

Upstream/Front of Pipe Focus

1. How do we in the State of NY move from end of the pipe to upstream practices? Landfilling is easy and cheap. We need to change the economics of the "hierarchy". When will landfilling become more expensive to encourage and enable more recycling practice and landfill avoidance?

Response from David Allaway, Oregon DEQ: New York State may pursue a different path than Oregon, but Oregon's story offers an example of one way of making this transition. Like New York, Oregon for many years had adopted a policy hierarchy of reduce first, then reuse, then recycle. Also like New York, this hierarchy was rarely practiced. But in first decade of the 21st century, Oregon DEQ chose to dedicate a modest amount of staff resources and contract/grant funds to the upper tiers of the hierarchy ("reduce" and "reuse"). A number of pilot projects (both directed, and through grants) were tried, and much was learned. Some of this work also led to DEQ's use of life cycle assessment, which demonstrated the importance of prevention (as well as the benefits and limitations of "recycling only") in language and terms of environmental impacts that spoke to DEQ executives (as well as businesses). Thus, when it came time to update the state's solid waste plan (in 2011 – 2012) and staff recommended exploring EPA's full life cycle approach of "sustainable materials management", management and some stakeholders better understood the potential benefits of this approach, and supported it. The result was Oregon's *2050 Vision*, which more firmly and intentionally pointed the state to move upstream. New York could do the same (or take a different path); this was not an externally driven change, although external stakeholders and partners have been generally supportive.

I would add that the comment about landfill economics might be off-base. For most materials, the cost of production/procurement is many times higher than the cost of disposal. Making disposal more expensive does not necessarily change that dynamic. Moving upstream simply requires acknowledging the already very significant costs of materials (even if disposal doesn't add much to that) – both financial as well as environmental/social costs.

Response from Missy Hall, Pollution Prevention Institute: The State is doing a lot to close this gap, e.g. ESD funding, food waste related research funding, Climate Smart Communities grants, and NYSP2I funding to provide education, community support and technical assistance, etc. The economics will also start to shift as more people adopt the hierarchy. We need to push/aid/educate the early adopters. For an individual business, a lot of time, prevention is the biggest opportunity for savings and often those solutions are not innovative or expensive, businesses just need to be aware of what to look for. Businesses should also make themselves knowledgeable of the “hierarchy” options in their area - ask questions, do research. For example, a business might be able talk to their existing (or another) waste management provider about increasing the value on their recyclables if they were compacted, better sorted, or more thoroughly cleaned, thus saving money at little to no cost. There are also several support mechanisms in place in New York to help businesses navigate this space and implement cost effective solutions as mentioned in my presentation.

Policy Focus

2. What impact will the current federal governments lack of commitment to climate change have on state level programs? What are some examples of municipal Sustainable Material Management projects funded through NYS?

Response from Missy Hall, Pollution Prevention Institute:

- Check out [NYSP2I's Community Grants Program](#) and its [funded projects](#) - NYSP2I has funding provided by the EPF as administered by NYSDEC.
- Check out the State's [Climate Smart Communities](#) and the [2016 Grant Awards](#)

Response from Nathan Putnam NYSDEC: the lack of commitment to addressing climate change at the Federal level means States have to work harder to promote opportunities to reduce emissions and be aware that policies that promote responsibility in one state may make out of state products and services that are less responsible more competitive. State policies have to carefully consider requirements in order to promote reductions without increasing emissions elsewhere.

In 2016 Climate Smart Community grants were awarded for projects for installation or expansion of compositing facilities in Ulster, Orange, Otsego, Tompkins, and Erie Counties. Construction of organics processing facility in

Oneida County and development of Vermicomposting facility in Cortland County. Furthermore, the 2017-18 NYS Budget earmarked \$2 million of DEC's Municipal Waste Reduction and Recycling (MWRR) Grants Program for food donation and food scraps recycling.

Organics

3. What efforts are being made to educate "end" users of recycled organics (i.e. compost) and the value of using it? (Building demand, instead of building supply)? Given that over 20% of methane emissions result from agriculture-related activities, other than anaerobic digester infrastructure, is the DEC looking at policies that force CAFO's to the "right-size"?

Response from Missy Hall, Pollution Prevention Institute

- Education of end users: Funded research in this area including \$200K from NYSDEC to Cornell to research compost use in agriculture and erosion control

Response from Nathan Putnam NYSDEC: NY continues to conduct outreach through its press office and website along with participating in seminar's, conferences, and discussions with stakeholders. NYSDEC provides financial support for a Cornell Waste Management study of compost for agricultural uses and for posters demonstrating compost uses including erosion and sediment control, agricultural uses, gardening and turf health. The NYSAR3 Organics Council is working to partner with NYSDOT and NYSDEC to offer an education program on compost for local highway department and NYSDOT staff. Also, NY works with communities under the Climate Smart Communities Program and related grants program to fund and promote local actions to reduce greenhouse gas emissions. NY recently launched some branding programs to identify green businesses and this branding may be used to educate and increase demand for products.

As for CAFOs, they are required to have a nutrient management plan that describes how the operations are going to address feeding and waste management in order to protect water quality. Additionally, the Climate Resilient Farming Program through the Department of Agriculture and Markets and Soil Water Conservation Committee provides cost share grants to cover manure storage and destroy the methane generated. Under NY Methane Reduction Program there are a number of actions that are planned to investigate

how to reduce methane emissions from manure and from enteric fermentation. None of these planned actions include a 'forcing' mechanism i.e. regulation.

Program Funding

4. Is Oregon considering developing a "cost for externalities"? If yes, how would that impact the states activities/programs? Can you elaborate on CFA funding and how recycling projects (other than organics) fit in?

Response from David Allaway, Oregon DEQ: Oregon's 2050 Vision calls for full cost internalization of environmental externalities. A short white paper commissioned by DEQ explores the topic of environmental externalities associated with materials; please see <http://www.oregon.gov/deq/FilterDocs/mmexternalities.pdf>.

How to internalize externalities is not obvious (or easy). Internalizing externalities would obviously reduce environmental benefits, although full internalization alone might not result in a sustainable state: internalization results in economic "efficiency" (optimal allocation of resources), but "efficient" is not necessarily the same as "sustainable".

Whether internalization would impact state activities (from a funding perspective) would depend on the mechanism for reflecting costs in prices, and how revenue raised would be allocated. This is not a topic we are actively exploring at this point in time.

Response from Nathan Putnam NYSDEC: The consolidated funding application is a 50:50 cost share with municipalities to implement projects that reduce greenhouse gas emissions in targeted areas. Currently we are targeting organics diversion from landfills. CFA applications are generally open during the summer through the regional economic development councils' website and are generally awarded each December. State Assistance Grants for waste reduction and prevention and recycling capital projects are described on the DEC website and applied for through the NYS grants gateway.

GHG Emissions – Climate Change

5. Is methane captured from landfills and anaerobic digestion included in GHG inventories? If not, is the CO2 resulting from combustion included in GHG

inventories? Wouldn't source reduction reduce GHG of upstream materials production?

Response from David Allaway, Oregon DEQ: GHG inventories do not count methane if it is captured and combusted (destroyed). Carbon dioxide emissions from methane combustion are typically not counted either, unless the inventory is accounting for "biogenic" emissions (which most do not). However, no landfill captures and destroys all of its methane; even landfills with state-of-the-art gas capture and control systems results in some methane emissions and methane is a potent greenhouse gas.

The climate benefit of both recycling and source reduction is not limited to avoiding downstream (landfill) emissions. Recycling often reduces greenhouse gas emissions in industry, as producing products from recycled feedstocks typically requires less energy than producing products from virgin feedstocks. For materials such as plastics and metal, these upstream benefits are many times larger than avoided downstream emissions (both because the energy savings are significant, and also because plastics and metal are inert in a landfill). "Recycling" food waste through composting or anaerobic digestion can reduce emissions in other ways, including storing carbon in soils treated with finished compost, and displacing fossil fuel combustion as a result of power production through anaerobic digestion. Paper recycling also has the potential for significant forest carbon storage benefits as paper recycling can lead to changes in forest practices.

However, in practically all cases, source reduction (using less in the first place) has greenhouse gas reduction benefits that are larger (per-ton) than recycling. Most of these benefits result from reducing GHGs from upstream materials production. The drinking water and food examples in my presentation both illustrate the relative benefits of recycling/composting vs. prevention.