if the ten persons group can demonstrate aggrievement.

- Reduce the public notice requirement from 21 days to 7 days to allow boards of health to make decisions within 45 days of a site suitability report. Currently, this 45 day timeline is typically not met.

  Response: By statute, the BOH now has 60 days to hold a hearing on the site assignment application. The 21 day notice provides interested parties time to review the application and prepare comments for the hearing. MassDEP believes seven days is an insufficient amount of time for public notice. The statute gives the BOH 45 days to issue its decision from the date of the hearing, not the date of the public notice so the length of the public notice period does not prevent the board of health from meeting that 45 day deadline.

- Strengthen the presumption of compliance so that site assignment hearings are not bogged down in technical issues and instead focus on issues relative to the site.

  Response: The existing presumption is stated in the regulations as follows: "All applications shall be evaluated with the presumption that the proposed facility shall be designed and constructed to meet all relevant state and federal statutory, regulatory and policy requirements." However, BOHs have considerable discretion in the level of detail of information that they require to approve a site assignment application.

  The Massachusetts Supreme Judicial Court, in TBI, Inc. v. Board of Health of N. Andover, 431 Mass. 9 (2000), found that the regulation created a rebuttable presumption of compliance with Federal and State standards. The court stated that "the application of a rebuttable presumption preserves both the board's statutorily mandated role in approving a site assignment by allowing the board to consider all the siting criteria, and its role in applying the presumption (in the absence of other evidence) that the proposed facility will be designed and constructed to comply with State and Federal requirements." 431 Mass 12. The court went on to say that "in many cases an absolute presumption of compliance would obviate the need for a hearing because the board would not be able to consider compliance with Federal and State standards as required by the criteria." *Id* at 12. Finally, the court found that the BOH needed to look at detailed plans in order to determine whether the applicable criteria relative to the site had been met. Therefore, by ruling of the Supreme Judicial Court, the presumption of compliance could not be further strengthened without obviating the need for a BOH hearing in the first place. However, there is a further right to appeal the decision of the BOH to court for aggrieved persons as set forth in M.G.L. c. 111, § 150A.

151. Comment: The rigorous approval process for beneficial use determinations (BUDs) has discouraged beneficial reuse. This is a significant obstacle for low grade, low value materials that could be used for construction materials or fill. In addition, there is inconsistency among BUDs issued by different regional offices. MassDEP should

establish statewide standards for the most common uses and applications. MassDEP should clarify that facilities using BUD materials are not required to obtain a site assignment to manage those materials.

Response: MassDEP completely revised the BUD regulations in 2005 and developed standards to ensure that use of solid waste materials will be protective of public health, safety and the environment. MassDEP believes these regulations respond to different types of uses to which materials can be put and are no longer "one size fits all". In addition, MassDEP has set clear health-based standards to be met based on the type of use to which a material will be put. A rigorous review process is necessary to ensure protection of public health, safety and the environment, given that most materials proposed for use have some type of contaminants of concern. The number of BUD applications has not decreased as a result of the 2005 changes to the regulations. Furthermore, there is an applicability review process available for a proponent to ask MassDEP whether a specific use of a solid waste material needs to go through BUD review or not.

152. Comment: Landfills should be regulated to prevent enhancing methane generation for the purpose of generating electricity. The Plan should also clearly state the goal of banning the disposal of organics in landfills. Landfills should be required to pay a carbon tax on emissions which could be used to help fund the SWMP. Do "problem landfills" include those that don't capture methane?

Response: MassDEP currently has requirements in place for landfill controls of methane emissions, through a combination of flaring and landfill gas to energy systems. Any proposals to do so would have to address other related concerns such as potential odor generation, in addition to concerns over methane emissions. Both the Draft and Final Plans include a goal to ban disposal of commercial and institutional food waste from disposal, although that ban needs to be part of a comprehensive strategy to increase our diversion of food waste from disposal to be successful. The provision about problem landfills is focused on landfills or landfill closures that are not being properly operated and where the permittee is unwilling or unable to complete needed work at the site.

153. Comment: Any waste facility producing energy, e.g. landfill, anaerobic digester or other, should be subject to sharing renewable/alternative energy credit revenue with the Department to aid in funding availability.

Response: Under current rules of the Renewable Portfolio Standard (RPS) Class II Waste Energy Program implemented by DOER, the existing MSW Units in Massachusetts are required to share 50% of the revenue they receive from selling Waste Energy Certificates with the MassDEP to support recycling programs. Any new generation units that utilize MSW as a fuel will not be eligible for qualification under the RPS program, and hence will not generate additional credit revenues. Landfill gas and anaerobic digesters are eligible for the RPS program, but credit revenue sharing is not contemplated. These revenues are important for the financial feasibility for these projects to move forward.

154. **Comment:** There should be a statewide ban of all open residential burning.

Response: Open burning of solid waste, tires, and materials such as leaves, grass, hay, and tires is not allowed anywhere in the Commonwealth. Open burning of tree debris by residents is banned in 22 specific communities in Massachusetts due to population and building density. In other communities, MassDEP has established restrictions on open burning, including limiting it to between January 1 and May 15, limiting the hours of burning, not allowing burning on days of poor air quality and requiring local fire department approval. However, in some cases, open burning may be the best or only option for managing tree debris and brush and is allowed under these specified conditions. For more information on these requirements, see the MassDEP web site at http://www.mass.gov/dep/air/compliance/burning.htm.

155. **Comment:** MassDEP is urged to require any existing waste combustion facilities to employ maximum achievable control technology and have continuous emission monitoring, stack testing, annual inspections, and specific monitoring of air quality within the general plume fall zone.

Response: Existing municipal waste combustion facilities currently are required to use best available control technology, have continuous emission monitoring for certain pollutants, and have periodic stack testing for others. Mass DEP does not require ambient monitoring within the plume zone for any facility.

Solid Waste Facility Waste Ban Implementation

156. **Comment:** The plan includes strategies to increase stringency of waste ban inspections and improved quality of failed load reporting by municipal waste combustion facilities. These requirements should be extended to landfills. Excluding landfills from the expanded requirements undermines this strategy and could potentially encourage more landfill disposal if haulers believe inspection will be less rigorous at these locations. It is also inconsistent with the status of landfill gas-to-energy as a renewable energy source eligible for the Commonwealth's renewable portfolio standard, which is already a much less efficient way of creating energy from residual solid waste than waste to energy.

Response: MassDEP proposed extending these requirements to landfills in the Draft Plan and has maintained this action item in the Final Plan. This would be done through a change in regulations along with a change to each facility's operating permit. MassDEP has issued these draft regulations for public comment and is currently developing final regulations to expand these requirements to landfills and transfer stations.

157. **Comment:** The vision for material management should include ensuring that waste handling facilities are environmentally sound. On page 47, recent inspection loads showed that 20% had unacceptable quantities of banned material. Notices of non-compliance were

issued to generators and handlers, but was this the only action taken? There was no indication that the materials were refused and sent back for resorting. It is presumed that they were accepted despite containing banned material. This suggests a problem with future collection plans. The environmental performance of SWM facilities needs to be improved on the basis of compliance with bans and enforcement of waste loads within the next ten years because inspections alone will not accomplish goals. If these are the only actions that can currently be taken, then MassDEP does not have the authority they should have to adequately enforce the waste bans.

Response: Under the waste ban regulations, solid waste facilities are required to comply with their waste ban plans. These include requirements for monitoring incoming waste loads, conducting comprehensive inspections, keeping records and notifying haulers (and where possible waste generators) of failed loads. In some cases (e.g., white goods, tires), facilities can pull out banned materials, charge haulers a processing fee, and recycle those items. However, in other cases (e.g., paper) the recyclable material in the trash is typically contaminated and not possible to safely pull it out of the trash load to recycle it. In these cases, facilities can accept the banned materials, as long as they follow the requirements of their waste ban plan approved by MassDEP.

In the case of waste haulers and waste generators, MassDEP has issued notices of non-compliance for first violations, which require the violator to notify MassDEP how it will return to compliance. Future violations could be subject to higher level enforcement including a penalty. In addition, MassDEP has issued press releases listing the generators and haulers that were identified as disposing of banned materials.

158. Comment: MassDEP should recognize that most facilities are not designed or equipped to comply with bans. Permits should be modified for facilities, requiring that they accept for disposal only loads which they have the capacity to process. Or, if they do not have the ability to process materials, they should only be able to accept loads which have already been processed. Solid waste facilities could increase recycling rates by building infrastructure to allow for on-site separation and recovery of waste ban materials. MassDEP should establish recycling standards for these facilities.

Response: In the case of construction and demolition debris processing facilities or transfer stations that take in loads of mixed C&D materials, those facilities should either be pulling out banned materials to prevent their disposal or sending the material to another facility, either in-state or out-of-state, that complies with the waste bans. Specific requirements for each facility are defined in each facility's waste ban plan, which is part of the facility's operating permit. Waste ban plans at solid waste facilities require banned materials to be pulled out to the maximum extent possible. However in some cases, at transfer stations or disposal facilities, it can be very difficult to separate banned materials from incoming loads of trash. In many cases, these materials are contaminated so that they cannot be marketed as recyclables. In those cases, the more important provisions are requirements to keep records and to notify haulers and generators of failed loads. In this way, waste bans can help to influence recycling and composting decisions by waste

generators, where most waste ban materials can be more easily diverted from the trash stream.

159. Comment: Waste ban exemptions for loads of less than five cubic yards create a large loophole, since these loads can be aggregated into large tractor trailers and shipped for disposal.

Response: Loads less than five cubic yards are not exempt from the waste bans. Rather, facilities that only accept loads of less than five cubic yards (which tend to be very small facilities) are exempt from certain waste ban requirements, for example conducting comprehensive inspections of a certain number of loads per month. MassDEP believes that it does not make sense to require comprehensive inspections of loads of less than five cubic yards. These small facilities are still subject to other waste ban requirements such as ongoing monitoring for banned materials.

160. Comment: Regulated private facility operators and haulers are being held to a standard that is not applied to municipalities and other exempt entities. We recommend that all waste disposal facilities, public and private, must be subject to enhanced enforcement activities.

Response: MassDEP waste ban regulations apply equally to both public and private facilities.

161. Comment: The emphasis on more enforcement is the wrong attitude. When the Department conducts waste ban sweeps and issues press releases that vilify the industry for continuing to throw away cardboard (ignoring that the facilities were implementing Department-approved waste ban compliance plans), the ultimate impact is to demean and demonize the industry, which reduces its effectiveness as a provider of recycling services.

Response: MassDEP disagrees with this comment and believes it is appropriate and important for MassDEP to conduct inspections and take enforcement actions for waste ban violations. Ensuring greater compliance with waste bans by all entities, solid waste facilities, haulers, and generators, is an important component of MassDEP's strategy to increase recycling and composting. In addition, MassDEP's waste ban strategy seeks to improve waste ban compliance through outreach to generators and haulers and technical assistance and guidance delivered through the RecyclingWorks in Massachusetts program. MassDEP only takes enforcement action against facilities that are not complying with their waste ban plan.

162. Comment: It is time for the Department to turn its attention to measures that cause waste generators to recycle – and to do so through avenues other than putting more pressure on the facility operators and waste haulers that provide the generators with services. Focusing these Department resources on getting waste generators to recycle would be much more

productive. Today, every operating solid waste facility is implementing a waste ban compliance plan that has been submitted to and approved by the Department. Consistent with this approach, enforcement actions by the Department should address whether a facility operator is operating in accordance with the Department-approved plan, not whether excessive quantities of banned materials are being discarded. There is concern that regulated facility operators and haulers are being targeted for the acts of waste generators and product manufacturers. By the time a load containing spoiled food in cardboard boxes is dumped on a tip floor or working face, it is too late to recover the cardboard – that had to have been done by the generator.

Response: Both the Draft and Final Plans include many strategies to increase recycling and composting by waste generators. In fact, Chapter 3 is devoted to this issue. Waste ban enforcement, including enforcement against solid waste facilities, haulers, and generators, is one action item in a much broader strategy. Feedback from solid waste facilities back to haulers and generators about failed loads should provide valuable information for correcting future problems prior to waste loads arriving at the facility.

163. Comment: In Nantucket, trash is not accepted at facilities unless it is in a clear, plastic bag. Each accepted container is inspected at each facility and if recyclables are found, it is returner to the source to be resorted. These procedures should be incorporated into other area's facility regulations.

Response: MassDEP does not have the authority to require use of clear bags. However, individual municipalities and facilities could choose to establish this requirement as part of their program.

164. Comment: Bypass materials (non-burnables and bulky waste) diverted from municipal combustors to landfills should be analyzed for their potential to be recovered for recycling or other higher use.

Response: Waste combustion facilities are currently performing waste characterization studies on incoming materials to determine the potential for additional recycling. The information will identify opportunities for further diversion both by material and by generator.

165. Comment: Enforcement activities must be adequately funded, otherwise this will limit the success of the recycling strategies in the Plan.

Response: MassDEP agrees that adequate resources for enforcement are an important part of successfully implementing this Plan, especially over the course of the 10-year planning period.

Environmental Justice

166. Comment: MassDEP should recognize that environmental justice communities bear a disproportionate share of solid waste facilities and associated pollution, decreased air and water quality. Most of the state's landfills and trash transfer stations are more heavily concentrated in lower-income towns and/or communities of color. MassDEP should develop criteria to ensure that siting of new or expansion of existing facilities does not result in a greater burden on communities of color and lower income communities. The department should address this disparity by assessing how its solid waste laws, regulations, and policies affect vulnerable populations, including environmental justice communities. The Draft Plan should address ways to alleviate these disproportionate burdens.

Response: The Executive Office of Energy and Environmental Affairs has established an Environmental Justice policy that addresses environmental justice concerns across program areas. The Final Plan includes a discussion of the policy. A review of locations of landfills and transfer stations does not show a clear trend of these facilities being sited in environmental justice communities. Of the 114 municipalities with defined environmental justice populations, 67 have transfer stations, but only 25 of these 67 transfer stations are sited within the environmental justice area of the community. These 25 facilities comprise 10 percent of the 241 transfer stations in the state. Similar trends exist for landfills. Of the total number of 625 mapped landfills in the state (including closed and inactive landfills), 255 are in municipalities with environmental justice areas, but only 71 of these are within the defined environmental justice area of that municipality. MassDEP is focused on ensuring environmental protection related to all facilities that the Department permits, regardless of their location.

167. Comment: The final plan should include a public process that will engage residents in the department's decision-making procedures regarding siting new facilities or expanding existing ones. This process should include at least one public meeting as well as meaningful public participation for each permit application for new facilities and expansions located in environmental justice communities.

Response: There are ample opportunities for public involvement in facility siting. The site assignment process includes requirements to establish opportunities for public review and comment for all facilities, regardless of where they are located. Boards of Health are responsible for running these processes and making site assignment determinations. MassDEP will be working with boards of health to determine how best to provide technical assistance and guidance with limited MassDEP resources. In addition, MassDEP also provides opportunities for the public to comment on draft permits and other approvals.

Worker Safety in Recycling/Solid Waste Facilities

168. Comment: In light of a recent incident at a New Bedford solid waste facility, where more than 100 workers were taken to a hospital and several almost died, there is a need for better health and safety training and equipment at recycling and solid waste facilities. Workers sort trash without protective equipment or training, operate equipment such as forklifts with

training or a license, work in confined spaces without training, and are exposed to dead animals or needles in trash without wearing protective equipment. There is also concern about worker safety at facilities that burn waste materials. Employees need to be respected and recognized as environmental stewards as well as involved more in developing recycling programs. Local recycling job opportunities should include benefits, health care, and safe working conditions. Single stream also contributes to unacceptable workplace standards for sorting personnel at MRFs, including exposure to high dust levels; exposure to hazardous materials mistakenly mixed into single stream loads; hazardous noise levels from sorting machinery; accident hazards from conveyor belts moving too fast; excessive litter and debris on walkways, stairs, and sorting platforms; and filthy working conditions. These worker health and safety issues need to be addressed in the Solid Waste Master Plan.

Response: MassDEP agrees that the quality and safety of recycling jobs is important in addition to the number of jobs. However, MassDEP does not have any authority over these issues, which are overseen by the federal Occupational Safety and Health Administration, and by the state Division of Occupational Safety, which is part of the State Executive Office of Labor and Development. Therefore, worker health and safety is not addressed within the Solid Waste Master Plan.

Allowing Source Separated Materials to be Used as Fuels

169. Comment: MassDEP should allow the use of materials such as C&D wood, food waste and mixed MSW to be used locally to support jobs and provide management capacity over the long term, while supplementing our energy supply, which to a large extent is imported. Otherwise, we are likely to export more waste for disposal to distant states, which will have a large carbon footprint, while discouraging technology investment in Massachusetts.

Response: MassDEP supports development of local markets, particularly for recyclable and compostable materials. Building these markets in Massachusetts helps to create jobs and economic development opportunities, as well as providing cost effective materials management solutions. MassDEP recognizes that there may be some distinct, separated materials for which recycling or composting markets may be limited, but which may be well suited to produce fuel or energy in some other way as an alternative to disposal.

170. Comment: MassDEP is encouraged to work with the Executive Office of Energy and Environmental Affairs (EEA) and the Department of Energy Resources (DOER) on coordinated policies, regulations, and permits that support efforts to extract energy from materials.

Response: DEP and DOER will continue to work closely as partner agencies within EEA on environmental and energy policy issues that involve both agencies.

171. Comment: There has been no technology proven to use source separated materials for fuel without emitting toxic pollution, increasing greenhouse gas emissions, and leading to continued wasting of resources. Some of these materials being proposed for use as fuels

are highly toxic. It is better to continue waste reduction, recycling, and composting instead of this method.

Response: MassDEP agrees that up-front waste reduction and toxicity reduction are the best environmental approach to more safely managing our waste. This approach is embodied in Massachusetts programs implemented under the Mercury Management Act and the Toxics Use Reduction Act. And, MassDEP supports maximizing recycling and composting of materials to capture the resource value of these materials and minimize the amount of material that needs to be disposed. In some cases, the options for higher value recycling of materials may be very limited, but they may be well suited to being separated from waste and prepared to meet fuel specifications. In such cases, this may be a better environmental and economic outcome than disposing of these materials.

172. Comment: It is understandable that the use of incinerators for managing specific waste materials may be difficult to completely stay away from, but instead the state should use EPR to phase out these materials as quickly as possible (e.g., railroad ties, telephone poles)

Response: In some cases, materials may be able to redesigned to reduce or eliminate their toxic constituents. MassDEP supports this alternative whenever possible, although MassDEP generally does not currently have the authority to require this type of change. Materials such as railroad ties, telephone poles, and C&D wood are in widespread use today. Even if they were redesigned and remanufactured to eliminate toxic or hazardous contaminants tomorrow, it will likely take several decades before the materials currently in use flow through the waste stream. Therefore, these materials will still need to be managed after their useful life. In this context, use of these materials for fuels or other energy source needs to be considered as an option.

173. Comment: Allowing source-separated wastes as fuels risks putting recycling at a disadvantage. These facilities should not be treated as renewable energy sources since the goal is to reduce the amount of waste generated over time, and because burning waste materials produces greenhouse gases and other air pollutants.

Response: MassDEP believes that, if materials are required to be separated, then recycling or composting will generally be more advantageous and cost effective, enabling re-use of those materials, rather than using those separated materials for energy. Instead, using materials as fuel is considered within the context of particular regulatory programs, such as the Department of Energy Resources' (DOER's) Renewable Portfolio Standard (RPS) program. More information about the RPS program, including a list of fuels that are considered renewable, is available on DOER's web site at www.mass.gov/doer. If asked in the context of a permit or other application to use source-separated material as fuel, DEP would consider relevant solid waste and air quality permitting thresholds, applicability and other requirements, including whether the facility is using material(s) that otherwise might have been recycled.

174. Comment: MassDEP should ban all combustion of C&D debris, whether or not materials are source separated. Instead of burning C&D wood, a strategy should be developed to promote maximum recovery and reuse.

Response: MassDEP supports maximizing reuse and recycling of C&D wood and other materials and has proposed a number of strategies to achieve this goal.

175. Comment: Assessment of the environmental and public health impacts of using specific materials as fuel, as proposed in the Draft Plan, is necessary. However, I am concerned that this will not be sufficient to ensure that unintended negative consequences of using these materials as fuel are avoided.

Response: MassDEP believes that this assessment along with other permitting, sorting and processing, and emission control requirements (if use of C&D wood for fuel were allowed) would be sufficient to ensure that potential public health and environmental impacts are identified and addressed.

176. Comment: Using separated waste materials for energy could be allowed as a viable option under the following conditions:

- only a specific set of materials should be permitted to be taken without a permit change
- technology has a track record and test data that it works as claimed
- using that material as a fuel should only be used if there is no other better method (i.e. recycling or composting)
- lifecycle GHG and other pollutant emissions must be less than for any other way of producing energy
- the facility must not emit persistent, bio-accumulative, and toxic (PBT) chemicals
- energy outputs should exceed energy inputs
- if a higher and better use is not possible, must plan for phasing that material can be out of the waste stream in the future
- this should never be counted as part of the progress to meet the waste reduction goal of 75-80%.

Response: MassDEP agrees that approvals for using materials as fuels should be limited to certain materials and based on the characteristics of that material as a fuel, including its energy output, fuel quality, and how clean of a fuel it is. However, MassDEP also believes that, when materials are source separated, that recycling or composting options will generally prove to be economically superior to using those materials as fuel. In some cases, these may not be mutually exclusive. For example, capturing energy from food waste through an anaerobic digester can also produce material that can be further cured as a compost product. MassDEP agrees that GHG and toxic emissions need to be considered among other factors in determining whether to allow use of source separated materials for energy. MassDEP plans to continue to count this as part of the progress

towards the disposal reduction goal, while recognizing that waste reduction, reuse, recycling, and composting are generally favorable.

177. **Comment:** Massachusetts Environmental Policy Act (MEPA) review is the best defense against ill-conceived projects. If DEP proceeds in allowing any new waste-to-energy combustion facilities, MEPA review should be required including the following criteria:
    - analysis of any sources of waste material to be designated as Beneficial Use Determination (BUD) and used as fuel,
    - demonstration that other alternatives for the proposed source materials have been pursued as aggressively as feasible and that no other use than as fuel is possible,
    - assessment of GHG, hazardous air pollutants and criteria pollutant emissions and health impacts on the community including cumulative analysis with other facilities in the vicinity
    - noise and odor impacts
    - process water use
    - whether located in environmental justice communities or near sensitive populations
    - contaminants in ash or other residuals and whether can be beneficially reused
    - size of the facility relative to impacts on waste reduction and recycling
    - energy efficiency (should include combined heat and power)

    Response: MassDEP will modify the moratorium on municipal solid waste combustion to encourage the development of new technologies (i.e., gasification and pyrolysis) for converting waste to fuel on a limited basis. The moratorium will remain in place for new capacity for traditional combustion of municipal solid waste. New additional capacity will be limited statewide to 350,000 tons per year. This limit is set at ½ of the projected in-state capacity shortfall if our disposal reduction goals are met, ensuring that we do not overbuild long-term disposal capacity. Proposed projects will have to meet stringent emissions and energy efficiency standards. New facilities will be subject to the same site assignment rules as other facilities. Any new facilities will be required to employ state of the art processing technologies focused on removing recyclable materials to the greatest extent possible so that these facilities do not supplant recycling or re-use options. MassDEP will include an opportunity for stakeholder input as this process moves forward.

Municipal Solid Waste Combustion Moratorium

178. **Comment:** I disagree with the moratorium on additional municipal solid waste combustion capacity. The Draft Plan states "additional capital intensive disposal facilities would result in fixed capacity for decades that would not be needed given this Plan's aggressive recycling goals." This is a somewhat naive statement, considering that goals can be cost prohibitive and are not always achievable. The moratorium is based on avoiding long-term fixed disposal capacity. There is no explanation as to why a fixed disposal capacity is not beneficial. The continued moratorium on combusting MSW, while sounding good on the surface, is not environmentally sound, financially viable or realistic.

Response: MassDEP believes that the goal to reduce annual disposal by 2,000,000 tons per year, or 30 percent, by 2020, is aggressive, but feasible. The Draft Plan includes many strategies that MassDEP believes will help to move Massachusetts towards this goal. And, MassDEP believes that we can further reduce our need for disposal capacity in future decades and that the Commonwealth's management capacity needs should be met by capturing the value of materials in the waste stream through increased reuse, recycling, and composting rather than disposal. However, MassDEP will modify the moratorium on municipal solid waste combustion to encourage the development of new technologies (i.e., gasification and pyrolysis) for converting waste to fuel on a limited basis. The moratorium will remain in place for new capacity for traditional combustion of municipal solid waste. New additional capacity will be limited statewide to 350,000 tons per year. This limit is set at ½ of the projected in-state capacity shortfall if our disposal reduction goals are met, ensuring that we do not overbuild long-term disposal capacity. Proposed projects will have to meet stringent emissions and energy efficiency standards. New facilities will be subject to the same site assignment rules as other facilities. Any new facilities will be required to employ state of the art processing technologies focused on removing recyclable materials to the greatest extent possible so that these facilities do not supplant recycling or re-use options. MassDEP will include an opportunity for stakeholder input as this process moves forward.

179. Comment: In a poll of Massachusetts voters conducted by opinion research consultants Kiley & Company in November of 2009, it was found that 87% favor increasing the use of waste-to-energy. More than half *strongly* favor such a move. By a margin of six-to-one, voters believe that the state should remove the moratorium on new capacity. With regard to the MassDEP's assertion that waste-to-energy would interfere with eventually achieving "zero waste", the poll showed that 71% of the state's voters believe that recycling 100% of waste is not achievable.

Response: The rationale for maintaining the moratorium is that this type of fixed disposal capacity, while it appears to be needed now, would not be needed in future decades as we continue to progress towards our disposal reduction goals. However, MassDEP is modifying the moratorium to allow up to 350,000 tons of new capacity to be permitted. This limited modification of the moratorium will encourage development of new technologies, while preventing overbuilding of long-term disposal capacity. Contrary to this comment, the Master Plan does not state either that waste to energy interferes with recycling or that 100% of recycling is achievable.

180. Comment: If there is a moratorium on MWCs, why isn't there one on landfills as well? MassDEP itself acknowledges that energy from waste supersedes landfilling on the waste management hierarchy. Even in landfills that have LFG to energy systems in place, large amounts of fugitive methane still escape, and there is no recovery of metals or organics. Maintaining the moratorium on municipal solid waste combustion, while not having a moratorium on landfills, is contrary to waste management policies of the U.S. Environmental Protection Agency and the European Union. Both have a clear preference for waste to energy over landfilling. Massachusetts should follow the example of the

Official EU policy that emphasizes reuse, recycling and energy recovery through modern waste-to-energy facilities. Massachusetts should not limit future waste-to-energy expansion with an arbitrary moratorium on a technology that has proven to be an integral component of the state's integrated solid waste management plan. Waste-to-energy is a safe, clean and reliable source of renewable energy generation that should be encouraged in the SWMP. The state should be encouraging more efficient facilities with fewer pollutants, more profit for owners, and more pressure in replacing current burn facilities and landfills instead of preventing such establishments from being built. This decision should take into account net energy capture, net greenhouse gas emissions, and the value of residuals, with the goal of putting waste materials to their highest and best use. Conversion of residual unrecyclable waste into energy at a modern facility is clearly superior to simply landfilling it (and in Massachusetts' case many times landfilling the waste out-of-state) in terms of environmental impact.

Response: Massachusetts' decision to maintain the moratorium on additional municipal waste combustion capacity is not based on an assertion that the environmental performance of landfills is superior to municipal waste combustion or that landfills are higher on Massachusetts hierarchy compared to municipal waste combustion. Rather, the distinction in this policy is that landfills can be designed, permitted, and operated for relatively short, periods, while municipal waste combustion capacity is designed to operate for decades.

181. Comment: The historical record shows that Massachusetts recycling rates increased rapidly through the early 1990s, after the waste-to-energy facilities were in place and operating, but stagnated in recent years while the moratorium was in place. On a nationwide basis, an examination of recycling rates in 567 communities in 22 states that depend on local waste-to-energy facilities for processing of solid waste showed that such communities recycle their wastes at rates that exceed the national average. Recycling programs and waste-to-energy facilities are not competing for materials, but play complementary roles in an integrated solid waste management system.

Response: MassDEP does not necessarily believe that municipal waste combustion facilities negatively affect recycling rates. Massachusetts data shows that recycling rates in municipalities served by municipal waste combustors are approximately the same as recycling rates in other communities. MassDEP believes that additional fixed long-term municipal waste combustion capacity would not be needed in future decades as increased recycling and composting continue to reduce our need for additional disposal capacity. However, MassDEP is modifying the moratorium to allow up to 350,000 tons of new capacity to be permitted. This limited modification of the moratorium will encourage development of new technologies, while preventing overbuilding of long-term disposal capacity.

182. Comment: There is disagreement with the continued moratorium on municipal waste combustion. Despite efforts to increase recycling and reduce waste, there has been little change in how solid waste is managed in the state. MassDEP needs to realistically address the potential to reduce the amount of waste exported from the Commonwealth due to a lack

of in-state management capacity. Gasification, pyrolysis, and plasma gasification should be specifically exempted from the moratorium and projects should be evaluated on a case by case basis. Without these options, we will be sending more waste to out-of-state landfills that may not meet MassDEP's environmental standards, which is the least desirable option.

Response: MassDEP acknowledges that Massachusetts will continue to be a net exporter of waste for disposal for some period of time, although more recent data suggests that the quantities exported may not be as great as initially projected. However, the decision to maintain the moratorium on traditional mass burn facilities is based on looking at disposal capacity needed for 2020 and beyond, as any additional municipal waste combustion capacity would be designed to be operated for decades.

183. Comment: There should not be ***any*** "moratorium". All types of waste-to-energy can be a fundamental part of an integrated waste management system. However, while encouraging some alternative waste-to-energy technologies that have not been proven viable on a large scale, the draft plan inexplicably prohibits the one technology that has proven its environmental, technical and economic viability in the Commonwealth for over twenty years. Facilities that convert source-separated MSW to energy, or which convert MSW to biofuels, will be just as "permanent" as new traditional EfW capacity would be, and would therefore have the same alleged impact on recycling rates as new EfW capacity.

Response: MassDEP views source separated materials prepared for use as energy differently from mixed MSW for several reasons. Once materials are separated, this enables these materials to be recycled or composted whenever markets are available. And, when markets are not in place, having separated, clean streams of material encourages development of recycling or composting options for those materials. MassDEP is modifying the moratorium to allow up to 350,000 tons of new capacity to be permitted. This limited modification of the moratorium will encourage development of new technologies, while preventing overbuilding of long-term disposal capacity.

184. Comment: The draft plan states in Section 4.1 that "MassDEP will maintain the moratorium on additional municipal solid waste combustion capacity for mixed municipal solid waste." This is the first time in twenty years that "municipal solid waste" has been qualified by the term "mixed." The result is an inconsistent application of the "moratorium". It highlights again that this policy has no basis in statute, regulation or good science, but is instead based on transient politics and the misguided influence of a vocal minority of special interest groups and politically connected individuals.

Response: Applying the term "mixed" to "municipal solid waste" in the context of the moratorium is simply a clarification of the existing moratorium and does not represent a shift in state policy.

185. Comment: If the moratorium in its present iteration remains, clarification of its application to existing facilities in Massachusetts is necessary. Also, it should be confirmed that an increase in allowable MSW processing rates at an existing facility is not subject to the moratorium if there is no change in the facility's capacity. If no physical changes are made at a facility to increase its capacity to accommodate the higher processing rate, the change should not be subject to the moratorium.

Response: The Master Plan states that existing facilities may make changes within the limits of their current permitted capacity and air plan approval without being subject to the moratorium.

186. Comment: The Draft SWMP calls for the moratorium to be applied to waste-to-energy facilities that would undergo reconstruction. This statement might be interpreted as prohibiting reconstruction activities to implement whatever additional emission and air pollution control systems might be required. Please clarify the following statement in Section 4.1: "If an existing facility needs to be rebuilt or repaired to the extent that it is defined as a facility "modification" under 310 CMR 7.08, then its reconstruction would be subject to the same moratorium restrictions as new facilities." Two criteria are used in the definition of "modification" in 310 CMR 7.09, either of which qualifies the change of modification. Confirmation that the moratorium fits into one of these criteria is requested as well as further explanation of the first criterion. The first criteria for "modification" include changes that exceed 50% of the original cost of construction. Depending on how this criterion is applied, this could possibly restrict an existing facility from modernization projects that would significantly reduce facility emissions. In this context, the institution of new requirements that lead to reconstruction, combined with the moratorium on reconstruction of existing facilities, would have the effect of a back-door method for shutting down existing facilities. This approach is unacceptable.

Response: MassDEP does not intend for this provision to limit the ability of facilities to implement facility modifications for the purpose of improving emissions control systems.

187. Comment: MassDEP received postcards and petitions from more than 1000 residents strongly supporting the decision to maintain the moratorium on additional municipal solid waste combustion capacity. These postcards stated that solid waste combustion facilities are dangerous, untested, and unrealistic, and urged Massachusetts to use safe, non-combustion alternatives to dispose of all remaining waste. Another commenter stated that, while we applaud the maintaining of the moratorium as described, it's not because such facilities simply won't be needed, it's because they are absolutely contrary to the strategies which get us to zero waste.

Response: MassDEP is maintaining the moratorium on additional municipal solid waste combustion capacity based on the same rationale as articulated in the Draft Plan. However, MassDEP is modifying the moratorium to allow up to 350,000 tons of new capacity to be permitted. This limited modification of the moratorium will encourage development of new technologies, while preventing overbuilding of long-term disposal capacity.

188. **Comment:** Why is the combustion of source separated waste considered "diversion", but combustion of mixed waste to a MWC is considered disposal? There should be a change in the definitions so that "energy recovery" is not considered to be disposal and is placed in between "recycling" and "disposal".

Response: Municipal waste combustion facilities operate primarily as disposal facilities, with generation of electricity as a secondary function. Therefore, this is considered to be disposal. Facilities that use source separated materials as fuels would be operating primarily as energy generation facilities rather than as disposal facilities and using the source separated material as a fuel product.

189. **Comment:** Waste to energy materials compete with recycling programs for the same materials. Holland is consistently reporting an inverse relationship between recycling and waste to energy and this trend can also be seen in the SEMASS contract offer to municipalities on Cape Cod. Every possible effort should be made to not destroy scarce, irreplaceable resources through burning or burying. Vital metal, forest, fuel, and other resources worldwide are being depleted at unsustainable rates. Soil needed by agriculture, and water needed by industry and agriculture are both approaching or have reached peak levels. The use once and toss mode simply cannot continue, because the economic and environmental costs of replacing these critical ingredients of modern life are simply unaffordable.

Response: MassDEP agrees that more efficient use of our materials should be a very important goal for our state and for our society. The Solid Waste Master Plan includes many strategies to move towards this objective. MassDEP has reviewed data compiled from municipalities in Massachusetts, from other states, and from other countries and has not found a clear correlation between waste to energy and decreased recycling rates. In Massachusetts, the average recycling rate for municipalities that send their waste to municipal waste combustors is about the same as that of other municipalities, not including metal recovery and recycling from municipal waste combustors. The moratorium is not founded on an inverse relationship between waste to energy and recycling, but rather the point that additional municipal solid waste combustion capacity would not be needed given Massachusetts goals and strategies to reduce solid waste disposal, keeping in mind what aspects of materials management MassDEP has the ability to influence.

Gasification

190. **Comment:** Public money is being wasted on investigating other waste disposal techniques. Taunton has spent $4 million so far to develop a plant that is unlikely to get built. Imagine what they could have accomplished if that money were devoted to developing and implementing a zero waste plan. There is ample evidence that contradicts claims that gasification facilities will work. The state should follow the results of the Tellus report which said that these technologies will *not* be viable in the next decade; they will distract from recycling efforts; waste public monies; and should not be allowed under the

moratorium. Allowing more waste to energy facilities will require MassDEP staff time to review and oversee these; this time could be better spent on increasing waste reduction and recycling. Therefore, money needs to stop being spent and loopholes need to be closed with current available technologies.

Response: The Solid Waste Master Plan does not make recommendations for or against specific facilities. In addition, it is not MassDEP's role to restrict technologies based on our judgment of what is economically viable. That judgment is up to each project proponent. This comment also mischaracterizes the findings of the report conducted for MassDEP by the Tellus Institute in December 2008, which states, "Several factors lead us to conclude that gasification and pyrolysis facilities are unlikely to play a major role in MSW management in Massachusetts by 2020.[3]" However, the report also finds some benefits with these technologies and does not recommend that they should be banned under the moratorium.

191. Comment: I am concerned that companies are trying to exploit this gasification loophole in Massachusetts. Communities could be locked into long term contracts and could wind up importing waste from across New England. Already, proposals for new facilities are being tailored around the weaknesses of the moratorium in the Draft Plan which hasn't even been finalized yet. Many people commenting expressed concerns with and opposition to proposed facilities in Athol, Attleboro, Fall River, New Bedford, Somerset, Springfield, and Taunton and stated that the Master Plan should not allow these proposed facilities. Facilities, no matter how large or small, should be subjected to the same level of scrutiny.

Response: The Solid Waste Master Plan does not make recommendations for or against specific facilities, but rather establishes a statewide policy framework. Facilities may be regulated in different ways depending on facility size. For example, larger facilities are more likely to trigger MEPA review. And, small scale, short-term projects can be permitted by MassDEP as demonstration projects. The fact that a type of facility is not subject to the moratorium does not constitute an endorsement of that technology by MassDEP and any such facility would still need to receive a number of state and local approvals to be constructed and operated.

192. Comment: As proposed in the Draft Plan, gasification is not defined as incineration if gas is created at high temperatures and then transported to another location to be burned, either as gas or as ethanol. This definition and method is wrong and does not follow the environmentally-conscious spirit of the moratorium. There is no consideration of long-term environmental, economic, and health consequences. Converting MSW to ethanol is unreasonable and is no different than incineration.

[3] *Assessment of Materials Management Options for the Massachusetts Solid Waste Master Plan Review*, Tellus Institute, December 2008, p. 1.

Response: The moratorium in the Final Plan applies to any new traditional municipal solid waste combustion capacity to combust mixed municipal solid waste. However, MassDEP is modifying the moratorium to allow up to 350,000 tons of new capacity to be permitted. This limited modification of the moratorium will encourage development of new technologies, while preventing overbuilding of long-term disposal capacity. The moratorium is not based on the relative health and environmental impacts of one type of facility versus another, but rather on the distinction between combustion of mixed municipal solid waste and other forms of material management.

193. Comment: Gasification will not be able to generate enough power from MSW because it recovers only a fraction of the energy as well as requiring the addition of other carbon rich material in order to burn trash. It is inefficient compared to combustion and is not viable for the next decade.

Response: The net energy production from various forms of gasification and other waste to energy technologies can vary widely depending on the specific technology and feedstock. MassDEP is modifying the moratorium to allow up to 350,000 tons of new capacity to be permitted. This limited modification of the moratorium will encourage development of new technologies, while preventing overbuilding of long-term disposal capacity. Proposed projects will have to meet stringent emissions and energy efficiency standards. New facilities will be subject to the same site assignment rules as other facilities. MassDEP will provide an opportunity for stakeholder input as this process moves forward. Any new facilities will be required to employ state of the art processing technologies focused on removing recyclable materials to the greatest extent possible so that these facilities do not supplant recycling or re-use options.

194. Comment: It would be most difficult to manage materials being proposed for gasification because they are often the most toxic materials. The burning of rail road ties, telephone poles, and tires in particular is an extremely bad idea.

Response: These materials are not subject to the moratorium because they are not considered "municipal solid waste." However, any facility applying for a permit to gasify these materials would need to meet Massachusetts' air quality permitting standards. While these materials may present particular emissions concerns, gasification may be a valuable option to manage them, given their current limited recycling potential.

195. Comment: It is important to consider anaerobic digestion and pyrolysis as other options to convert materials biologically.

Response: MassDEP will consider permit applications for anaerobic digestion as well as other technologies for deriving energy from source separated wastes. Anaerobic digestion is best suited for source separated organic materials that are more uniform and easily processed through that biological process. MassDEP has promulgated amended regulations

that streamline the permitting of anaerobic digestion operations for source separated organics.

196. Comment: Several commenters expressed concern about proposed locations of specific facilities and their effects on people and animals living near proposed facilities, including future effects on children and grandchildren. Some proposed facilities are in close proximity to schools, neighborhoods, and nursing homes, or in areas where air quality is already degraded.

Response: Solid waste management facilities need to meet the requirements of the Massachusetts solid waste facility site assignment regulations (310 CMR 16.00), and obtain site assignment from the local Board of Health. If they will emit air or water pollution, they will also need to meet the MassDEP standards for those media, which are designed to protect neighbors from significant impacts.

197. Comment: Gasification, as well as all other forms of incineration, should be required to use continuous emissions monitoring (CEM) for all toxic and hazardous compounds known to be released for which the CEM technology exists (e.g. dioxins, furans, acid gases, heavy metals, PAHs, PM, and VOCs). Much of this technology has been tested and verified by the EPA and is commercially available.

Response: Per 310 CMR 7.08, gasification is only considered "combustion" if the resulting gas is burned. Continuous emissions monitoring is already required for some pollutants for existing municipal waste combustion facilities. Other pollutants for which CEM is not appropriate are monitored through periodic stack testing.

198. Comment: Gasification will not destroy material. If toxins are in material, they will come out somehow and enter environment/atmosphere. The process also entails the use of a lot of fuel to start and maintain the burning of waste. Resulting ash from gasification will contain a lot of toxins that will leak into the surrounding environment. What are the plans to control this ash?

Response: In order to be used as a product rather than disposed, ash derived from municipal solid waste would need to have a beneficial use determination (BUD) approval from MassDEP. The BUD regulations require increased scrutiny, the greater the potential exposure from use of this materials. The BUD review would address concerns over levels of toxics in the ash material.

199. Comment: The Fall River Sewage Treatment Plant proposes to gasify sludge, an obvious conflict with the goals of DEP's Solid Waste Master Plan.

Response: Management of sewage sludge is not governed by the Solid Waste Master Plan, or by solid waste regulations, but rather by MassDEP wastewater and land application regulations.

200. Comment: Gasification facilities in other parts of the world have not had a very good track record suggesting a high risk of failure or health and environmental impacts. I would like to see regulations tightened so that all gasification technologies would be subject to the same permitting requirements, whether they are designed to accept municipal solid waste or more specialized waste streams. The Beneficial Use Determination should not be a loophole that leaves local communities with less control and more uncertainty with regard to the future health impacts of gasification plants in their midst.

Response: Beneficial use determination approvals only apply to the use of materials separated from solid waste. Any facility accepting mixed solid waste would be regulated as a solid waste management facility and would need to receive local site assignment, as well as MassDEP permits for construction and operation.

201. Comment: MassDEP should allow combustion of syngas from trash. Gasification can help generate jobs, economic development and tax revenue in Massachusetts and create fuel that doesn't need to be imported. It can also have a greater effect if it is market-driven. It can reduce the need for landfills, reduce methane, create diesel fuel and electricity, is better than anaerobic digestion, and will result in less material being shipped out of state. Gasification can contribute to achieving zero waste by creating syngas from waste. Based on progress from 2000-2008, if the state achieves any sort of waste reduction goal, it will be just enough to keep pace with decreasing landfill capacity. The goals do not account for additional growth in the economy or out of state export. MassDEP missed an opportunity for reduction in GHG by not allowing for the practical use of innovative energy technology as alternatives to landfilling. Current technology and expert opinion need to be utilized in order to find better methods for disposal and to cut back on landfill use.

Response: Gasification of municipal solid waste and combustion of the gas generated is considered "combustion" under the moratorium on additional municipal solid waste combustion capacity. However, MassDEP will modify the moratorium on municipal solid waste combustion to encourage the development of new technologies (i.e. gasification and pyrolysis) for converting waste to fuel on a limited basis. The moratorium will remain in place for new capacity for traditional combustion of municipal solid waste. Total new capacity will be limited statewide to 350,000 tons per year. This limit is set at ½ of the projected in-state capacity shortfall if our disposal reduction goals are met, ensuring that we do not overbuild long-term disposal capacity. MassDEP's goals and policies are to meet this capacity need primarily through other means, including waste reduction, recycling, composting, and other forms of energy generation from waste, such as anaerobic digestion of source separated organics.

202. Comment: Gasification, pyrolysis, and plasma gasification systems need to be exempted from the moratorium. They should be evaluated on a case by case basis in the context of environmental standards to be adopted by the Commonwealth in order to protect the health and welfare of its citizens.

Response: MassDEP will modify the moratorium on municipal solid waste combustion to encourage the development of new technologies (i.e., gasification and pyrolysis) for converting waste to fuel on a limited basis. The moratorium will remain in place for new capacity for traditional combustion of municipal solid waste. Total new capacity will be limited statewide to 350,000 tons per year. This limit is set at ½ of the projected in-state capacity shortfall if our disposal reduction goals are met, ensuring that we do not overbuild long-term disposal capacity. Proposed projects will have to meet stringent emissions and energy efficiency standards. New facilities will be subject to the same site assignment rules as other facilities. Any new facilities will be required to employ state of the art processing technologies focused on removing recyclable materials to the greatest extent possible so that these facilities do not supplant recycling or re-use options. MassDEP will provide an opportunity for stakeholder inpust as this process develops.

203. Comment: The continually shifting and inconsistent policy interpretations in Massachusetts force technology developers to reconsider siting innovative facilities in Massachusetts, even facilities that may be allowed under the moratorium, due to the uncertainty and risk involved with regulatory approvals.

Response: MassDEP appreciates the importance of clarity in solid waste policy and regulations and is willing to meet with project proponents in the early stages of project planning to determine the applicability of the moratorium and MassDEP's solid waste regulations.

Integrated Waste Management Systems

204. Comment: The objectives and action items set forth in this section of the Draft Plan are vague and not well developed.

Response: The objective and action items in this section were purposely written to be very general, as MassDEP does not have a specific system in mind. There are other examples of this type of approach in other states and countries. During the public hearings on the Draft Plan, MassDEP stated that we are particularly interested in suggestions for better defining recommended systems and approaches for this section.

205. Comment: The language used regarding technologies that can divert 100% of waste from disposal needs to be rationalized. These claims of zero emissions and zero waste are shown not to be true. There are many good examples, such as Nantucket, of zero waste integrated management systems that should be studied.

Response: MassDEP recognizes that 100% diversion from disposal, or literal zero waste, may not be possible to achieve. However, we are interested in systems that employ a zero waste mindset and attempt to reduce the amount of disposal to as close to zero as possible.

206. Comment: I believe it is MassDEP's intent to include energy recovery as part of integrated waste management systems. In that case, MassDEP should add "energy recovery" to the first bullet at the top of page 22 of the Draft Plan to clarify this point.

Response: These systems do not necessarily need to include energy recovery or use of separated waste materials as a fuel. The emphasis in these systems would be on maximizing waste reduction, reuse, recycling, and composting before determining whether there is a viable and safe use for the remaining materials as an alternative to disposal.

207. Comment: Nantucket should not be held as a good example of waste management. Creating compost from a combination of mixed trash and sewage sludge is a bad idea. Composting and anaerobic digestion should be limited to source separated organics.

Response: Nantucket may not be the best example for every community, but that facility has proven to be very successful for Nantucket. Nantucket has effective recycling programs, recycling and composting regulations, up-front screening, and back end screening that reduce contaminants in the composting process. Nantucket also has aggressive programs to remove toxic products from the waste stream. The in-vessel composting process and the subsequent curing process are effective at eliminating pathogens from the sewage sludge. The resulting compost goes through many testing parameters to ensure that it is safe to be land applied.

Disaster Debris Management and Management of Other Non-MSW

208. Comment: Managing disaster debris more cost-effectively is an important issue to address in the Solid Waste Master Plan.

Response: MassDEP agrees and has worked with the Massachusetts Emergency Management Agency to update the State's Disaster Debris Management Plan, provide guidance for local and regional planning, and establish statewide contracts to support local and state agencies. More information on Massachusetts disaster debris management planning can be found on the MassDEP web site at http://www.mass.gov/dep/recycle/laws/policies.htm#disaster.

209. Comment: There would most likely be a large amount of spoiled food as part of the debris following a large disaster event. This could be taken to supermarkets that have the capacity to run composting programs.

Response: In most cases, spoiled food would likely need to be sent directly for disposal, due to odor and public health concerns. If it were able to be composted, it would need to be sent directly and immediately to a compost facility. Supermarkets are not well-suited to take in food waste from other sources, particularly spoiled food, given that they are selling food, and are not designed to take in waste food.

210. Comment: Options for managing excavated urban soils are limited, expensive and over-regulated. It may be possible to utilize these urban soils for filling quarries, making them safe and enabling them to be redeveloped. This type of use should be allowed without requiring a site assignment. Many of these quarry locations would not meet site assignment criteria, but filling them would provide important benefits. This could help create local jobs, remove a nuisance, reclaim sites for recreational uses, provide economic benefits to communities, reduce development costs for managing excavated soils, and cut down on the need for more landfill space.

Response: Options for managing urban soils will depend on the levels of contamination in the soil. MassDEP has determined that projects that propose to fill quarries with contaminated soils will be subject to solid waste facility site assignment and permitting, as this is the most appropriate tool to oversee such activities.

211. Comment: Street sweepings, which are a major management challenge for municipalities, are not included in the plan and need to be addressed.

Response: Reuse of street sweepings is typically regulated under the beneficial use determination (BUD) regulations. MassDEP has approved BUDs for certain uses of street sweepings, but these need to be community-specific, as the quality of, and contaminants in, the street sweepings can vary widely.

212. Comment: MassDEP is applauded for recognizing that industrial, commercial, and special waste streams need to be accounted for and addressed, including storm debris.

Response: MassDEP agrees that these waste streams are significant and important to be aware of and plan for, as their management can have important impacts on the solid waste management system.

Appendices

213. Comment: There are several comments regarding information in Appendix B, 2008 Residential Solid Waste and Recycling Data by Municipality:

- The data for Athol seems to be misaligned so that the column headings and data do not match. Data should be shifted to the left.
- **Response:** This has been corrected in the Final Plan appendices.

- The Recycling Rate for Southampton (87%) is incredibly high. This is driven by Composting Tons that are 3x that of recycled tonnage. This seems to be a major difference from other communities, including those with relatively high diversion rates. How much confidence is there in this data? Are there special circumstances in Southampton that explains this?
- **Response:** This municipal data is all self-reported data by municipalities. While MassDEP does conduct some QA/QC of the data, the data quality may vary by municipality. Compost data in particular is highly variable as it is based on volume

to weight conversions rather than scale weights. Specifically regarding Southampton, this compost tonnage was particularly high because it reflected some increased material from storm damage

- The recycling rate listed for Haverhill is not consistent with the municipality's data and appears to be incorrect.
- **Response:** This rate has been corrected in the Final Plan appendices.

214. Comment: MassDEP should publish the recycling rate for the town of Sutton Transfer Station which is approaching 50% based upon actual weights of recyclables and trash collected through the town program. The publication of this actual news will hopefully encourage residents to utilize the Transfer Station and private haulers to increase their recycling. MassDEP should not publish calculations that do not reflect actual numbers because it is misleading and does not encourage consumers to push for additional recycling and reporting.

Response: MassDEP has calculated residential recycling rates by municipality that reflect the trash and recycling tonnage of all residents of a municipality, regardless of whether they are served by a municipal program or by a private subscription trash hauler. In cases when municipalities only report disposal for a portion of their residents, MassDEP estimates the amount disposed by the remaining residents based on statewide averages to estimate disposal of 100% of a municipality's residents. MassDEP believes that this methodology provides a more consistent comparison of the true residential solid waste data by municipality. Excluding this private hauler data and not counting trash from some residents in a municipality gives a distorted picture of residential recycling rates by municipality. MassDEP discontinued the collection of residential solid waste and recycling data by municipality for calendar year 2009, but will renew collection of more limited data for 2010. This 2010 data collection will not include calculation of residential recycling rates by municipality.

215. Comment: There are a number of math errors in the bottom lines for both permitted and potential capacity totals. One source of the errors is that the Southbridge capacity of 180,960 tpy was changed in the table, but not incorporated into the Totals. All the numbers should be double checked.

Response: This data has been checked and corrected. The appendices now link to updated capacity projections in MassDEP's 2010 Solid Waste Data Update.

ADDENDUM to MASSDEP'S RESPONSE TO COMMENTS

April 2013

COMMENTS RECEIVED CONCERNING MASSDEP'S PROPOSAL TO MODIFY THE MORATORIUM ON DEVELOPMENT OF NEW CAPACITY FOR COMBUSTION OF MIXED SOLID WASTE

On December 13, 2012, MassDEP issued an updated Draft 2010-2020 Solid Waste Master Plan that incorporated comments previously received from the public, presented a series of initiatives to increase recycling, tighten waste ban enforcement and put Massachusetts on the path to a "zero waste" future, and proposed to modify the moratorium on development of new capacity for combustion of municipal solid waste. The Department accepted public comment on the moratorium modification through March 1, 2013 (the deadline was extended from February 15, 2013 at the request of stakeholders).

The proposal to modify the moratorium was based on a recognition that, even as the Commonwealth meets the ambitious goal that the Master Plan sets to reduce waste disposal by two million tons per year by 2020, we will still face an annual in-state capacity shortfall of between 700,000 and 2 million tons by 2020 (since a number of landfills that are active today are expected to close over the rest of the decade). The proposal was designed to encourage the development of alternative technologies that will convert some of the waste that remains after the recyclable materials have been removed from the waste stream into energy or fuel. The proposal was directed toward environmentally responsible management of the portion of the waste stream for which recycling is not currently feasible, and was designed to complement (and not to replace) recycling efforts.

Specifically, the proposal would modify the moratorium on the development of new capacity for combustion of municipal solid waste to encourage the development of alternative technologies (e.g., gasification and pyrolysis) for converting municipal solid waste to energy or fuel on a limited basis.

- The moratorium will remain in place for new capacity for traditional combustion of municipal solid waste.
- Total new capacity for gasification, pyrolysis or perhaps other new technologies of municipal solid waste will be limited statewide to 350,000 tons per year (This limit is set at ½ of the projected in-state capacity shortfall of approximately 700,000 tons if our disposal reduction goals are met, ensuring that long-term disposal capacity is not overbuilt).
- These technologies will be used for those portions of the waste stream for which reuse or recycling are not an option.
- Proposed projects will have to meet stringent emissions, energy efficiency, and upfront recycling standards.

- New facilities will be subject to the same site assignment rules as other facilities.
- Any new facilities will be required to employ state of the art processing technologies focused on removing recyclable materials to the greatest extent possible so that these facilities do not supplant recycling or re-use options.
- Existing combustion facilities would be allowed to continue their operations within the limits of their current permitted capacity as established by their solid waste permit and air plan approval. If an existing facility needs to be rebuilt or repaired to the extent that it is defined as a facility "modification" under 310 CMR 7.08, then its reconstruction would be subject to the same moratorium restrictions as new facilities, but this provision will not apply to upgrades of emission control equipment.

MassDEP received more than 13,000 comments on this proposal during the public comment period. This document summarizes these comments and provides the Department's response. The comments and responses are presented in the following sections:

1. Comments Supporting Pyrolysis/Gasification
2. Comments opposed to the proposal
   A. Emissions/health and environmental impacts
   B. Greenhouse gas emissions and other related issues
   C. Resource impacts/recycling impacts
   D. Waste ban enforcement /meeting capacity need through recycling
   E. General comments/process issues
   F. Burning wood from construction/demolition debris
   G. Gasification is not renewable
   H. Other Comments on Technologies

1. Comments Supporting Pyrolysis/Gasification

1. **Comment**: Several commenters expressed support for the proposed change to the moratorium, stating that this would be a step towards a more sustainable integrated solid waste management system. Pyrolysis or gasification facilities can be better alternatives than landfills for meeting waste disposal needs and can contribute to our electricity supply. The proposed partial lifting of the combustion moratorium will encourage next-generation waste technology that recovers more energy than current systems from post-recycled waste while avoiding the unintended consequence of exporting our waste to low-tech, methane-leaching landfills. This can provide more disposal options for municipalities that may otherwise seek to send waste via long haul transfer to out of state landfills, which is the most damaging waste management option. All parties should note that the careful use of gasification and pyrolysis of solid waste would enable MassDEP to accomplish the goal of increasing more waste recycling in the Commonwealth. The Commonwealth should provide clear environmental guidelines that allow for the testing and demonstration of new technologies such as gasification and pyrolysis. The technology research and innovation economy of the Commonwealth needs pathways to responsible pilots of emerging technology. The Department of Environmental Protection is doing the right thing in allowing these technologies to be considered. Research shows that pyrolysis of solid waste is more energy efficient, has fewer toxic residues and lower greenhouse gas emissions than most conventional incineration now in wide use. The US Department of Energy's National Renewable Energy Lab reports that emerging gasification and pyrolysis technologies have significantly cleaner operating characteristics than "burning," but are still in development and testing both in the United States and overseas. MIT, UMass, and other institutions have leading research efforts in these areas. While some interest groups seem adamantly opposed to the wider use of pyrolysis, that is based on a few examples where implementation has been flawed and the technology poorly understood or implemented badly. Further study will remedy these problems, by no means should this form of technology be banned. The added advantage of pyrolysis is that it captures carbon with organic waste and produces biochar. Research is now proceeding at UMass, and at other universities, including Cornell, to determine how biochar may be used to enhance soil in food producing farms and on old landfills to reduce methane leakage.

Response: MassDEP concurs. The goal of the modification to the moratorium is to encourage development of cleaner and more efficient technologies that will convert residual waste after recycling into energy or fuels, thereby allowing the capture of the energy value of the waste materials.

2. **Comment**: Allowing our in-state disposal capacity to drop below MassDEP's ambitious yet realistic disposal projections is not going to drive our society to reduce its waste. Unless manufacturers produce items whose packaging and parts can be easily disassembled and repurposed, and take responsibility for those that cannot, there will continue to be significant amounts of material from which the only economically and practically recoverable attribute is energy. Plastic label backing, spoiled paint, oily rags, Band aids, broken ornaments, paper ream wrappers, used paintbrushes, food-contaminated plastic wrap, and residuals from recycling and

food waste recovery operations are part of a long list of materials that cannot be re-purposed in a practical way. Even if every municipality in the state reached a per household disposal of 850 lbs/ year through aggressive implementation of pay as you throw, local waste ban enforcement, and food waste diversion (which is unlikely), that would still leave a million tons per year of just residential solid waste disposal.

Response: MassDEP is promoting recycling and composting, as well as technologies such as anaerobic digestion to reduce the amount of waste that must be disposed and to create either new materials or energy. While the Solid Waste Master Plan recognizes the need for some disposal capacity and allows for a limited amount of that capacity be in the form of alternative technologies that will capture energy or create fuels, it also sets aggressive goals for waste reduction. The amount of waste affected by the revised moratorium is expected to be about 50% of the projected in-state capacity need for disposal after MassDEP's recycling and composting targets are met.

3. **Comment**: MassDEP should create a clear regulatory and permitting pathway for pyrolysis and gasification systems. The pathway should ensure that recycling is not adversely affected and that system emission profiles do not pollute more than the alternative methods (i.e. incineration and landfilling). For those systems creating a fuel using gasification or pyrolysis (i.e. syngas), the permitting pathway should follow the end use of the fuel. For example, if a gasification system produces syngas that is directly fed into a non-road stationary engine, the system should have to meet requirements for that engine type.

Response: The permitting pathway for pyrolysis and gasification facilities managing municipal solid waste is clear. They will require a site assignment from the local board of health and solid waste and air quality permits from MassDEP. The air quality permit will require that the facility employ the most stringent emissions standards to ensure that emissions will not exceed emissions from existing solid waste facilities. In addition, engines burning biogas must meet the emissions requirements established by MassDEP or US EPA, whichever is applicable.

4. **Comment**: In addition to modifying the moratorium relative to MSW gasification or pyrolysis, MassDEP should also lift its moratorium on biomass facilities that burn fuel derived from construction and demolition wood.

Response: MassDEP is not proposing to lift the moratorium on biomass facilities that burn wood derived from construction and demolition material at this time.

5. **Comment**: If pyrolysis/gasification facilities are permitted to be built, they should also have the same renewable energy credit opportunities as traditional waste-to-energy and be required to pay into the same trust fund for MassDEP to use to fund waste reduction activities.

Response: The Green Communities Act[4] established Renewable Portfolio Class II Renewable Energy Credits Waste Energy Generation Attributes (commonly known as "Class II Waste to

[4] Chapter 169 of the Acts of 2008 – Section 11F(d) and corresponding Department of Energy Resources Renewable Portfolio Standard regulations (225 CMR 14.00 and 225 CMR 15.00)

Energy RECs") but made them available only to facilities that utilize conventional municipal solid waste plant technology and that were in operation prior to December 31, 1997. Therefore, Class II Renewable Energy Credits cannot be used by advanced gasification or pyrolysis facilities unless the statute is changed to make these facilities eligible.

6. **Comment**: Assuming that the Commonwealth gets on a path to success for achieving its overall waste reduction goals, we recommend investigating improved technologies for efficient clean energy recovery from MSW that can perform better than our existing disposal infrastructure. Unless they are already proven in the marketplace, these technologies should be implemented on a limited/pilot basis, with clear goals and methods of evaluation so that MassDEP can assess whether and how much of an improvement there is over existing technologies. The proposed technologies – pyrolysis and gasification – seem as of yet unproven and caution should be exercised until they are tested and proven in Massachusetts. We recommend lifting the ban for these technologies only after further study and, if further study determines that testing is warranted, by only as much capacity is needed to conditionally permit a potentially commercially viable facility(ies).

Response: MassDEP will assess any gasification or pyrolysis technology proposed to manage MSW at the time it is proposed to determine whether it can meet MassDEP's stringent permitting criteria (for solid waste and air quality). Unproven technologies may need to be permitted first as a demonstration project before proceeding at a commercial scale.

7. **Comment**: While the proposed change would be a step in the right direction, MassDEP should not impose a technology or process limitation on further energy recovery development and should lift the moratorium for all forms of waste to energy. While different reasons have been given for this policy since 1990, the most common reason, and the one provided again this time, is the reluctance to permit new long-term disposal capacity that could potentially reduce incentives for diversion and recycling. The past two decades have proven this reasoning to be incorrect. Export of waste to out-of-state landfills has increased since the early 1990's and has remained at more than 1.2 million tons per year for the past decade. There should not be any moratorium. All types of energy from waste can be a fundamental part of an integrated waste management system. After source reduction and recycling, conversion of residual unrecyclable waste into energy at a modern facility is clearly superior to simply landfilling it (and in Massachusetts' case landfilling the waste in and out-of-state) in terms of environmental impact. The US EPA and the European Environmental Agency recognize that recycling and energy from waste are preferred over landfilling. A recent paper coauthored by U.S. EPA and North Carolina State researchers demonstrated the value of energy from waste over landfilling from a GHG and energy perspective[5]. Energy from waste avoids approximately 1 ton of carbon dioxide equivalents (CO2e) for every ton of municipal solid waste (MSW) processed on a life cycle basis when using national averages. The Intergovernmental Panel on Climate Change identifies waste-to-energy as a key GHG mitigation technology for the waste sector and the World Economic Forum at their 2009 meeting in Davos, Switzerland, identified waste-to-energy as one of eight renewable technologies likely to make a meaningful contribution to a future low-carbon energy

[5] Kaplan, P.O, J. DeCarolis, and S. Thorneloe, 2009, Is it better to burn or bury waste for clean electricity generation? *Environ. Sci. Technology* 43 (6) pp1711-1717

system. Finally, the US EPA has acknowledged the GHG benefits of energy from waste, noting that in 2006 energy from waste facilities avoided GHG emissions of over 17.1 million tons of carbon dioxide equivalents. This avoidance is based on four major factors:

a) Anthropogenic, or fossil CO2, GHG emissions from combustion of waste components (plastics, textiles, etc.) made from fossil fuels such as oil and natural gas;
b) Avoidance of CO2 from fossil fuel fired power plants on the local grid occurs due to the waste-to-energy facility generating renewable electrical power or steam;
c) Avoidance of landfill methane emissions from waste, including factoring-in methane capture, that would have been landfilled in the absence of the waste-to-energy facility; and
d) Avoidance of extraction and manufacturing GHG emissions due to ferrous and non-ferrous metal recovery and recycling at waste-to-energy facilities.

Belgium, Germany, and the Netherlands all have recycling rates above 60%, *and* make extensive use of energy from waste for the materials remaining after recycling. In addition, landfills have significant uncontrolled non-greenhouse emissions, including over 170 characteristic air pollutants, over 40 of which are hazardous air pollutants, including 4 known carcinogens and 13 probable carcinogens.

MassDEP is correct to recognize that more energy from waste capacity is needed and we support those technologies that MassDEP seeks to encourage. Unfortunately, it appears that once again, MassDEP is proposing an arbitrary restriction on new technologies that will continue to ensure that Massachusetts MSW is still landfilled at an alarming rate. If MassDEP is serious about diversion from landfills, why would it look to exclude, without a clear benefit to the exclusion, any technologies that can work at the scale (350,000 tons per year) that it is contemplating? Instead, you should develop standards that are performance based and technologically blind so as to encourage all technologies that have been demonstrated at commercial scale and are attainable. Attempting to pick winners by creating another arbitrary standard will simply ensure that more of the Commonwealth's waste is landfilled, moving in the exact opposite direction of advanced nations with successful solid waste management systems (and with dramatically higher recycling rates than Massachusetts).

Response: Massachusetts already has extensive conventional municipal solid waste combustion capacity, as more than 3 million tons of waste or disposed in municipal solid waste combustion facilities annually. MassDEP is limiting the modification of the moratorium on a technology basis to allow for the consideration of other innovative technologies that have been prevented by the moratorium, but that may be more effective and efficient than existing technologies. One of the reasons for establishing the moratorium on development of new capacity for combustion of MSW is to limit the construction of new, long-term disposal capacity that will remain in place even as MassDEP is pushing to increase reuse, recycling and composting of waste materials. Because MassDEP does not want to allow overbuilding of fixed long-term disposal capacity the modification to the revision to the moratorium is limited to 350,000 tons per year, which is about half of the residual tonnage expected to require disposal after recyclable materials have been removed. Construction of too much capacity could decrease the incentive to reduce, reuse and recycle our waste and achieve the recycling goals of the Solid Waste Master Plan. In addition,

the moratorium is being modified to allow the development of technologies that are more efficient that existing municipal waste combustors.

MassDEP agrees that the state should manage the waste that the state produces, and should recover first the material value and second the energy value of material remaining after recycling using efficient technologies. MassDEP has recently revised its Site Assignment Regulation (310 CMR 16.00) to provide a clear permitting pathway for technologies such as anaerobic digestion that will handle source separated organics that are diverted from disposal. Now it is proposing to modify the moratorium to allow a modest amount of capacity for technologies that could generate energy from solid wastes that remain after recycling. MassDEP believes that, with the combination of increased waste reduction, recycling, composting, anaerobic digestion, and limited gasification or pyrolysis, the amount of Massachusetts waste sent to landfills will be reduced by 2 million tons annually by 2020.

8. **Comment**: It should be noted that in all gasification processes, the syngas or the downstream product of the syngas, must be combusted to recover its energy content, and, that this combustion, will result in emissions. Furthermore, regardless of where you draw the boundary, all gasification processes involve partial combustion and oxidation reactions to generate a syngas. As a consequence, the inclusion of a "non-combustion" requirement in the definition of gasification excludes all forms of gasification, seemingly contrary to the MassDEP's goals. If MassDEP does, however, choose a technology standard, it should adopt a more technically accurate definition for gasification. Specifically, gasification should be defined as the processing of fuel in a chamber with sub-stoichiometric levels of oxygen resulting in consistent and measurable quantities of CO and H2 which enable the subsequent use for energy (e.g. heat, steam, electricity, liquid fuels) or raw materials.

Response: MassDEP will review the definition of gasification as suggested. The intent is not to exclude the combustion of the gas generated by a gasification system to generate electricity or to generate a fuel that can be used elsewhere in an engine or boiler.

9. **Comment:** Small-scale gasification systems provide additional benefits that large-scale units will not. Waste should be reduced, reused and recycled first. All other wastes that cannot be recycled should be disposed of by gasification and pyrolysis systems to create energy and reduce the lifecycle carbon impact on the environment. Facilities for small-scale gasification units, such as industrial plants, universities, prisons, and resorts, have significant control over their feedstock eliminating contamination of environmentally harmful products such as mercury. Further, these units do not accept construction and demolition waste, which would create dioxins and furans due to high presence of PVC material. These systems produce an emission profile low in dioxins, furans and other harmful pollutants. They can also reduce greenhouse gas emissions by about 1,040 equivalent tons of CO_2 emissions annually when compared to normal operations of waste disposal in a landfill, plus the reduction of emissions from waste-hauling trucks that are no longer required to transport waste to landfills.

Other benefits of small scale gasification systems include:

a. Increased recycling rates: Recycling programs are easily instituted in conjunction with small scale gasification systems and these systems can help to increase the robustness of facilities recycling processes.
b. Reduced traffic (and therefore, lower vehicle pollution) from hauling waste to disposal facilities.
c. Increased landfill life expectancy by diverting waste from landfills.
d. Significant job creation.

Response: MassDEP concurs that recycling of materials should be maximized and only the remaining waste materials managed by gasification/pyrolysis systems. The modification of the moratorium would let the market determine whether small-scale gasification systems or larger ones would be more efficient.

10. **Comment**: The proposed 350,000 ton/year cap on gasification/pyrolysis of MSW would likely terminate a project for the gasification of MSW which is being developed in Taunton and for which the City entered into a series of contracts in early December 2012. The current project would be a facility that would process more than 550,000 tons of MSW per year and thus could not be constructed under the proposed cap. The cap shouldn't be applied to the Taunton project because the project will have a significant positive environmental impact on southeastern Massachusetts and the surrounding area. It will provide much needed alternative fuel manufactured from renewable energy sources. The project will manufacture 48 million gallons per year of 87 octane "drop in" gasoline that will qualify as renewable fuel under the US EPA's Clean Air Act, RFS-2 Standards. This gasoline is needed by refiners and blenders (referred to in the Clean Air Act as "Obligated Parties") to blend with other gasoline obtained by refining crude oil in order to satisfy the Clean Air Act. The project will significantly reduce greenhouse gas emissions compared to landfilling the same quantity of waste and manufacturing the same quantity of gasoline by refining crude oil.

The project will provide an economic stimulus in southeastern Massachusetts. It will create about two million man hours of construction and manufacturing jobs over a two year period and 100 well paying jobs for 30 years thereafter. The project will invest $600 million in Massachusetts and the surrounding area in facility construction and will invest $30 million per year for 30 years in southeastern Massachusetts during the operation and maintenance of the facility. It will also provide in State capacity for the long term disposal of solid waste and assist MassDEP in achieving its goal of minimizing the export of waste out of State.

The environmental benefits of the Taunton project are that it uses non-incineration thermal technology, will achieve front end recycling of at least 50%, 100% of the remaining waste is recycled into five commercially useful products that are sold, no ash is produced, no landfill is required, there are no process water discharges, there are no air emissions from the waste gasification technology - It is a closed loop process, air emissions from ExxonMobil's MTG technology are minimal, it will reduce greenhouse gas emissions by 80% compared to the greenhouse gas emissions produced by landfilling the same quantity of waste and generating the same quantity of gasoline by refining crude oil, and air pollution from diesel fueled trucks hauling waste out of state will be reduced.

Response: MassDEP communicated to the City of Taunton in a letter dated July 28, 2011, that the Taunton project would not be covered by the existing moratorium because it would generate a syngas that would be converted to gasoline. This interpretation was based on the project proponents' assertion that the gasoline generated by the project would be used for transportation fuel, rather than for electricity generation. To the extent that this plan is still in place, the project would not be counted towards the 350,000 tons/year allowed under the modification to the moratorium. (The tonnage limit in the modification applies to syngas used to produce electricity derived from MSW.) However, if the project's plan changes so that the fuel produced is converted for energy generation, the project would come under the modification of the moratorium and the MSW that it takes in would be counted toward the statewide cap of 350,000 tons/year. While the Department may allow a limited amount of the syngas produced to power the facility, the project would need to demonstrate that the bulk of the syngas produced will be incorporated into gasoline.

11. **Comment**: At the time the moratorium was put into place, gasification and pyrolysis technology was not available and municipalities only had access to mass burn incinerators for municipal waste. Today, these new technologies, in addition to expanded recycling, anaerobic digestion and other initiatives proposed in the Solid Waste Master Plan, make economic and environmental sense and have the potential to preserve limited open space, protect the environment and save municipalities money. Cities and towns in Massachusetts have a demonstrated record as true stewards of the environment. This past summer, the research and policy organization Environment Massachusetts published "Massachusetts' Solar Leaders: Cities and Towns at the Forefront of the Clean Energy Revolution," a report that chronicles the enormous success that communities across the Commonwealth have had in facilitating the rapid development of solar energy facilities, making our state a national leader. Massachusetts now ranks number one in energy efficiency, and number two in solar generation and almost all of our 351 cities and town host at least one renewable energy facility. Our communities are also turning once dormant landfills into renewable energy generating facilities. Over 20 municipalities have solar installations on capped landfills; with more than 40 permit applications for solar developments on capped landfills currently pending. Massachusetts now has the opportunity to lead the nation in new environmentally safe waste disposal technology which would meet stringent recycling, emissions and energy efficiency standards while providing municipalities with critical tools to adopt sustainable and cost-effective approaches to meeting energy needs and environmental challenges. In addition, the Solid Waste Master Plan would protect local municipal authority by subjecting these new facilities to the same site assignment rules as other solid waste facilities.

Response: By making the limited proposed revision to the moratorium, MassDEP hopes to encourage innovative technologies to be developed in Massachusetts. The total additional capacity of 350,000 tons per year is 50% of the projected in-state capacity shortfall even if the Master Plan's aggressive disposal reduction goals are met.

12. **Comment**: I commend the Department on the bold steps being taken to increase our recycling rates towards a zero waste goal. I am glad to see we will no longer treat waste as waste, but now think of waste as material that can be used and capitalized upon. However, I hope that

this change will also include C&D waste. As with MSW, C&D waste can be successfully processed here in Massachusetts to help make us become more energy independent. Meeting the strictest emissions requirements of the state and the EPA for these new technologies while simultaneously providing energy or fuel for our state will take us closer to our zero waste and energy goals.

Response: The proposed revision regarding the moratorium is only for MSW after recyclables have been removed, and does not apply to wood originating from construction and demolition waste. A separate moratorium was placed on wood from C&D waste until such time as MassDEP conducted a study of the public health and environmental impacts of burning C&D wood in biomass boilers. That study has not been conducted and in addition, no C and D waste facilities are currently under consideration in Massachusetts.

2. Comments Opposing Proposed Change

A. Emissions/Health and Environmental Impacts

1. **Comment:** Emissions from gasification and pyrolysis facilities will be comparable to or worse than MWC emissions**.** Available gasification and pyrolysis technologies produce many, if not all, of the same harmful air pollutants that are produced by other forms of combustion and that spurred the application of the waste incineration moratorium in the first place. Although pyrolysis and gasification technologies can be designed to introduce less oxygen into their energy conversion processes than traditional incineration, available technologies still produce toxic air emissions**,** including particulates, hydrogen chloride**,** nitrogen oxides, sulfur dioxide, cadmium, lead, mercury, and dioxins. In addition, some toxins might be in a different form (soil or liquid vs. gaseous). And, there may be a whole new set of complex toxic emissions that are not part of the conventional pollutant listings or monitoring criteria with an incinerator. No current pollution control technology has shown to be sufficiently effective in preventing the release of these emissions into the atmosphere.

Response: Any proposals for Massachusetts projects involving innovative or alternative technology would need to satisfy MassDEP that emissions will be sufficiently controlled to prevent negative impacts. By modifying the moratorium on new capacity for combustion of solid waste, we are signaling that we will open the door to review projects that will provide:

- additional up-front separation of recyclables,
- lower levels (or more complete control) of pollution in air emissions and water discharges),
- more useable by-products such as steam or fuel that can be used to generate electricity or directly power equipment and inert/benign solids that can be reused (e.g., glass-like material that can be used for roadbed construction) and less ash that must be landfilled.

2. **Comment:** Trash is not homogeneous at all and there is no way to know what the chemical makeup is or what the physical properties are, as the waste would constantly be from different sources, different types, with varying properties making for erratic operational conditions and therefore erratic emissions.

Response: While the Department agrees that trash is a very heterogeneous material, a wealth of consistent information has been developed over many years about the types and quantities of pollution that are produced when it is burned. See EPA's compendium of emission factors, http://www.epa.gov/ttn/chief/ap42/.

3. **Comment:** The "Tellus Report" prepared for MassDEP in 2008 states, "For modern landfills, waste-to-energy incinerators, as well as the gasification and pyrolysis plants, the emission factors used to compare environmental performance are based largely on *modeling and/or vendor claims* for modern, state-of-the-art facilities, as opposed to actual operational data

from real word experience. For example, operation performance for Massachusetts WTE facilities has been shown to produce far higher emissions than the modeled figures."

Response: While this statement was taken verbatim from the Executive Summary of the 2008 "Tellus Report"[6], the data that were presented in the body of the Report drew from actual emissions reported by municipal waste combustors in Source Registration and Toxics Use Reduction Reports submitted to MassDEP, and from measured emissions provided by conversion technology vendors for two U.S. assessments (New York City, 2005, and Los Angeles County, 2007) and several gasification plants located in Europe, as summarized in a memorandum that was reviewed by Tellus in the preparation of their report.[7] The data indicate that, on a "units of pollutant per ton of solid waste handled" basis, gasification technologies had lower average measured emissions than the Massachusetts municipal waste combustors for filterable particulate matter (PM10), sulfur dioxide, carbon monoxide, volatile organic compounds, lead, hydrochloric acid, mercury, and dioxin-furans. The memo also states that nitrogen oxide emissions from conversion technologies reviewed were also lower than those reported by Massachusetts municipal waste combustors, but the conversion technology emissions were based on emission factors rather than measured emissions. The memo attributes at least some of the differences in emissions to the fact that all of the Massachusetts municipal waste combustors were built before 1990, while all of the conversion technologies evaluated were relatively new at the time.

4. **Comment:** The EPA requires incinerators "to use the best control technologies", but unfortunately, while there have been some improvements in control technologies, emissions are not monitored on a continuous basis and there are concerns about the accuracy of monitoring devices. Emissions are self-reported and plants are not required to report emissions during start-up and shut-down periods or during malfunctions. When emissions exceed allowable limits the waste company is fined long-after the fact when the damage has been done. Also, ultra-fine particulates, most dangerous to health, are not limited or even measured.

Response: All municipal waste combustors in Massachusetts use monitors that record air emissions data at frequent intervals around the clock. These continuous monitoring systems record actual levels of nitrogen oxides (NOx), sulfur dioxide (SO2) and carbon monoxide (CO). They also track operating conditions (e.g., flue gas temperature) and operating parameters for emission control systems with established acceptable ranges that can affect emission levels. Facilities periodically report to MassDEP on excess emissions, deviations from operating parameters that are outside of acceptable ranges, and monitoring downtime. The pollutants that are monitored are generally those for which EPA requires monitoring, including total particulate matter (which is not broken down into fractions by size).

Stack tests are used to assess emissions for some pollutants for which continuous monitors are not available. Facilities are required to perform stack tests on a periodic basis: quarterly for

[6]" Assessment of Materials Management Options for the Solid Waste Master Plan Review", prepared by the Tellus Institute for MassDEP in 2008: http://www.mass.gov/dep/recycle/priorities/dswmpu01.htm (Executive Summary, p. 2).

[7] 2Alternative Resources, Inc., *Memorandum: Air Emissions from Existing Massachusetts Waste-to-Energy Facilitates Compared to Air Emissions from Advanced Thermal Conversion Technologies* (January 14, 2008).

mercury and once every nine months for other pollutants. A stack test provides a "snapshot" of a facility's emissions at the time testing is performed. Sampling and recording devices are used to simultaneously measure a range of pollutants and operating conditions in several "runs" over the course of a testing day. A laboratory analyzes the samples to determine concentrations of specific pollutants, including mercury, lead, cadmium, particulate matter, hydrogen chloride, and dioxin and furans. The results are averaged using EPA methodologies and emissions data are reported to MassDEP. When monitoring indicates that an emissions standard has been exceeded, the facility operator is required to report the finding to MassDEP, explain the factors that contributed to excess emissions and outline the steps taken to address these emissions.

MassDEP's regulation governing air emissions from municipal waste combustors (310 CMR 7.08) allow emissions to exceed standards for up to three hours in specific circumstances: when a facility is starting up or shutting down, and when certain types of malfunctions occur. However, these "excess emissions" events must be noted in facilities' annual and semi-annual reports to MassDEP, and if monitoring equipment is not functioning, the facility is responsible for finding another way to quantify its emissions while the equipment is down.

MassDEP has posted annual and semi-annual emissions reports from the five largest Massachusetts municipal waste combustors on its web site since 2002: http://www.mass.gov/dep/recycle/solid/mwc.htm.

5. **Comment:** The Draft Solid Waste Master Plan notes that if the moratorium were modified, proposed gasification facilities would have to meet stringent recycling, emissions, and energy efficient standards. However, the Master Plan also identifies the need to create additional regulatory standards to improve air pollution control systems at existing municipal waste combustors. Massachusetts should not even consider allowing new combustion facilities to be built if our existing facilities are falling short on limiting harmful emissions and protecting the public's health.

Response: Under the U.S. Clean Air Act[8], Massachusetts is required to ensure that its air pollution control regulations are at least as stringent as those adopted by the U.S. Environmental Protection Agency (EPA), and therefore, the Massachusetts regulations must be updated when EPA updates the federal regulations. EPA updated its emissions guidelines for existing municipal waste combustors in 2006, and MassDEP expects to propose corresponding amendments of its Municipal Waste Combustor Rule (310 CMR 7.08) for public comment in Spring 2013. These amendments would strengthen emission standards for particulate matter, cadmium, lead, and dioxin/furans, and would allow these facilities to use (and report from) continuous emission monitors rather than stack tests. In addition, MassDEP will also propose to tighten nitrogen oxide emission limits for municipal waste combustors, to ensure that state standards reflect Reasonably Available Control Technology (i.e., the level that a particular source is capable of meeting using technology that is reasonably available considering technological and economic feasibility), to ensure that these standards are at least as stringent as those adopted by EPA.

[8] 42 U.S.C., section 7401 et. seq.

6. **Comment:** Within the Taylor Biomass facility (proposed in NY state), total emissions of NOx from the facility are over 63 tons per year. The Taylor loan application states that emissions from the facility are only about 34% lower than a traditional MSW incinerator, and this is based on assuming a high and perhaps unrealistic degree of efficacy for the emissions controls, given that the technology is still largely unproven. The engineering report prepared for the Taylor facility tacitly recognizes that real emissions are unknown, including the following as a risk and its mitigation: "Condensable organics will be polyaromatics and are therefore suspect carcinogens. The gas conditioning reactor will destroy 90% of these materials. The remainder will be removed by scrubbing and disposed of within the process combustor or by treatment of the process waste water stream." Likewise, the air permit application states that the combustion turbine "will also emit unburned hydrocarbons, 20% of which are assumed to fall within the category of volatile organic carbons". Such admitted risks for the Taylor facility make it clear that gasification is not a magic technology that makes toxics disappear. Even at a gasification plant, "garbage in equals garbage out" – that is, burning more contaminated materials increases stack emissions of air toxics.

Response: Any project planned for a Massachusetts location will need a Comprehensive Air Plan Approval from MassDEP, which requires the applicant to provide data concerning expected air emissions based on test results and/or scientifically recognized emissions factors.

7. **Comment:** Although pyrolysis and gasification technologies can be designed to introduce less oxygen into their energy conversion processes than traditional incineration, available technologies still produce ash, which includes toxins that can leach into groundwater, with similar environmental and public health risks as are presented by incineration. Ash produced by gasification, about 8-15% of the volume of the original solid waste, typically contains toxic metals, such as cadmium, lead, and mercury, which can contaminate groundwater as well as soil. This raises particular concerns should an existing facility expand to include a new gasification unit and increase landfilling of ash in sensitive areas, particularly in Saugus. The presence and levels of toxic metals in ash produced in the gasification process would be the same as ash produced by traditional incineration because the source material is the same. Plants relying on these technologies also typically produce a significant amount of tar.

Response: MassDEP recognizes that all processes produce a variety of by-products, including ash. We expect an innovative or alternative technology to more efficiently convert the solid waste that the facility takes in to heat or gas than is the case with the currently operating municipal waste combustors, and therefore to produce less ash per pound of trash. The newer technologies may produce other by-products that are inert and can therefore be re-used (e.g., some vitreous materials may be used in road bed construction), which would also reduce the amounts of ash that would require disposal.

In addition, ash from Massachusetts municipal waste combustors is disposed of in landfills that are required to comply with the requirements of the Solid Waste Management Facility Regulation (310 CMR 19.000), which include provisions for capturing and disposing of leachate at a facility that is designed to handle it properly. The ash landfill in Saugus installed a system in the 1980's that collects leachate from the perimeter of the landfill, to prevent leachate from being discharged into the marsh.

8. **Comment:** MassDEP's own taxpayer-funded study commissioned by the Tellus Institute in 2008 recommended against lifting the incinerator moratorium. Recycling and composting programs far outperformed every other management method, and gasification/pyrolysis performed only marginally better than "conventional" MSW incineration and worse than landfills with respect to CO2 emissions.

Response: The Tellus Institute compared recycling and composting with a variety of methods for disposing of solid waste. MassDEP agrees with the Institute's finding that source reduction, recycling and composting are preferable to all forms of disposal, including gasification and pyrolysis. However, MassDEP believes this comment does not appropriately characterize the conclusion of the Tellus report. That report, which is available at http://www.mass.gov/dep/recycle/priorities/tellusmmr.pdf, stated, "reported per ton emission factors for gasification/pyrolysis facilities are lower than for "Waste to Energy" incineration facilities for all pollutants, and lower than landfill emissions for all except carbon dioxide (eCO_2)[9]." In addition, MassDEP does not agree with the Report's characterization of landfills as significantly reducing GHG emissions.

9. Comment: Recent studies on pilot gasification and pyrolysis plants in other states and foreign countries reflect troubling levels of emissions of particulate matter, hydrogen chloride, nitrogen oxides and other pollutants. It therefore is not reasonable to conclude that gasification and/or pyrolysis technologies will avoid significant environmental or health risks. Particularly in the absence of new, objective evidence of technology that enables gasification and pyrolysis without the risks and drawbacks noted above, the Department lacks a reasonable basis for lifting the moratorium.

Response: Modifying the moratorium will allow proponents to file applications for projects involving innovative and/or alternative technologies, which will allow MassDEP to determine whether a proposed facility can be built and operated efficiently, effectively, and cleanly. This review will include a determination of whether the facility is capable of meeting stringent air pollution standards and requirements. If the moratorium is not modified to allow these applications to be submitted, we will have no basis for evaluating these technologies for their appropriate use in the Commonwealth. Any facility will need to satisfy MassDEP that it can be built and operated without significant impacts on public health and the environment, and will also have to obtain all necessary local permits (include a Site Assignment from the local Board of Health).

10. Comment: A 5 ton per hour R&D pilot plant years ago was touted as being able to take high sulfur coal, gasify it and generate a low BTU gas without emitting any pollution or waste. The project was plagued with problems, including corrosion throughout the plant, problems with the sulfur removal system, the scrubber systems, the formation of other unanticipated gaseous emissions, the fouling of catalysts beds, the large amount of hazardous wastes generated, both solid and liquid, and the toxic odors/fumes being emitted from the different pollution control systems.

[9] *Assessment of Materials Management Options for the Massachusetts Solid Waste Master Plan Review*, Tellus Institute, December 2008, p. 2.

Response: MassDEP is not familiar with this facility and therefore cannot comment on its design, construction, or operation.

11. Comment: Contrary to the Department's suggestion that the partial lifting of the incineration moratorium would be geared toward alternative technologies *innovation*, the Department's proposed action is not limited to narrowly tailored R&D activities. Rather, it would allow one or more large, utility-scale facilities – or a host of smaller (e.g., 1-3 MW capacity) facilities – to go forward, locking in more waste-to-energy infrastructure over the long-term. The Department's proposal would allow nearly 1,000 additional tons per day of solid waste to be used as fuel for power generation – enough to supply a facility with an electric generating capacity of 35 MW or more. In addition, the proposal is silent with respect to limiting the duration such a facility may operate. Limited-duration permits have been important for R&D facilities, to ensure that technologies are not allowed to be deployed for long periods of time unless and until they have been proven to be safe and effective. Yet no such protection appears to be contemplated here.

Response: MassDEP did not propose to limit development of new facilities to only those built at a "research and development" or "demonstration" scale to allow approval of proposals for the use of technologies for which these steps are not needed. However, if sufficient specific data on emissions or other aspects of a proposed facility is not available, the Department may require the proponent to conduct studies that may involve smaller-scale demonstrations of the technology prior to permitting a commercial scale facility.

12. Comment: Environmental policies must protect the public against acute and chronic adverse health effects. We are especially concerned about the effects of air pollution on the health of vulnerable populations, including the 1 in 10 children living with asthma and the nearly 300,000 adults with chronic obstructive pulmonary disease (COPD) in Massachusetts. Incineration will cause the burning of plastics, bleached papers, vinyls, and immeasurable amounts of toxic materials, with dioxins, mercury, lead, asbestos, arsenic, other heavy metals, and countless other dangerous poisons emitted into the air and onto the soil, rivers, streams, lakes, ponds, oceans and waterways. All of these will end up in the bloodstreams and tissues of men, women, children, animals, fish, and other food sources.

Based on studies conducted by the National Institute of Health and Beth Israel Deaconess, carcinogenic substances such as dioxin, mercury, lead, cadmium, chromium, dioxin and contaminated ash are released into the air from gasification emissions. Health impacts of dioxin include cancer, IQ deficits, disrupted sexual development, birth defects, immune system damage, behavioral disorders, diabetes, and altered sex ratios. Some studies show higher cancer rates and the presence of elevated levels of dioxin in the blood of people living near municipal solid waste incinerators when compared to the general population. All along the line, from the people who work in the plants to the people living near landfills where bottom ash has been deposited, people are exposed to dioxin and other contaminants from incinerators. High levels of dioxins are also found in food and dairy products produced near incinerators, so that the toxic impacts of incineration are as far-reaching as the shipment of that food to other communities.

Response: Of the "advanced" thermal conversion technologies reviewed by the Tellus Institute in the 2008 Tellus Institute Report, the newer conversion technologies had measured emissions

that were in many cases significantly lower than emissions reported by the Massachusetts municipal waste combustors. MassDEP expects that any new facility will need to employ advanced air pollution controls, and will need to manage by-products containing toxic materials so that they do not contaminate the environment.

13. Comment: The ash residue from the new retrofitted technologies and the increased amount of solid waste that would come to this facility due to the technological changes Wheelabrator would make would further compound the health of Saugus citizens, the air and the groundwater surrounding the ACEC wetlands. Statistics show that in Saugus we have elevated cancer rates and increased respiratory diseases. This region has been designated as an Area of Critical Environmental Concern because it provides valuable habitat for fish, birds, shellfish and other wildlife, and is located on the Saugus/ Pines River estuary, and is the most important natural resource area in the Saugus River watershed. The Rumney Marshes ACEC is a 2,634 acre urban salt marsh system extending into Saugus, Lynn, Revere, Boston and Winthrop. This region was designated as an ACEC in 1988 to preserve its critical environmental value as one of the most biologically significant salt marshes north of Boston. The marsh contains flounder, alewife, rainbow smelt, American eel, soft shelled and razor clams, mussels, and a variety of native and migratory birds. Contaminated water is continuously discharged from the facility into the adjacent Saugus River, thus causing potential negative affects to the fish and wild life in the area. The Attorney General's Office recently issued a $7.5 million penalty against Wheelabrator as part of a settlement for numerous environmental violations associated with plant operation and the improper handling of solid waste in Saugus and other comminutes. ENVIRON, an auditor of Wheelabrator, continued to identify throughout 2012 numerous additional operation problems that had to be addressed.

Response: See Response to Comment #7 in this section for information about leachage management from the ash landfill in Saugus. MassDEP is not aware of a request to retrofit the Saugus facility. However, should a proposal for a new (or retrofitted) facility there or in other locations occur, MassDEP would need to decide whether the facility can be built and operated so that it will meet all applicable regulatory limits and requirements.

B. Greenhouse Gas (GHG) and Other Related Issues

1. **Comment**: As energy generators, gasification plants emit more greenhouse gases per unit of electricity generated than fossil fuel plants, and as such, are incompatible with the greenhouse gas reduction goals of the Massachusetts Global Warming Solutions Act (GWSA). The Intergovernmental Panel on Climate Change (IPCC) states that when comparing power sources, biogenic emissions from incinerators must be accounted for in evaluating global warming impacts.

Response: While the greenhouse gas emissions may be greater per megawatt hour (MWh) than a natural gas facility, MassDEP regulations require an applicant to compare their emissions to a facility using a comparable fuel, not the lowest emitting fuel. In addition, MassDEP is working on many fronts to reduce the amount of organics being disposed in the Commonwealth and expects to propose this Spring that disposal of organics at facilities with more than 1 ton per

week be banned beginning in Summer 2014. Finally, we agree that biogenic emissions need to be included in any assessment of GHG impacts and opportunities for reducing GHG. The MA GHG inventory developed as per the GWSA includes biogenic emissions. See http://www.mass.gov/dep/public/committee/swacorg.htm for more information on organics and http://www.mass.gov/dep/air/climate/gwsa_docs.htm#implement for more information on the MA GHG inventory.

2. **Comment**: Since 2009, the EPA has been utilizing "systems-based accounting" of GHG emissions. Whereas prior accounting for waste was limited to emissions from landfills and incinerators, the new system also accounts for the emissions generated to replace the products and packaging that we discard, much of which is designed for obsolescence or one-time use. Similarly, food production, transport, and disposal in landfills and incinerators also drive climate change, and almost half of the food supply in the United States is wasted. EPA reports, "In total, the goods we create, transport, and dispose of and the food we produce, and process, transport, and dispose of are estimated to account for approximately 42% of U.S. GHG emissions."

Response: We appreciate that EPA uses lifecycle "systems-based accounting" for some of its GHG related work. That is not our understanding however of their GHG reporting requirements or inventory tools. Massachusetts uses EPA's state GHG inventory tool for our state-wide inventory which is not based on systems-based accounting. See link included for comment #1 for more information.

3. **Comment**: Massachusetts' goals should incorporate the concept of "reduce, reuse, recycle," rather than technologies that are a continuation of the 19th century mindset of "waste, exploit, and destroy." Destroying valuable non-renewable resources for the tiny amount of electricity created is not only a shortsighted response to the problem of waste, the impact of increased CO2 emissions flies in the face of the increasingly urgent need to reduce greenhouse gas emissions.

Response: The goals of the SWMP includes ambitious goals to "reduce, reuse and recycle" resources. And the goals of the GWSA mean that the Commonwealth is among the leading states in the US in reducing GHG emissions.

4. **Comment**: As incinerators, albeit operating under starved oxygen conditions, gasifiers emit significant conventional air pollutants and hazardous air pollutants. Combustion of the char left over after syngas is produced is also a source of pollution. Gasification does not destroy air toxics – when contaminated materials are used as fuel, toxic emissions increase.

Response: MassDEP will require any proposal submitted under this provision to meet stringent air quality and energy efficiency requirements.

5. **Comment**: Our comments on the waste plan are informed by our review of Taylor Biomass, a municipal solid waste gasification facility proposed in Montgomery, NY. This facility is advertised as the "nation's first, commercial-operation, energy generation facility, powered by syngas produced from the sorted and non-recyclable portions of the waste stream." Referring to the 1990 moratorium on new incinerators, the waste plan states "Since that time, a variety of alternative technologies (such as gasification and pyrolysis) have advanced." However, this is

not exactly the case. In fact, while a variety of facilities and technologies have been proposed, there are still no large-scale operating facilities in the United States that are gasifying MSW or biomass. Our review of the Taylor facility's application documents for an air permit and a DOE loan guarantee reveal the considerable uncertainties that still exist with regard to operation of gasification facilities. The 24 MW Taylor plant will consume 25,000 dry lb/hr of MSW, and will in turn produce 8,210 lb per hr of char to be burned in the char combustor. In other words, nearly 33% of the feedstock for gasification is ultimately burned in a conventional boiler after it has been pyrolyzed. The char burner produces 3,670 lb of ash per hour, which contains heavy metals and anything else that wasn't volatilized, and therefore may require special disposal. If the char is not combusted, it also may require special disposal, due to the high concentration of heavy metals. The Taylor application states that the heating value of syngas is only about half that of natural gas, so even though Taylor's combined cycle gasification process is projected to be more efficient than simple incineration, its stack emissions are still about 1,670 lb/MWh of "raw" CO, around twice the emission rate from a natural gas combined cycle plant.

Response: MassDEP is not familiar with the Taylor proposal so cannot comment in detail on the calculation included above. However, a facility does not need to demonstrate that it can meet the emission limits of a natural gas facility. The emissions will be compared to a facility of similar size, using a comparable fuel.

6. **Comment**: Considering gasification strictly as a means of waste disposal, with regard to GHG emissions, the Tellus report commissioned by the state concluded that landfilling with gas capture is the best option: "On a per ton MSW basis, modern landfills with efficient gas capture systems reduce two and a half times as much CO2e as gasification and pyrolysis facilities, and three and a half times as much as waste-to-energy incinerators." Considering the GHG impacts of gasification as a means of energy production, as has been the case with biomass energy, waste incineration has often been portrayed as having reduced "net" GHG emissions based on discounting for the biogenic portion of the waste stream used for fuel. In some cases, such calculations rely on over-inflated estimates of methane generation and escape if the waste is landfilled instead of being incinerated. MSW gasification facilities emit more GHGs per MWh than natural gas facilities.

Response: MassDEP does not agree with the specific finding of the Tellus Report (which is available at http://www.mass.gov/dep/recycle/priorities/tellusmmr.pdf) that landfills significantly reduce GHG emissions and instead views landfills as significant net sources of GHG emissions. It is also worth noting that the Tellus Report concluded that gasification and pyrolysis perform better than landfills with regard to all other environmental parameters that they considered.

7. **Comment**: While it is understandable that the plan focuses on simply reducing the number of tons of waste landfilled each year, rather than expressing the amount of materials landfilled against an economic baseline of materials production, the goal of reducing landfilling by two million tons a year is unfortunately accompanied by the following statement, page 18 within the plan: "This goal of reduced solid waste disposal could be achieved through any combination of source reduction, reuse, recycling, composting, and other forms of diversion, so Massachusetts would not necessarily need 2 million tons of additional recycling and composting capacity to meet this goal." (emphasis added). The phrase "any combination" is notable. In fact, once

incineration is back on the table as an option for reducing waste, there are two possible and even probable outcomes. First, alternative fates for waste such as recycling or source reduction can be shortchanged; and second, greenhouse gas emission reductions become much more difficult to achieve, relative to other options. Compounding these outcomes, we are not confident that the proposed cap of keeping new gasification capacity at 350,000 tons per year will be maintained – rather, this cap feels like it would just open the door for the cap to later be raised.

Response: MassDEP disagrees with this comment. The Plan sets a goal to reduce "disposal", not "landfilling" by 2 million tons on an annual basis by 2020. Any MSW or gasification capacity would be considered disposal and not part of the 2 million ton disposal reduction. We proposed to limit new capacity to 350,000 tons per year precisely to ensure that source reduction, reuse, recycling, composting, and other forms of diversion are the preferred alternative. This level is designed to cover at most half the expected needed capacity for disposal by 2020.

C. Resource Impacts/Recycling Impacts

1. Comment: Recycling of materials reduces the need for virgin resources extracted from forests and mines, saves energy, and reduces emissions of greenhouse gases and other dangerous air and water pollutants. Recycling conserves on average three to five times as much energy as incineration facilities that process MSW into energy. Gasification and pyrolysis, by contrast, do nothing to reduce the amount of virgin resources extracted, and these technologies produce carbon dioxide (in addition to other harmful air and water pollutants) in significant amounts.

Response: MassDEP agrees that recycling is preferable to all forms of disposal, including gasification and pyrolysis, from an environmental and an economic perspective. That is why MassDEP has set an aggressive goal to reduce disposal by 2 million tons by 2020 and more than 5 million tons by 2050 through reducing waste, recycling, composting, and anaerobic digestion.

2. Comment: Staff time and taxpayer dollars are best spent enforcing waste bans and supporting recycling programs- from collection to end market, not in reviewing draft permits and proposals and dealing with public opposition for projects that, as experience elsewhere proves, stand a slim to zero chance of getting built. Taunton has already invested over $5 million into their hoped-for incinerator, which is nowhere close to being built. Even a fraction of this money could have been invested into a world class recycling program. While waste incinerators collect millions of dollars in disposal fees each year for their operators, the facilities are nonetheless still dependent on publicly funded renewable energy subsidies and tax incentives to be financially viable. If the state funds development of gasification facilities, then they will have a disincentive to increase recycling to feed those facilities.
Response: MassDEP is not proposing to divert staff or funding from recycling and waste reduction programs to work on gasification and pyrolysis projects. All forms of waste reduction, recycling, and composting will continue to be a supported strongly by MassDEP, while we also work to ensure that the facilities that dispose of material that remains is safe, including any additional disposal capacity using gasification and pyrolysis.

3. **Comment**: MassDEP has chosen to call its Solid Waste Master Plan *Pathway to Zero Waste*. However, the international, peer reviewed definition of Zero Waste says that "Zero Waste means designing and managing products and processes to systematically avoid and eliminate the

volume and toxicity of waste and materials, conserve and recover all resources, *and not burn or bury them*." Communities throughout the country with Zero Waste Goals are seeing recycling rates far higher than even Massachusetts' best recycling communities. In the U.S. most of the Zero Waste planning is happening in the western states. If Massachusetts were to take a step forward on the path to Zero Waste, instead of stepping off the path by increasing incineration, the Commonwealth could lead the way with Zero Waste policies in the Northeast.

Response: MassDEP believes that the proposed change in the moratorium will not have a meaningful impact on moving towards zero waste. Many communities with high recycling rates are in states like California that do not have moratoriums on any kind of waste to energy. MassDEP is proposing to limit disposal capacity to less than what will be needed to address Massachusetts waste disposal need, assuming that Massachusetts meets its aggressive 2020 goal of a 2 million tons reduction in solid waste disposal. Meeting this goal would give Massachusetts a higher recycling rate than any state in the country has achieved to date.

4. **Comment**: Incineration is a poor approach for addressing the problem of residual waste (material that cannot be reused or recycled). MassDEP needs to require an integrated approach to address the overlap between our wastewater cleanup challenges and our post- 2015 handling of MSW as a resource out of place. Encouraging more incineration and gasification of narrowly defined MSW is the last thing that the state should do. Massachusetts should focus on updated environmental strategies such as producer responsibility policies for "upstream" waste reduction, and MBT (mechanical/biological treatments) for residuals, to make them inert so they can be safely landfilled while we are on the path to Zero Waste.

Response: MassDEP proposed this limited modification to the moratorium to allow gasification or pyrolysis facilities to submit a permit application and have the potential to be considered for a permit, as such facilities could be preferable alternatives to Massachusetts existing disposal capacity. MassDEP would also consider proposals for mechanical/biological treatments for residual wastes. MassDEP would also consider integrated approaches for managing organics from MSW along with wastewater residuals. In fact, MassDEP is working with a number of municipal wastewater treatment plants to incorporate anaerobic digestion as part of their treatment processes.

5. **Comment**: Although the waste plan states that only non-recyclable materials would be burned in gasifiers, it seems likely that new incineration capacity would compete with recycling and anaerobic digesters for materials. Certain recyclable materials have greater heating value than non-recyclables, leading to competition between fates as fuel and re-use. Unlike a landfill, once an incinerator is built, it requires constant feeding. And that means that there is an inherent conflict between high recycling goals and incineration. Disposal, especially inexpensive disposal, always competes with waste reduction and diversion. This is especially true for gasification for energy production, because these facilities need the high-carbon materials that are also needed by manufacturers using recycled feedstock. For this reason, officials in Europe are becoming concerned that high levels of incineration capacity are limiting increases in diversion. A chart of recycling and incineration from the five regions of Denmark shows an inverse relationship between recycling and incineration. Denmark's per capita generation of

waste (over 1836 lbs./yr.) is the highest in the EU,[10] and most of it is incinerated. Eighty percent of what Denmark incinerates is recyclable or compostable.[11] The chart below shows that the higher the rate of incineration, the lower the rate of recycling.

	Recycling	**Incineration**	**Landfill**
Hovedstaden	21%	77%	2%
Nordjyllnad	29%	63%	8%
Sjælland	31%	59%	10%
Midtjylland	40%	53%	7%
Syddanmark	41%	52%	6%

Data from Waste Centre Denmark, 2005 data for household waste, Storage for incineration classified with incineration.

In Massachusetts, we have recently seen an example of how incineration facilities compete with recycling. The Covanta incinerator SEMASS proposed waste disposal contracts with Cape Cod towns for 50% of trash generated, "ensuring that we have tons coming to the facility for the long term."[12] Sending 50% of trash generated to SEMASS would require towns to lower the recycling diversion goal of 60% previously set forth by the Cape Cod Planning Commission

Response: MassDEP has set an aggressive goal to reduce waste and increase recycling, composting, and anaerobic digestion by 2 million tons on an annual basis by 2020. Even with this dramatic increased waste reduction, recycling, and organics diversion by 2020, MassDEP will still face an in-state capacity shortfall of approximately 700,000 tons. The proposed 350,000 tons of gasification or pyrolysis capacity that would be allowed under the modified moratorium would be limited to half of this projected capacity shortfall. MassDEP believes that this limited increased capacity would not have any meaningful effect on increasing recycling. MassDEP has reviewed available data about recycling and waste to energy and concluded that there no trend exists indicating that waste to energy results in decreased recycling rates (Please see the response to Comments 181 and 189 in the Full Response to Comments Document). . Based on MassDEP's understanding of the proposed SEMASS contract offers, the description of the proposed contract offers is inaccurate, as they would allow for increased recycling. MassDEP agrees with the comment that inexpensive disposal capacity is most likely to compete with and undermine recycling, but understands that any gasification or pyrolysis facility is unlikely to be an inexpensive disposal option. Therefore, businesses and municipalities would

[10] http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/8-08032011-AP/EN/8-08032011-AP-EN.PDF
[11] Jens Peter Mortensen, 3119 3210, jpm@DN.dk Danmarks Naturfredningsforening, 2012001004
[12] Tom Cipolla, SEMASS business manager, See "SouthCoast towns face trash fee increase," by Charis Anderson, *The New Bedford Standard-Times*, March 1, 2009.

continue to be able to save money by diverting materials from disposal to recycling, composting, and anaerobic digestion.

6. **Comment:** Facilities or technologies that use these raw materials for energy will have to compete with rising recycling markets and manufacturer-led initiatives to capture more recycled materials, and may not be able to guarantee a feedstock for the long life of these projects. We urge the state of Massachusetts to maximize the value of its waste stream by continuing to emphasize recycling and reuse, exploring product stewardship policies for packaging materials, and not by investing in further disposal technologies.

Response: MassDEP agrees that recycling will continue to be an economically preferable alternative to gasification and pyrolysis, as well as other disposal options, which will limit the degree to which those facilities will be able to compete for recyclable materials. In the Final Solid Waste Master Plan, the Department has committed to continuing and expanding its support for reuse and recycling programs.

7. **Comment:** Improved technologies such as optical sorting can be implemented anywhere – they do not need to be coupled to new incinerators. Existing combustion must be improved further, on a schedule that matches our zero waste goal. My expectation is that by 2050 our combustion facilities will become largely recyclers. That is the zero waste future we need written into our plan.

Response: As part of the Solid Waste Master Plan and proposed revisions to solid waste regulations, MassDEP continues to tighten waste ban enforcement, including requiring increased third party inspections at more facilities to inform and support MassDEP waste ban compliance and enforcement, tightening facility waste ban plan implementation, and increasing MassDEP waste ban inspections. These changes will lead to increases in recycling and composting infrastructure and increased efforts to divert materials before they reach disposal facilities, as well as diversion of these materials at disposal facilities.

D. Waste Ban Enforcement/Meeting Capacity Need through Recycling

1. Comment: Recycling trumps incineration. At least 75% of what goes to landfills and incinerators could instead be recycled or composted through existing and planned programs, including 26% paper, 14% plastics, 5.5% metals, >2% glass, 21% organic materials, 14% construction and demolition debris, 3% household hazardous waste, 3% electronics, and 11% other, including textiles, fats and grease, and tires. Because a no "action threshold" for banned material has been established for a garbage truckload, according to the current waste ban compliance guidance, a truck that is two-thirds full of banned material can still pass a waste ban inspection. Despite these large amounts of banned recyclables going to disposal facilities, MassDEP has issued only three penalties statewide since August, 2009 for failure to comply with waste ban regulations— while being well aware of these violations. With approximately 230 waste disposal facilities in the Commonwealth (landfills, incinerators, and transfer stations), MassDEP conducted only 21 waste inspections dedicated to waste ban compliance since 2010.

We would not need new incinerators if we reduced, recycled and composted more of our wastes. Instead of allowing more incinerators, MassDEP should penalize waste ban violators. I want to see much more progress in efforts to reduce, reuse and recycle waste. Updating the bottle bill, enforcing current waste bans, increasing producer responsibility requirements, and getting food waste out of the trash are just a few proposals that could get us on the path to zero waste. The direction you are considering is the opposite one, and we hope you will reconsider.

Response: MassDEP agrees that there is significant potential for increasing diversion of recyclable and compostable materials from disposal, since waste ban materials represent approximately 44 percent of what is disposed. However, not even the most effective recycling and composting programs can realize a 100 percent capture rate. MassDEP has set an aggressive goal of reducing disposal by 2 million tons on an annual basis by 2020 and reducing disposal by more than 5 million tons on an annual basis by 2050. The Draft 2010-2020 Solid Waste Master Plan proposed a comprehensive set of strategies to move Massachusetts towards this goal and all of these strategies remain in the Final Plan. These include all of the strategies proposed in the comments, including supporting an expanded bottle bill, increasing producer responsibility requirements, increasing food waste diversion and many more. This goal, as well as all of the supporting strategies, are among the most aggressive in the nation and would continue to make Massachusetts a leader in waste reduction, recycling, and food waste diversion.

In particular, MassDEP has taken major steps to move forward with increasing food waste diversion and increasing waste ban enforcement. MassDEP has established an aggressive, comprehensive Organics Action Plan and is actively moving forward with implementation, setting Massachusetts on a path to be a national leader in this area. MassDEP is also rolling out a comprehensive strategy to increase waste ban compliance, which includes expanding requirements for third party waste ban inspections and monitoring to help inform MassDEP compliance initiatives, proposed changes to significantly tighten waste ban guidance for solid waste facilities, and add waste ban compliance and enforcement staff. MassDEP believes that these steps, along with the many other strategies in the Master Plan, will increase recycling substantially and move us forward towards achieving the Solid Waste Master Plan goals. However, even given this progress, MassDEP projects that additional disposal capacity will be needed. Without added capacity, more waste will be exported for disposal to out of state landfills, which MassDEP believes is a poor environmental and economic outcome.

2. **Comment**: Waste ban enforcement fines should be used to pay inspectors to fund MassDEP enforcement activities and enhance community and state recycling and reuse programs.

Response: Fines cannot be used to pay for community or state recycling programs. State law requires that any revenue from fines goes into the state's General Fund.

3. **Comment**: I know MassDEP intends to require proposed projects meet "upfront recycling standards." However, I lack any confidence recyclable materials won't be burned. It's just too easy to burn rather than sort. Additionally, MassDEP's constrained budget will not allow for monitoring and compliance.

Response: MassDEP will seek stakeholder input on upfront recycling standards at disposal facilities, including monitoring and verifying facility compliance with these standards. These standards would then be enforced via any facility-specific permit.

4. **Comment**: We are concerned with how an expansion of waste-to-energy capacity will affect current market conditions for MSW. The success of recycling is partially dependent on the cost-effectiveness of diverting materials from waste disposal. Increased disposal capacity would lower disposal costs and undermine recycling efforts and decrease participation. If waste-to-energy capacity is expanded, the vital role the Waste Bans should/could play in reducing the volume and recapturing the energy of MSW should be maximized. It is possible that greatly increased and consistent enforcement of the Waste Bans could partially counter the effect of increased disposal capacity.

Response: Given projected reductions in landfill capacity over the coming decade, even with the addition of 350,000 tons of gasification capacity, overall in-state disposal capacity would be reduced. At the same time, MassDEP is implementing a comprehensive strategy to increase waste ban compliance.

E. General Comments/Process Issues

1. **Comment**: MassDEP has not identified, and indeed cannot identify, a compelling rationale for lifting the moratorium on municipal solid waste combustion. The proposed partial lifting of the waste incineration moratorium would be arbitrary, capricious, and contrary to the Department's mandate to protect against damage to the environment and public health. The Department lacks a reasonable basis on which to adopt such a flawed modification to the otherwise laudable SWMP.

Response: MassDEP has not proposed to lift the moratorium, but implement a modification that will limit capacity while enabling the consideration of alternative technologies with lower emissions, greater energy generation, and lower environmental impacts than existing disposal options. As such, MassDEP intends to evaluate new technologies such as gasification, a process that proposes to produce a fuel product, produce less pollution than traditional waste to energy facilities and minimize the disposal of recyclable materials.

2. **Comment**: Although the Department has suggested that the proposal under consideration pertains to "innovative and alternative technologies (e.g.,gasification or pyrolysis) for converting municipal solid waste to energy or fuel on a limited basis," and has implied that gasification and pyrolysis might not be covered by the moratorium in the first instance, such an interpretation is contrary to Massachusetts regulations. Indeed, by the very act of proposing the partial lifting of the waste incineration moratorium to accommodate new deployment of gasification and pyrolysis technology, the Department concedes that the moratorium applies and would need to be modified to allow such uses.

Response: MassDEP has proposed to modify the moratorium to allow proposals for gasification or pyrolysis facilities that would use MSW as their feedstock to be considered, when they

otherwise would have been subject to the moratorium. The moratorium remains in effect for traditional waste to energy incineration.

3. **Comment**: The Revised Draft SWMP provides no useful details on the "stringent emissions, energy efficiency, and upfront recycling standards" that proposed projects would be required to meet pursuant to the Plan's terms. The Plan states that "MassDEP will seek stakeholder input while developing performance standards" – yet by considering public input on such performance standards only *after* promulgating plans to lift the moratorium, the Department inappropriately is segmenting the consideration of impacts.

Response: The Solid Waste Master Plan provides a framework for Massachusetts solid waste policy. But, as is the case throughout the plan, many important aspects of implementation are addressed outside of the Plan as various Plan elements are implemented. Each facility proposal submitted to MassDEP is subject to solid waste site assignment, solid waste facility regulations and other applicable requirements (e.g., air quality permitting). These projects will be evaluated individually to ensure that factors such as energy and recycling efficiencies are a vital part of the proposal. Each proposal would also require air permitting from MassDEP which would require the project to utilize Best Available Control Technology (BACT) or Lowest Achievable Emission Rates (LAER) for emission controls at a minimum. MassDEP will seek stakeholder input on the approach for emission controls requirements.

4. **Comment**: The proposed changes to the SWMP require MEPA review. MEPA requires agencies to "review, evaluate, and determine the impact on the natural environment of all works, projects or activities conducted by them and… use all practicable means and measures to minimize damage to the environment." Projects covered under MEPA include "an Agency's programs, regulations, or policies." MEPA review is required when one or more of the review thresholds are met or exceeded and the subject matter of at least one review threshold is within MEPA jurisdiction. That one or more individual projects enabled by a partial lifting of the waste incineration moratorium would be subject to MEPA review does not obviate the necessity of reviewing the enabling policy itself. Among other considerations, the proposed partial lifting of the waste incineration moratorium could open the door to a host of smaller distributed waste-to-energy systems that individually would be below MEPA (and potentially permitting) review thresholds but that collectively would exceed such thresholds. Accordingly, the proposed partial lifting of the moratorium on solid waste incineration should be subject to MEPA review, including an analysis of whether there are alternatives with decreased environmental impact – such as by effectively implementing preferable policies and programs on recycling, reusing, and composting.

Response: The Solid Waste Master Plan does not trigger any MEPA thresholds (e.g., for filing an Environmental Notification Form or other MEPA reviews because the Master Plan is neither a "Project" or a "Regulation", and it does not provide any type of entitlement (i.e., state financial support) from MassDEP. In and of itself, the Solid Waste Master Plan does not create any damage or potential damage to the environment.

5. **Comment**: Additional electricity generation from gasification or pyrolysis technologies would qualify as a renewable energy source. This would create additional revenue for MassDEP

through the Waste-to-Energy Credits (WEC). Burning more trash for electricity would only increase DEP's share of the WEC revenue. I would be disappointed if this were the reason for "lifting the moratorium" but based on the research into these technologies I can't imagine why else they would be added as a feasible disposal option.

Response: This comment is incorrect. Under the Green Communities Act,[13] RPS Class II Waste Energy Generation Attributes are available only to Waste-To-Energy (WTE) facilities in commercial operation prior to December 31, 1997 that use conventional municipal solid waste technology to generate electricity. Therefore, any new MSW conversion technology would not be eligible to earn RPS Class II Waste Energy Generation Attributes unless the statute is amended.

6. **Comment**: Gasification and conventional waste incineration plants can be lucrative for their developers, generating millions of dollars in waste disposal fees each year ("tipping fees" can range from $50 to more than $70 per ton). Nonetheless, our review of the Taylor plant (proposed for NY) struck us with the developers' seemingly unlimited appetite for publicly funded subsidies and tax breaks in addition to tipping fee revenue. Taylor has applied for a federal DOE renewable energy loan guarantee that would amount to tens of millions of dollars. They also hoped to receive a federal incentive tax credit (ITC) cash grant that would reimburse a full 30% of their development costs (a one-time payment that appears to be around $21 million). They arranged for a payment-in-lieu-of-taxes scheme at the municipal level that would dramatically reduce their local taxes by about one-half. Tipping fees are a major source of revenue for the plant; in their loan application Taylor projected receiving $55 per ton of material as a tipping fee, yielding revenues around $14.75 million per year. In addition, Taylor would sell power to the grid, earning about $10.5 million per year at 0.065 per kWh, and the plant would also be eligible to sell the "green attributes" of its power. For a plant in Massachusetts, sale of Class II RECs would yield a certain amount of revenue. As "renewable energy" generators, garbage incinerators burn money almost as fast as they burn garbage; we suggest that it may be time for the state to re-examine whether garbage incineration needs, or deserves, renewable energy credits.

Response: MassDEP has no control over financial incentives that may be offered by other governmental entities in other jurisdictions for development of solid waste management facilities. Please see the response above about the applicability of RPS Class II Waste Energy Generation Attributes.

7. **Comment**: Lifting the incineration ban in Massachusetts creates a slippery slope to future modifications, expansions, and potentially invitation of even riskier energy production technologies. Further, the proposal to lift the ban based on the assumption that new technologies have emerged since 1990 is inconsistent with other commitments to reduce risks from toxic emissions.

[13] Chapter 169 of the Acts of 2008 – Section 11F(d) and corresponding Department of Energy Resources RPS regulations (225 CMR 14.00 and 225 CMR 15.00

Response: This comment is incorrect. MassDEP is not proposing to lift the moratorium, but is implementing a narrow modification to the moratorium with stringent up-front recycling and emissions control requirements.

8. **Comment**: From 2003-2010, combustion has seen virtually no tonnage reduction, therefore its share of total disposal has *increased* from 23.7% to 30.1%. One suggestion is that the Objective 2 items "Modify the Moratorium on Municipal Solid Waste Combustion" and "Reduce Emissions of Municipal Waste Combustors" should be addressed in combination, not separately. These are described in more detail in sections 4.1 and 4.3 of the revised plan. As written, the first proposal increases combustion by a limited amount while the second proposal reduces environmental impacts, at least relative to the total combustion tonnage. If new facilities must be built to utilize better technologies, then their capacity should *replace* some portion of existing combustion capacity. Phase one of this alternative proposal would insure that total combustion does not increase beyond the current level, and would provide more incentive than the current proposal, incentive for existing facilities to add advanced capacity as their permits are reduced. It would not be possible for any facility to continually make repairs without upgrades, and maintain level capacity. And since gasification of entire MSW streams has never succeeded, using selected portions as fuel may be more viable. In phase two of the alternative proposal, beginning after 2030, the total combustion limit would be reduced each year, to 20% of initial by 2050. The portions of the reduction drawn from conventional and advanced limits would be decided by MassDEP each year, based on feasibility analysis. This would give plants 20 years to amortize prior upgrades while finding ways to handle the waste stream without combustion.

Response: MassDEP is not proposing to reduce currently permitted municipal solid waste combustion capacity at this time. However, overall disposal capacity will be reduced as more existing landfills close over the course of the coming decade.

F. Burning C&D Wood

1. **Comment**: Even if the proposed partial lifting of the MSW moratorium were justified – which it is not – it still would be necessary for the Department to undertake a Health Impacts Assessment ("HIA") prior to considering any use of construction and demolition ("C&D") debris as fuel. In late 2009, the Secretary of Energy & Environmental Affairs instructed the Department to suspend the review or issuance of permits for R&D gasification projects using wood from C&D debris as fuel until there was a more thorough review of the health impacts from gasification plants and assurance of the reliability of the fuel. In June, 2010, EEA announced that the Department, in conjunction with the Massachusetts Department of Public Health ("MDPH"), would oversee an Assessment of Construction and Demolition Derived Wood Used for Fuel, which called for proposals from consultants to conduct a study on the public health and environmental impacts of converting C&D waste into fuel through combustion and gasification processes. To date there has been no final report and, correspondingly, no assurance that these processes will somehow avoid significant public health and environmental effects. As the Commissioner explicitly has recognized in recent public remarks, a HIA would need to be undertaken before any consideration could be given to the use of C&D debris as fuel in any new WTE facility.

Response: MassDEP is aware of the requirement to conduct a Health Impact Assessment before combustion of C&D debris would be considered. A scope for that study was developed and public comment was sought, but MassDEP did not proceed due to resource constraints. This proposal to modify the moratorium on developing new capacity for MSW combustion is not intended to re-open the moratorium on C&D debris combustion. At this time, there are no proposals to burn C&D debris before MassDEP. If a developer comes forward with a proposal, then we will determine whether funding is available for the study noted above.

2. **Comment**: Massachusetts' northern neighbor, New Hampshire, has recognized the danger of burning construction and demolition (C&D) debris, and has imposed a moratorium on C&D burning. The Revised Draft SWMP, by contrast, may open the door to experimental new combustion of C&D debris in Massachusetts. Although the Department has committed to undertake a HIA in advance of allowing any such new use of C&D debris as fuel, this still falls far short of the protective ban adopted in New Hampshire.

Response: MassDEP acknowledges that New Hampshire has taken the approach noted above, which is different from Massachusetts' approach. We also note that Connecticut has taken a different path by issuing permits for a C&D gasification facility, which is currently under construction.

3. **Comment**: Several years ago, the DOER and MassDEP initiated an effort to include construction and demolition (C&D) debris as wood waste eligible for feedstock in biomass facilities that seek renewable energy credits. This inclusion seemed to be a way for MassDEP to manage the significant problem it created through the wood waste ban by generating thousands of tons of unmarketable C&D waste. It was clear to many of us who extensively researched the environmental impacts of burning C&D debris that it was not beneficial to the environment or public health. C&D waste was eventually removed from the list of eligible biomass input. The concept of opening the gate to WCTs (waste conversion technologies) for a similar reason leads only to a similar result.

Response: The Commonwealth is not reconsidering whether C&D waste should be eligible for renewable energy credits.

4. **Comment**: No one really knows what the emissions of hazardous air pollutants (HAPs) from MSW and biomass gasification are, thus the Taylor facility used EPA's AP-42 emission factors for natural gas to estimate emissions from the combustion turbine for purposes of their air permit application to New York State. They estimated HAPs emissions from the char burner using the AP-42 emission factors for wood-fired boilers. However, they plan to gasify garbage and construction and demolition wood, thus AP-42 emissions factors for pure natural gas and virgin wood are unlikely to fully represent the range of HAPs that will be emitted by the Taylor facility. In fact, the image of gasification as "clean" is not based on any real data. If MassDEP has relied on promises made by facilities like Taylor when considering whether to lift the incinerator moratorium, the Department should be aware of how flimsy and unsupported these promises are.

Response: MassDEP is not relying on the Taylor facility's proposal to determine the emission requirements for any facility that may be proposed in Massachusetts. Any proposal will need to

meet all applicable air quality and solid waste regulations and will go through an application process to determine the applicable permit limits.

G. Gasification is not Renewable

1. **Comment**: The only thing that makes energy generated from waste renewable is that we keep making garbage. But this is no one's definition of renewable! Most of the components of solid waste are not from renewable resources. The Natural Resources Defense Council estimates that 80% of municipal solid waste is non-renewable. In addition, turning waste into energy instead of recycling means that new resources must be mined, drilled, or cut. Turning primary materials such as trees, bauxite, and petroleum into new products uses much more energy than recycling wastes back into new products. We would need to extract and process more of these materials if they are destroyed for energy. Incinerator companies are working hard to get their technologies considered renewable, thus qualifying for certain subsidies, and taking attention away from real renewable sources of energy, like wind, water, and sun. The state should not consider any regulations to classify these processes as renewable energy. About 50% or more of the feedstock for these facilities is made up of non-renewable, fossil-based products and packaging made of plastics and tires. A large chunk of the state's waste stream, food waste, makes for a poor fuel, while world demand for recycled paper has never been higher and markets are struggling to meet the demand. Anaerobic digestion of source separated organics would be a great fit for the economic and environmental needs of Massachusetts, and would provide a way to generate renewable energy from a "waste" resource in a safe manner.

Response: MassDEP does not determine whether the fuel from this type of operation is renewable. The Massachusetts Department of Energy Resources (DOER) is the department which supports renewable electricity generation through the state's Renewable Portfolio Standard (RPS). At this time, new electricity generation that utilizes municipal solid waste is not eligible for RPS support, though electricity generation based on source separated organic materials (e.g., anaerobic digestion of food/agricultural wastes) is eligible for such support. DOER is not considering any change to these eligibility criteria. MassDEP agrees that recycling, composting, and anaerobic digestion are preferable to any form of disposal from a resource management perspective.

H. Other Comments on Technologies

1. **Comment**: There are no commercially operating gasification plants in the United States. Japanese Thermoselect facilities mainly run on a partial mix of MSW with industrial and other wastes, such as auto shredder fluff and C&D debris. Japanese MSW appears to be much different that U.S. MSW. Scheduled maintenance for this technology is relatively higher than for a traditional waste-to-energy plant. Some gasification technologies require preprocessing (shredding) of material. Tip fees are in the $200-$300 per ton range. The average size of a Japanese gasification facility is 200 tpd. Using this as an operating standard and MassDEP's proposed 350,000 tpy of waste, proponents would have to build seven (7) new facilities - each requiring eight (8) acres of land – to handle the total tonnage proposed by MassDEP. Gasification facilities internally use a large percentage of the generated power for process energy. When this electrical energy use is subtracted from the total, the net electrical generation

rate per ton of MSW processed appears to be comparable to, or even lower than, that of traditional waste-to-energy systems.

Response: MassDEP will evaluate all proposals on a case by case basis and will only allow up to a total of 350,000 tons per day of MSW to go to facilities built under the modification of the moratorium. Whether that capacity is handled by one facility or several has not been determined. In addition, this capacity will only be permitted to the extent that applications are submitted, local site assignment is approved, and the facility(ies) can meet all MassDEP requirements.

2. **Comment**: The Solid Waste Association of North America (SWANA) published a comprehensive report in December 2011 on Waste Conversion Technologies. SWANA's Applied Research Foundation evaluated six conversion technologies: gasification, plasma arc gasification, pyrolysis, hydrolysis/fermentation, anaerobic digestion, and autoclave/mechanical processing. This report includes an in-depth review and analysis of each technology. After reading the report it is clear to me that gasification and pyrolysis are not technologies that the Commonwealth should be including in the Solid Waste Master Plan.

Response: MassDEP will review all specific facility proposals to determine whether the technology being proposed will meet all applicable MassDEP requirements.

3. **Comment**: There are no commercially operating plasma arc gasification plants in the United States. It is unknown how plasma arc gasification would perform with U.S. MSW. The major disadvantage of the plasma arc systems is that a large fraction of the generated electricity is required to operate the plasma torches, which reduces net electrical output. MSW must be preprocessed (shredded). Some technologies require the use of supplemental fuels to moderate and control the gasification process. The net electrical generation rate per ton of MSW processed appears to be comparable to, or even lower than, that of traditional waste-to-energy systems. The sole commercially-operating MSW plasma arc gasification system in the world processes 200 tpd. Facility scale-ups of more than a factor of three are generally considered risky for MSW processing systems. Using this as an operating standard and MassDEP's proposed 350,000 tpy of waste, proponents would have to build seven (7) new facilities - each requiring eight (8) acres of land - to handle the total tonnage proposed by MassDEP.

Response: MassDEP will evaluate all proposals on a case by case basis and will only allow up to 350,000 tons per day of MSW to go to facilities developed under the modification of the moratorium. Whether that capacity is handled by one facility or several has not been determined.

4. **Comment**: Not mentioned in the SWANA report is the obvious inclusion of recyclable material in any of these proposed facilities. It does not seem to be in the interest of achieving MassDEP's waste reduction goals to create more disposal capacity without first increasing waste diversion efforts. Also, based on SWANA's tour of Japanese facilities rated at 200 tpd and SWANA's determination that increasing the rated capacity two- or three-fold is risky, it would require seven new facilities to process 350,000 tpy. Even if a facility was able to successfully process 500 tpd that would require three new facilities on eight acres of property. This seems

completely implausible and impractical. In the 5-6 years that it would take to permit such a facility, MassDEP could instead focus more concentrated efforts on waste reduction programs. Overall, I have not read any information about waste conversion technologies that leads me to believe that they would be a positive asset in the Commonwealth's Solid Waste Master Plan. Nor do they seem significantly better in process efficiency, electrical generation, or air emissions that the currently permitted waste-to-energy combustion facilities currently under the moratorium.

Response: MassDEP's proposal for allowing this change is predicated on the idea that recyclable materials must be removed from the waste prior to any use of the waste as a feedstock for a facility process such as gasification. MassDEP will continue to strive to reduce solid waste disposal regardless of any gasification facility proposals moving forward.

5. **Comment**: The newer high-heat conversion technologies - gasification, pyrolysis, and plasma arc - are classified by the EPA as what they are: incineration, but instead of burning garbage directly in a single chamber, they heat waste until it forms a gas that is then combusted as fuel or electricity. While incineration companies invest in greenwashing their processes, the differences among them are miniscule.

Response: MassDEP believes that these technologies have the potential to more efficiently reduce waste volume, with lower emissions and more energy production than existing solid waste disposal capacity. The modification to the moratorium will allow MassDEP to review and consider proposals on a case by case basis, evaluating each on its own merits.

6. **Comment**: The Tellus Institute correctly discusses how some pilot scale plants are using pyrolysis or gasification to process small feedstocks of sorted materials such as plastics or tires. These facilities are nothing like those proposed to process the entire mixed waste stream and cannot be construed as any success in demonstrating the feasibility of converting mixed waste to fuels using these technologies. These pilot facilities are just that—pilots—and something Massachusetts should be aware of happening but not rush out to invest in given their unproven track records. Communities and states, including California, a leader in recycling and waste diversion, continue to reject conversion technologies for mixed waste as a viable alternative and we strongly urge Massachusetts to continue its moratorium on pyrolysis and gasification projects.

Response: MassDEP is not proposing to invest in these technologies, but rather to allow specific proposals to be considered on a case by case basis, evaluating each on its own merits. If a facility cannot receive local approval and meet MassDEP's requirements, then it will not proceed.

7. **Comment**: I am concerned about: 1) the possibility of traditional combustion incinerators being allowed to retrofit for the new alternative technologies, thus endlessly expanding their incineration cycle and significantly diminishing the drive to reduce, reuse, and recycle that many citizens are now invested in; and 2) opening the door to new technologies such as gasification and pyrolysis, because I don't think they are in the best interest of those living in host communities or in cities and towns that abut the incinerator. Gasification facilities share the same

environmental problems associated with mass burn incinerators, including air and water pollution, disposal of ash and other by-products, health/safety/odor impacts, disincentives for waste reduction, and diversion of waste from composting and recycling efforts.

Response: MassDEP will only allow up to a total of 350,000 tons per day of MSW to be used as feedstock for new facilities. If a facility cannot receive local approval and meet MassDEP's requirements, then it will not be able to be developed.