



Hearing on The Climate & Community Protection Act sponsored by NY Senator Todd Kaminsky

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I want to thank Senator Kaminsky for inviting Energy Vision to testify at this hearing on the landmark Climate and Community Protection Act. Energy Vision is a New York City-based 501(c)(3) environmental organization, recognized nationally as a leading independent expert in exploring commercial, cost-effective options for decarbonizing our economy.

New York State and the US overall has made impressive progress in deploying renewable sources of electricity, especially wind and solar. But to meet New York's ambitious, necessary, economy-wide emissions reduction goals requires looking at all sectors and pursuing strategies appropriate to each. The Climate and Community Protection Act (CCPA) creates the broad framework for doing just that.

The CCPA states explicitly that the Department of Environmental Conservation (DEC) and the Climate Action Council that the bill envisions must report on "information relating to greenhouse gas emissions from non-fossil fuel sources, including... landfill gas generators, and anaerobic digesters." That's significant, because this language points to New York's massive organic waste stream, which deserves to be a major focus of the CCPA and the State's climate program.

New York generates 3.7 million tons of food waste a year from communities and businesses, and 13.7 million tons a year of manures and other wastes from farms and dairies. As they decompose these organic materials are prolific emitters of methane gases that warm the climate. So is the municipal sewage in New York's nearly 600 wastewater treatment plants, and the organic wastes already generated in previous years still decomposing and outgassing in 27 major landfills across the State.

But New York's organic wastes aren't just a big liability for the climate; they're also a big opportunity for fighting climate change.

Methane emissions from organic waste sources account for 9% of the State's total greenhouse gases by volume, which is considerable in itself. Much of the climate debate has focused on limiting carbon dioxide emissions. But in terms of its effect on the climate over the next 20 years, methane emissions are much more impactful, and the most urgent form of GHG to curtail. Methane is *86 times* more potent than carbon dioxide over 20 years – the critical period during which we need to act to keep warming below 2 degrees Celsius.

Using proven, commercially available anaerobic digestion technology that can be implemented across the State today we can capture the biogases from New York's organic wastes, preventing the methane emissions that would otherwise escape into the atmosphere. This tackles New York's methane emissions problem head on, directly addressing the source of 9% of GHG. But that's just the beginning. Captured methane can then be processed into "biomethane," a renewable, ultra-low carbon, made-in-NY fuel that can play a crucial role in meeting the State's greenhouse gas emission reduction goals and the goals of the CCPA.

Just as electricity generated from wind and solar can displace electricity from fossil fuels, biomethane can be a direct renewable substitute for the natural gas we use daily for cooking, heating, generating electricity and fueling vehicles. Following the anaerobic digestion process, biomethane is refined into pipeline-grade fuel that is chemically nearly identical to natural gas. It can be transported and stored in the same infrastructure as geologic natural gas, and used in the same applications, from gas-fired power plants to compressed natural gas (CNG) vehicles. But unlike natural gas, biomethane is not a fossil fuel; it's fully renewable, requires no fracking or other extractive processes, prevents fugitive methane emissions rather than generating them, and has a much lower carbon footprint.

In fact, biomethane is the lowest-carbon fuel available today. It has been verified by the California Air Resources Board to be a net-carbon-neutral or even net carbon-*negative* fuel over its lifecycle (when used as a road fuel displacing diesel in truck and bus fleets). This is remarkable; it means that more greenhouse gases are captured in producing the fuel than are ever emitted by the vehicles running on it. Put another way, using biomethane as a transport fuel doesn't just add less GHG to the atmosphere, it effectively subtracts it, actually resulting in net lower atmospheric GHG than if the fuel was never made or used in the first place.

Developing and using biomethane in New York would vault the State towards achieving its emissions reduction, clean energy, clean transportation, air quality and waste reduction goals, while also generating significant in-state economic benefits.

Yet today, we're letting that potential go largely unrealized, and failing to develop New York's massive organic waste stream as a massive renewable energy resource. The CCPA does not currently mention biomethane, but we strongly recommend that the text of the CCPA be modified to include direct reference to biomethane as a renewable energy source, and that the DEC and Climate Action Council study the many benefits it holds for New York. Below is a brief summary of those benefits.

Greenhouse Gas Reductions

Energy Vision estimates that turning New York's organic wastes into biomethane could reduce overall GHG emissions in the State by as much as 15%. This estimate takes into account the volume of organic wastes and the biomethane production potential in the State, the impact of preventing methane emissions from landfill and agricultural wastes, the impact of displacing diesel and gasoline emissions when biomethane is used as a road fuel, the impact of displacing fossil fuel-derived fertilizers with high-quality compost which is a by-product of the anaerobic digestion process, and other factors.

Beyond what can be produced from New York's own organic wastes, additional biomethane imported from other states via pipeline could be used in New York buildings, power plants and fleets wherever natural gas is used now. New York gas utilities are also actively working to procure more biomethane to help decarbonize the overall gas supply. This could mitigate negative climate impacts from the natural gas industry, and reduce the State's GHG emissions even beyond 15%.

Progress On Clean Transportation

The CCPA sets up a process for considering "land-use and transportation planning measures aimed at reducing greenhouse gas emissions from motor vehicles," and measures that "reduce emissions from greenhouse gas emission sources that have a cumulatively significant impact on statewide greenhouse gas emissions, such as internal combustion vehicles that burn gasoline or diesel fuel."

That emphasis on the transport sector is important, because it is the largest emitter of GHG in New York, surpassing the building sector and electricity generation. Heavy-duty buses and trucks make up just a small percentage of all vehicles on our roadways but they have an exceptional impact. In New York, they consume more than a billion gallons of carbon-intensive diesel fuel each year, accounting for 19% of statewide transportation GHG emissions, harming the climate and polluting communities with toxic exhaust that damages New Yorkers' health. Heavy vehicles require high energy density and are considered especially hard to decarbonize.

While electrification of municipal buses and heavy trucks is underway experimentally, large-scale deployment of these EV's is not viable today. Electric buses and trucks currently have a poor, [problem-plagued service record](#). They may remain experimental, prohibitively expensive and unreliable for daily service for years to come. Their tailpipe emissions are zero, but it's important to note that what matters to the climate and to public

health extends beyond tailpipe emissions to lifecycle emissions, including emissions from the power source charging electrical vehicles' batteries. Those power sources are likely to remain primarily non-renewable and climate-damaging for the foreseeable future. An International Energy Agency report recently [found](#) that electrification was not a panacea, and that reduction in tailpipe emissions from electric vehicles would be offset by the increased use of power plants to charge them.

However, when heavy-duty trucks and buses are equipped with widely available “near-zero” natural gas engines and fueled with biomethane, they offer a practical, reliable, cost-effective way to decarbonize heavy transport now. Cummins Westport manufactures its heaviest duty “near zero” engine in New York State. Conservatively estimated, known sources of biomethane from organic wastes in New York could displace 25% of diesel used for heavy transport in New York. But since biomethane is net-carbon negative as a transportation fuel, its impact on transport-sector GHG emissions could be much greater.

Improved Air Quality

Biomethane-fueled buses and trucks equipped with “near zero” engines are also air-quality winners. They reduce emissions of health-damaging nitrogen oxides to negligible levels, 90% below the most stringent EPA requirements. Since the worst air quality and health impacts from diesel exhaust are often in low-income communities located near bus and truck depots or major highways, weaning heavy trucks and buses off diesel fuel and onto biomethane is also an environmental justice imperative, strongly aligned with the CCPA's requirement to "prioritize measures to maximize net reductions of greenhouse gas emissions and co-pollutants in disadvantaged communities."

Improved Water and Soil Quality

Developing biomethane in New York would help improve our water quality, because it requires containment of manure and other agricultural waste on farms so it can be processed into biomethane, preventing it from contaminating streams, rivers and lakes. Liquid and solid materials that remain after organic wastes are processed in anaerobic digesters are beneficial by-products of producing biomethane fuel. They provide nutrient-rich compost that makes a superior substitute for fossil fuel-based chemical fertilizers. Displacing chemical fertilizers further cuts overall GHG emissions.

Waste Reduction/Landfill Diversion

Developing anaerobic digesters and other biomethane infrastructure enables and incentivizes collection and diversion of organic wastes from landfills. New York City currently spends some \$400 million a year to ship its organic wastes to landfills out of state, when it could be harnessing them as feedstocks for biomethane, and bringing within reach its ambitious Zero Waste goal of collecting and diverting all its organic waste from landfills by 2030. While there is no New York State requirement for organic waste diversion yet, there is significant support for one. Meanwhile there is potential to direct organic waste from New York City's collection program and other in-state sources to anaerobic digesters upstate, where they could boost biomethane production and generate economic benefits, such as providing an additional income stream for farmers.

Economic Benefits

Building an organic waste-to-fuel industry in New York could create thousands of new jobs. Assuming an anaerobic digestion facility processes 100,000 tons of organics per year, it would take more than 160 digesters to process New York's organic wastes (including 30 food waste digesters and 130 agricultural waste). According to industry estimates, the average digester project generates over 170 direct and indirect jobs, both short- and long-term. Developing in-state biomethane production could therefore create over 27,000 jobs. Since New York announced its fracking ban at the end of 2014, in-state natural gas production and State revenues

from it have declined sharply. But production potential for biomethane in New York is more than sufficient to make up for those losses. Since Cummins Westport “near zero” engines are made in New York, procuring more buses and heavy trucks equipped with them for municipal fleets could generate additional jobs and revenue for the State.

The CCPA mandates a process for studying GHG mitigation "in other states, regions, localities, and nations," and learning about biomethane projects elsewhere would clarify the benefits of developing it in New York. Examples of successful biomethane projects are available on Energy Vision’s website, www.energy-vision.org. There are hundreds of biomethane projects in Europe today, and more than 80 in the US.

Only two of those are in New York, which leaves most of the State’s biomethane potential yet to be developed. That’s a liability, but also an opportunity. Energy Vision’s research indicates that given conducive policies and market conditions, New York is well positioned to attract investors, project developers, farmers, and other stakeholders to develop biomethane. Through the CCPA and other initiatives, New York has an opportunity to frame and adopt policy measures that would enable more in-state biomethane production and use, unleashing deep positive climate impacts and many co-benefits for the State.

Other states have adopted policies enabling biomethane development which the DEC and the Climate Action Council should consider under the process the CCPA lays out. For example, California, Connecticut, Massachusetts, and Vermont have laws restricting disposal of organic wastes in landfills, which helps create a market for these materials as feedstocks for biomethane. California’s framework on so-called "short-lived climate pollutants" (the category under which methane falls) creates programs and policies to reduce methane emissions, especially building out infrastructure for anaerobic digestion. California and Oregon have made rapid progress on biomethane development with their low-carbon fuel standards (LCFS), which require fuel producers, refiners and importers to reduce the overall carbon content of the states’ fuel supply through blending or displacement of petroleum-based fuels with renewable alternatives including biomethane. Canada is currently considering a similar measure.

Explicitly including biomethane in the CCPA would be a significant policy step toward developing it in New York. We strongly encourage the New York State Legislature to take it, and to place a high priority on pursuing the CCPA and other measures that could help accelerate biomethane development in the State. If New York’s climate goals are to be met, we simply can’t continue to ignore and discard a powerful, home-grown energy source that can scale up carbon-negative energy, decarbonize heavy transport, and cut New York’s overall emissions 15% or more, while improving our air, water and soil quality, public health, and economy.

Thank you for your time and consideration.

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