Princeton Student Climate Initiative
September 28th, 2018

Report on Stakeholder Perspectives for NJ Climate Policy

On September 15, 2018, the Princeton Student Climate Initiative, a student group within the Pace Center for Civic Engagement at Princeton University, hosted a forum convening stakeholders from diverse sectors to discuss the following question: What policies should New Jersey consider in the next 10 to 20 years to mitigate climate change while protecting vulnerable communities? The goal was specifically to understand stakeholder perspectives.

We hosted 48 stakeholders from environmental, labor, business, academic, government, utility, and environmental justice sectors. 44 audience members were also in attendance. The day was organized by a team of 39 members, ranging from high school students to graduate students to working professionals. This report summarizes the discussions and key perspectives shared by the stakeholders.

This report should not be viewed as an authority on the policies discussed-- for those looking for thorough policy analysis, we recommend reaching out to the many researchers, policymakers, and advocates in New Jersey who have done in-depth analysis on each of these discussed policies. Our forum should be seen primarily as a listening session. We hope this report gives a tentative overview of the variety of stakeholder perspectives on policies.

Princeton Student Climate Initiative
September 28th, 2018

About the Organizers

This event was organized by the Princeton Student Climate Initiative, a student group within the Pace Center For Civic Engagement at Princeton University.

We hosted this event in collaboration with NJPIRG Student Chapters, Princeton Citizen Scientists, Rutgers Sustainability Coalition, Rutgers Students for Environmental Awareness, Science Policy and Advocacy at Rutgers, Chi Epsilon NJIT Chapter, Stockton Echoing Climate Optimism, and West Orange Fight for Green Club.

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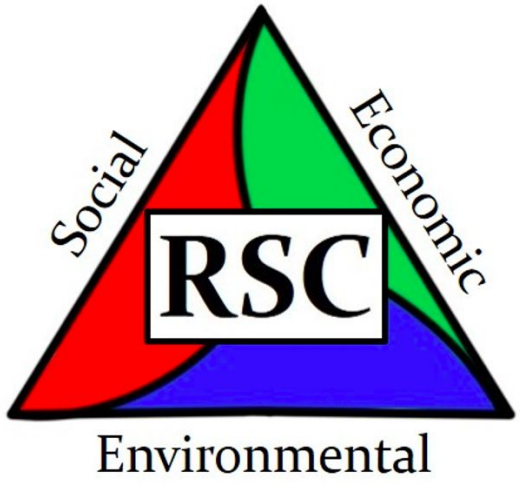

Science Policy and Advocacy @Rutgers

West Orange Fight for Green Club

Acknowledgements

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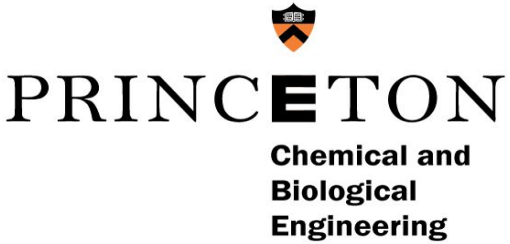

Princeton University Graduate Student Government Events Board

Introduction

In order to gather perspectives on potential climate change policies in the state of New Jersey, the Princeton Student Climate Initiative convened stakeholders from diverse groups, including environmental, labor, business, academic, government, utility, and environmental justice sectors. This report presents the commentary and priorities of attendees in the six focus groups: long-term emissions reductions ("emissions"), transportation, buildings, economic transition, coastal resiliency, and resource management. It focuses on areas where there was room for further discussion, and on teasing out points of agreement and disagreement.

Caveats

For several reasons, this report should not be seen as the final word on specific policies and stakeholder perspectives. First, several groups were not able to fully incorporate the substantial research and policy analysis around these topics. This forum was framed more as a listening session than a final synthesis of the research to date. Second, the report lists critieria and their rankings, but these represent stakeholder perspectives rather than authoritative conclusions of whether a policy meets the criteria or how a policy ranks against other policies. Furthermore, the representatives do not necessarily speak for their whole sector, as there may be varying opinions across organizations. Although the 48 stakeholders came from diverse sectors, some key groups were underrepresented, particularly environmental justice, business and labor groups. There was also a lack of racial and socioeconomic diversity, as well as ideological diversity (most attendees prioritized climate action, which may not be the case across the state). In conclusion, the results of this listening session should be used in conjunction with the considerable analysis and policy efforts that have already happened and continue to happen in the state.

Executive Summary

Emissions

The emissions focus group covered broad, long-term policies that could help meet our state's emissions goals, especially in the power sector (since other sectors were covered by other groups). The group's eight stakeholders represented three environmental groups, an environmental justice group, a faith group, a legislative district, a state utility, and a business association. Group members were most commonly concerned about socioeconomic equity, certainty of emissions reductions, and political feasibility.

Overall, most group members supported regulations or multi-faceted approaches more than market-based approaches like cap-and-trade or carbon fee and dividend. With market-based policies, many were concerned about equity toward environmental justice communities, as well as certainty of emissions reductions. Stakeholders noted that the Regional Greenhouse Gas Initiative (RGGI) is going forward, but advocated for more research before implementing a similar cap-and-trade program for transportation. Additionally, while a state-level carbon fee and dividend might be more politically feasible with conservatives, the group was concerned that a low price would not significantly reduce emissions, while still costing consumers up front and potentially causing leakage to other states.

Since RGGI does not ensure reductions in state or local emissions, some group members advocated for mandatory emissions reductions in environmental justice communities, as well as in ports, heavy duty vehicle fleets, and bus systems. The group supported pilot community solar programs and noted the need to improve the solar incentive system, which is currently under review. The state's offshore wind goals were praised, although some participants were concerned about the environmental footprint of current offshore proposals. To accommodate the intermittency of solar and wind, research into and financing of storage projects was mentioned as a key impact area. Nuclear was also noted as a key low-carbon transition fuel, but stakeholders wanted to ensure that the state's new nuclear subsidies are actually needed to keep its reactors in operation. Sector-specific steps may be more politically feasible, but the difficulty is in the details of the incentives and regulations.

Transportation

The transportation group's eight stakeholders included two public transit experts, an environmental group representative, a legislator, an electric vehicle business, a car dealer representative, a natural gas representative, and an alternative fuel vehicle consultant. They highlighted the need for *cost effective* emissions reductions, as well as technical feasibility and the importance of aligning state and federal policies for political feasibility.

The group first discussed "cash on the hood" incentives for electric vehicles, i.e. rebates applied to electric vehicles directly at the time of sale as opposed to tax exemptions, which will not come until February and do not apply to people who pay too little in taxes. This conversation also included California Air Resources Board (CARB) enforcement in New Jersey, which involves crediting manufacturers for delivering electric vehicles to dealers, regardless of whether dealers can sell them off their lots. The conversation then shifted to the possibility of a New Jersey Low Carbon Fuel Standard, which would be a market-based cap and trade approach targeted at reducing diesel and gasoline use. Such a policy would be intended to provide reductions not only in greenhouse gas (GHG) emissions, but also co-pollutants like particulate matter and NO_x.

Stakeholders unanimously agreed that cash on the hood incentives are an effective approach to getting electric vehicles on the road, while helping ensure that lower income residents are more rapidly allowed into the market. However, getting the money for such a rebate program will be challenging. It was also agreed that cash on the hood incentives could exacerbate the issue of loopholes in the CARB credit policy, and that a simultaneous change to CARB rules would also be necessary.

On the topic of a low carbon fuel standard, there was consensus on the general point that capping emissions would be beneficial and equitable across industries. However, there is currently a lack of knowledge and research into the economics and externalities of such a policy at the NJ level.

Several points of consensus were reached. The group's natural gas proponents readily agreed that for passenger vehicles, electric vehicles are the way to go. Similarly, the environmental and EV voices in the room agreed that a low carbon fuel standard, which would prop up natural gas use in heavy duty vehicles, could be a good idea for its positive health impacts. Finally, it was agreed that renewable gas would be a productive and economically feasible way to manage waste while simultaneously providing power.

Throughout the discussion, a few caveats were raised. Most of these related to the importance of emissions reductions *per* unit cost rather than either one independently. First, deciding not to own a car at all does a far better job of reducing emissions than buying an alternative fuel vehicle of any type. Using money for rebates reduces revenue from public transit and complete streets programs, while simultaneously reducing the income from the gas tax (which also funds transportation infrastructure). Equity also plays a major role here since low income communities typically have less car ownership. In addition, a disproportionate amount of emissions come from heavy duty vehicles, so reducing heavy duty emissions would be a low hanging fruit. There was disagreement on whether the significantly lower GHG emissions of electric vehicles are worth the approximately 2-3x cost, or whether cheaper natural gas buses which reduce health-related emissions like NO_x and particulates are the better option. On this point, one must look carefully into the specifics of a given fleet.

Buildings

The group's seven stakeholders represented a labor group, two environmental advocacy groups, a business group, a state senate district, a local non-profit, and a charitable environmental organization. The group's priorities included magnitude and certainty of emissions reductions, as well as technical feasibility and equity.

The buildings group discussed policies in three main areas: sustainable materials, transition to electric heating, and energy audits. In the sustainable materials discussion, stakeholders were in favor of incentivizing residential and commercial contractors to recycle building materials such as steel, concrete, and timber. Both financial and non-financial incentives were supported, and

stakeholders agreed that shifting the market to create demand for these materials was important. Increasing the convenience of recycling materials would be an example of a non-financial incentive. More specifically, the state and municipalities could provide sorting and collection facilities for such material. Stakeholders were in favor of further research into the application and the limits of RCA concrete to better determine policy to implement its usage.

Stakeholders were concerned about incentivizing a transition from natural gas heating to electric heating in residential and commercial buildings. This is mainly due to the high cost of electric heating and low cost of natural gas. Creating the infrastructure for a new, more expensive product concerned stakeholders. There was consensus that the best approach would be to first increase New Jersey's production of electricity from renewable sources before switching to electric heating. Stakeholders also favored policy that would increase the energy efficiency of buildings and decrease the demand for natural gas in buildings.

There was clear consensus among stakeholders that energy audits should be mandated, particularly for newly sold houses and commercial buildings. On this topic, stakeholders praised the New Jersey Clean Energy Program for incentivizing energy audits. Its programs should be part of a statewide and local marketing campaign to raise awareness. Stakeholders were concerned about reaching renters in New Jersey, since many have no say about the energy efficiency of their home. To incentivize landlords to perform energy audits, stakeholders want to require landlords to disclose monthly electric and heating bills to potential tenants before signing a lease. This could create a competitive market, and force landlords to improve the energy efficiency of their buildings.

Stakeholders were in favor of a carbon fee or dividend to help provide funding to all of these policies. Stakeholders agreed that a carbon fee would help incentivize the switch from natural gas to electric heating, as well as provide the necessary infrastructure to incentivize construction material recycling.

Economic Transition

The group's six stakeholders represented an environmental group, an environmental justice group, a utility, a government office, and two labor groups. Political and technical feasibility were some of the more important criteria, along with equity and high emissions reductions.

The first discussion covered a market-based mechanism called "rate decoupling," which separates (decouples) utility revenues from total electric or gas sales, and allows investment in energy efficiency as a complementary policy. This policy can eliminate the disincentive for deployment of renewable energy programs, and allow them to engage more in and sell fewer units of energy, which results in less price volatility. However, this policy would mean that higher electricity usage would not benefit the utility companies

(which would be especially problematic with increased usage of electric cars). Ensuring transparency in the rate-making process would also be a high priority, to avoid alienating consumers.

Next, the group discussed the New York Climate and Community Protection Act (CCPA), which prioritizes allocating funds to the health and safety of people in disadvantaged communities affected by climate change. Stakeholders noted that when crafting legislation that addresses disadvantaged communities, it is essential to hear from the communities themselves. The group also noted that while it may be difficult to identify specific disadvantaged communities, influencing regional or federal energy policy could reduce climate and health impacts in these more local communities.

The third discussion focused on NJ senate bill 359, which aims to build a green jobs initiative that promotes workforce training and developing jobs in the clean energy sector. Many stakeholders agreed that we need to increase job training and make vocational jobs more accessible, but they cautioned that job training alone is not enough; this policy would work best if coupled with an initiative to create specific green jobs in New Jersey.

Coastal Resiliency

The group's seven stakeholders represented two environmental groups, an environmental law firm, a consumer advocacy group, a government office, a green business, and an environmental consulting firm. Political feasibility and leadership was noted as the key towards action, which would ideally bring cost-effective and equitable emissions reductions.

Discussions focused on the challenges posed by rising sea levels and storm surges, and how New Jersey residents will be impacted. We went through the strengths and weaknesses of various techniques that can be used to protect people from flooding. Overall, the group noted that nature-based solutions tend to be more sustainable in the long-term and have fewer hidden costs than many hard structure solutions. On the other hand, it was stressed that no single solution will make sense everywhere, and that hybrid solutions may be necessary is many situations. A large part of our conversation focused on vulnerable communities. It was repeatedly mentioned that many existing solutions are designed mainly by and for wealthier communities, and that many vulnerable communities and populations do not have the means to make their voices heard. New Jersey's resilience plans should consider the state as a whole, even though solutions must be localized and adapted to the specific communities they are serving.

A key concern for the group was the challenge of raising funds to sustain resilience projects. People tend to respond negatively to increased taxes, although they may be somewhat more receptive if they know where the money is going. A carbon fee was mentioned as one possible funding solution, although other sources of revenue would be needed. Stakeholders also emphasized the need to increase the general awareness of climate change and resiliency in New Jersey, as people make better decisions when they

have enough information. Private investment can also help develop resilience initiatives, although it is important to align the incentives of developers and investors with those of the local communities.

Resource Management

The resource management group focused on how to more efficiently utilize resources and more sustainably dispose of wasted resources . In the initial priorities session, stakeholders agreed that cost is a primary factor [SM2] in determining the feasibility of resource management practices as well as technical feasibility. Technologies had to be both attainable and cost-effective in order to be implemented. Magnitude and certainty of emissions reductions were also seen as incredibly important for both air quality purposes and longer-term climate action. While not seen as one of the top three criteria by all, environmental justice was also mentioned as important given the historically poor treatment of lower-income communities by the resource management industry (e.g., frequent siting of waste incinerators in marginalized communities).

The first policy discussion centered around an organic waste ban, which was seen overall as a key next step in moving New Jersey's resource management sector forward when it comes to making the industry more sustainable. Magnitude and certainty of emissions reductions were clear here and were identified as a benefit of organic waste separation from the overall waste stream for separate disposal. Barriers identified included potential high costs and the lack of existing infrastructure to deal with organic waste.

The second policy discussion focused on how to enhance recycling in New Jersey, as recycling has stagnated in the recent past but has been shown to result in varying levels of emissions reductions due to a decrease in the consumption of natural resources. Proposals seen as potentially feasible and effective by the group included municipally universal recycling standards in New Jersey, enhanced education and outreach, and a shift of responsibility to the manufacturer (i.e., development of a product stewardship model) for proper recycling of their materials.

In the third discussion, a pay-as-you-throw (PAYT) system was discussed and was seen as an area with the potential for adoption in more towns in New Jersey, although a mechanism for adoption was unclear as well as its political feasibility. At the conclusion, stakeholders all agreed that dealing with organic waste is a key priority for resource management moving into the future as well as providing more incentives for more sustainable practices and enhancing enforcement to shut down unsustainable practices.

Methods

The forum consisted of 6 focus group topics:

- Emissions

- Transportation
- Buildings
- Coastal resiliency
- Resource management
- Economic transition

We also wanted diverse stakeholders, from all of the following areas:

- Environmental groups
- "Green" business (primary product or service focuses on reducing our environmental footprint)
- "Concerned" business (all others)
- Labor
- Government (legislative and regulatory)
- Utilities
- Environmental Justice

At first, we wanted each focus group to have at least one representative from each of these areas. Ultimately, this wasn't possible, and some focus groups lacked representation from some sectors.

Each focus group had three students in the room to facilitate the discussion. A "student moderator" established ground rules and guided the conversation. A "student attendant" held up cards for stakeholders when they had 30 seconds left, and again when they ran out of time during round robin sessions. The attendant also watched the organizers' Slack channel for central updates, and handled miscellaneous events (such as ushering late stakeholders to the room). Finally, a "student scribe" typed down everything that was said during the conversations verbatim. The scribe also summarized the conversations into a recap that was read at a final plenary session.

Each student moderator, alongside with a team of researchers and the scribe and attendant, worked throughout the summer to decide on three specific "policy session" subtopics within their focus group. The goal of the forum was to consider concrete policies in New Jersey, so each policy session would discuss stakeholder perspectives on a specific policy.

Before the forum, we set up preliminary phone calls with each stakeholder and their group's student moderator. This call helped the moderator develop empathy for all stakeholder perspectives, informed the stakeholder of the forum structure, and helped clarify which specific policies should be considered for the policy sessions.

On the day of the event, each focus group began with a "priorities session" to establish a joint set of criteria. Stakeholders were asked to force rank the following criteria when considering policies:

- High emissions reductions
- Certainty of emissions reductions
- Reasonable cost
- Equitable across industries (doesn't "pick winners")
- Equitable across communities and socioeconomic levels
- Politically feasible
- Technically feasible
- [*stakeholder could write in their own*]

This priority session helped to get a sense of stakeholder perspectives and framed the ensuing discussions on policies.

At the beginning of each session, the moderator presented an initial primer on the subject to set the context and provide foundational facts and figures. This helped conversations get started, and also ensured that everyone was up to speed on baseline knowledge. In the policy sessions, stakeholders then filled out a worksheet asking for positives and negatives of the policy, as well as ways to mitigate the negatives. This served to help stakeholders organize their thoughts, and to get more input from stakeholders beyond what was said out loud (we collected the worksheets).

Each focus group concluded with a "summary session" for stakeholders to present final reflections and answer any audience questions. This session also began with a worksheet, which simply allowed stakeholders to jot down remaining thoughts and points.

Focus Group Results

Emissions

Stakeholder Priorities

The group's eight stakeholders represented three environmental groups, an environmental justice group, a faith group, a legislative district, a state utility, and a business association. The most commonly held priorities were equitability across communities and socioeconomic levels, as well as certainty of emissions reductions (4 mentions each in stakeholders' top two criteria). Political feasibility (3 mentions) was also a frequent discussion point. Still, all criteria were mentioned in at least one stakeholder's top two. Stakeholders began to discuss policies in this session; these perspectives are summarized in the policy sessions below.

Table of Stakeholder Priorities: Emissions

Note: the below rankings represent stakeholder perspectives primarily, and may or may not correspond with findings from rigorous policy analyses. We recommend that the reader also look through the substantial research and policy studies that have already been performed in New Jersey.
*1 indicates the most important priority for the stakeholder.

	High Emissions Reductions	**Certainty of Emissions Reductions**	**Reasonable Cost**	**Equitable Across Industries**	**Equitable Across Communities and Socioeconomic Levels**	**Politically Feasible**	**Technically Feasible**
Environmental Group	2 Science does not negotiate and the planet will dictate the action needed	3	5	7	1 Moral and personal reasons, including rising wealth inequality and pervasive systemic injustice	6	4

Environmental Group	6	1 A measurable and concrete effect is more important than a lofty goal	4 Plays into equitable across socioeconomic levels	7	3	5 Becomes feasible when the other metrics are fulfilled	2
Environmental Group	(not listed)	1 There has to be a plan and a short-term urgency needs to be included	(not listed)	(not listed)	2 Policy will be rejected by citizens in communities that are most affected	(not listed)	(not listed)
Environmental Justice	2	2	5	6	1 Equity ties with high emissions reductions, continuing current trends would lead to more pollution in communities of color and poverty	3 May be more politically feasible to have inequitable system	4
Faith Group	3	2 Situation is desperate enough that certainty of effect is necessary, regardless of the distribution of the effects	7	5	4	6	1 Any action should at least be possible
Utilities	5	1 Companies do	3	2 No picking	4	7	6

		long-term planning and need to know what the future holds		winners, the market should choose			
Legislator	(not listed)	(not listed)	(not listed)	(not listed)	(not listed)	2 Pathway for policy implementation, other criteria are academic and discussion points until action is taken	1 Important to evaluate if an action or policy is possible
Concerned Business	(not listed)	(not listed)	1 Implementing policies will cost citizens and could become burden for society	2 No industries should be favored	(not listed)	(not listed)	(not listed)
Agreement	4 (top 2 for one in group)	1 (top 2 for 4 in group)	3 (top 2 for 2 in group)	3 (top 2 for 2 in group)	1 (top 2 for 4 in group)	2 (top 2 for 3 in group)	2 (top 2 for 3 in group)

Policies

Table of Stakeholder Policy Perspectives: Emissions

Note: the below comments represent stakeholder perspectives primarily, and may or may not correspond with findings from rigorous policy analyses. We recommend that the reader also look through the substantial research and policy studies that have already been performed in New Jersey.

	High Emissions Reductions	**Certainty of Emissions Reductions**	**Reasonable Cost**	**Equitable Across Industries**	**Equitable Across Communities and Socioeconomic Levels**	**Politically Feasible**	**Technically Feasible**
Regional Cap and Trade (RGGI, TCI)	Positives (TCI): Could reduce transportation emissions (half of NJ emissions) Negatives (RGGI): Inadequate to only cover CO_2; this subsidizes natural gas and CH_4 emissions Reductions in region (good), but not national	Negatives: Hard to measure how cap-and-trade directly affects emissions reductions	Positives: Revenue can help clean energy and transportation initiatives Negatives: Increased costs for rate payer	Positives: Market-based systems are easier for businesses to deal with than regulations	Positives (TCI): revenue could go to EJ communities, e.g. to ensure access to EVs / low-emission vehicles Negatives: Does not guarantee emissions reductions in EJ communities	Positives: RGGI moving forward State legislators want to include transportation Negatives: History of diversion of funds TCI could be regressive	Positives: Good technical feasibility of cap-and-trade system Negatives: For transportation, it is difficult to influence consumer habits Lack of clean transportation infrastructure
State-Level Carbon Fee and	Negatives: Initial price is not aggressive	Negatives: No cap on emissions	Positives: Revenue could fund	Positives: Disincentivizes fossil fuels	Negatives: Like cap-and-trade, doesn't account for EJ	Negatives: Perceived as a tax, creating	Negatives: Fascinating concept, but in practice it has

Dividend	enough for companies to change behavior Fee on just CO_2 fails to cover other air pollutants	and ideal price is unclear	low-carbon initiatives Negatives: Makes it costlier to do business in NJ	Doesn't pick winners among emitters Incentivizes renewables in PJM process	communities Immediately hurts those who can least afford A policy that looked at cumulative emissions and increased monitoring would be preferable	opposition (even with dividend) Gas prices will rise and the cost of living is already high	been unsuccessful and/or regressive in past examples, according to group members
Small-scale Regulations and Subsidies	Negatives: 2% increase per year for building efficiency should increase faster	Positives: Regulations can cap emissions more directly	Negatives: Subsidizing rooftop solar costs more than utility-scale solar Considerations: Nuclear needs to be viable during transition to renewables, but PSEG must demonstrate the need for costly subsidies	Negatives: Regulating utilities targets them directly	Positives: Regulating emissions in EJ communities would save lives and improve livelihoods Community Solar makes the benefits of solar to renters, which would help EJ community Negatives: Increasing energy efficiency will be harder in EJ communities	Positives: Could include regulation rules within RGGI re-entry legislation to help pass the rules Negatives: Regulations have become a dirty word	Positives: RPS credit systems are established Negatives: ORECs are very complex Unclear as to who will own and bid transmission lines for offshore wind - previous examples (e.g. MA) have had issues with this Still need to replace SREC system

Regional Cap-and-Trade

We discussed two main policies: the Regional Greenhouse Gas Initiative (RGGI), a regional cap-and-trade program for large power plants, and the Transportation Climate Initiative (TCI), a similar regional initiative (still in development) that could adopt a cap-and-trade for transportation. Overall, the group focused more on the disadvantages of cap-and-trade, especially with regards to equity issues. Since RGGI is a regional policy, it does not guarantee pollution reductions in environmental justice communities. In fact, a recent study by Cushing et al. showed that local emissions rose near 52% of the facilities regulated by California's cap-and-trade program, most often impacting communities of color. Although power sector emissions have been decreasing in the RGGI region, some stakeholders questioned whether RGGI or other factors were most responsible for this decrease. Finally, many were concerned about the program revenue being distributed appropriately, given the state's history of raiding Clean Energy Program funds. On the other hand, the group acknowledged that power plant emissions have gone down, and that reentering RGGI is clearly politically feasible under Governor Murphy.

In the context of long-term emissions reductions, transportation was mentioned as a priority, since the sector currently accounts for nearly half of New Jersey's emissions. For TCI, stakeholders brought up similar concerns on equity and certainty of emissions. These concerns could be mitigated if other transportation cap-and-trade programs (e.g. in California) were shown to significantly reduce emissions. Some stakeholders recommended regulating or incentivizing emissions reduction programs in high-pollution areas, such as ports and buses in environmental justice communities. Still, most said they would need to learn more about TCI to have a more detailed discussion.

State-Level Carbon Fee and Dividend

We discussed the possibility of a state-level carbon fee and dividend, in which a flat fee is collected from carbon dioxide emitters and redistributed in some fashion (whether to households, businesses, vulnerable communities, or clean energy programs). Stakeholders focused on the disadvantages of this policy, with equity concerns related to the challenge of fairly allotting (and protecting) policy revenue. A low fee could also lead to uncertain or insufficient emissions reductions. Finally, because this would be a state policy, the group was also concerned about leakage and disincentivizing business in New Jersey. Observed advantages included political favorability with conservatives, as well as simplicity for businesses. Some of the negatives could be mitigated if revenue protected

environmental justice communities, if other business taxes were lowered, or if the social cost of carbon was included in net present value calculations instead of a direct fee. But some said that while this policy looks great in theory, state-level versions may fall apart in legislation or implementation. In the absence of a national carbon fee, the group preferred more small-scale regulatory or multi-faceted approaches.

Sector-Specific Regulations and Subsidies

We discussed sector-specific regulations and subsidies, including credits for solar, offshore wind, and nuclear, as well as other regulatory approaches. Compared to the first two sessions, there was more support for these policies, in part because they can be more equitable for environmental justice communities. With solar, there were concerns that renewable portfolio standards (RPS) and solar renewable energy credits (SRECs) did not accurately incentivize solar. However, with the SREC rule expiring soon, the group saw a need to continue incentivizing solar with community-based approaches, including the state's pilot Community Solar program. With offshore wind, the group agreed on its importance, but there was some environmental concern about current proposed projects, as well as wariness about the complexity of the OREC credits. Research into and financing of storage projects was mentioned as a key impact area, given the governor's new storage goals of 2000 MW by 2030. Nuclear was acknowledged as an important low-carbon transition fuel, but many stakeholders wanted to make sure that utilities needed the subsidies that will cost ratepayers. Other proposed regulations included mandatory emissions reductions in environmental justice communities, strengthening energy efficiency programs, and updating heavy-duty vehicle standards. While the word "regulation" may harm political feasibility, focused steps may be more likely to take effect.

Transportation

Stakeholder Priorities

The group's eight stakeholders included two public transit experts, an environmental group representative, a legislator, an electric vehicle business, a car dealer representative, a natural gas representative, and an alternative fuel vehicle consultant. All of our stakeholders agreed that *cost effective* emissions reductions should be a priority, as no emissions reductions will be successful if the programs proposed lack the necessary funding or cost feasibility. All stakeholders also agreed that technological feasibility is the cornerstone of any successful policy, and no climate policy can move forward until thorough research has been done into the

availability of appropriate transportation technology. In terms of political feasibility, there was abundant discussion throughout the day that state policies must seek to align with existing federal policies, as matters of federalism and policy supremacy can complicate any state effort, particularly where public funding of policy initiatives is needed.

Table of Stakeholder Priorities: Transportation

Note: the below rankings represent stakeholder perspectives primarily, and may or may not correspond with findings from rigorous policy analyses. We recommend that the reader also look through the substantial research and policy studies that have already been performed in New Jersey.

*1 indicates the most important priority for the stakeholder.

	High Emissions Reductions	**Certainty of Emissions Reductions**	**Reasonable Cost**	**Equitable Across Industries**	**Equitable Across Communities and Socioeconomic Levels**	**Politically Feasible**	**Technically Feasible**	**Additional**
Public Transit Expert	1 Covered under additional	6	1 Covered under additional	5	3 Environmental justice - ongoing concern	4	2 10-15 years ago weren't ready for EV, but now in a much better place	1 **Cost effective emissions reductions (emissions / $ spent)** Critical for Congestion Mitigation and Air Quality Improvement program, etc. - need to

								account for every dollar
Environmental Group Perspective	1 Climate change is most critical issue in terms of biological and financial impacts	3 We must implement strategies that have positive results	5 Reasonable cost is important but emphasis should focus on long term value of the project	7 When gun-powder was used to propel projectiles, why would we also support bow & arrow manufacturers	4 It's best to share responsibility among all - we're all in this together	6 In a democracy this is important	2 Actions taken must have immediate impacts	
Legislative	3	2	4	5	5	6 Not everything has to be done legislatively: education and activism can do a lot	1	
EV Business	1 This is probably the reason to do all of this. 10-15% reductions won't cut it.	7 Focus on high impact reductions, not incremental	3 There will be a backlash if too far out of money.	6 We spend too much time propping up stuff that won't work (fuel cells)	5 Important, but not at the expense of progress overall	4 If other 3 are in place, this should follow	2 Needs to be achievable	

Car Dealer Representative	5 Cost must be worth benefit	3 Effort to move tech must prove valuable	2 Cost must be worth benefit and benefit must be affordable	4 Tech moves faster than regulators and policy makers	6 Life isn't fair; pollution reduction is the goal	4 Can't tilt at windmills…. Politics will dictate	1 It all starts with what is possible	
Natural Gas Representative	7	2 For the environment deploying tech that works	1 Adoption is driven in many cases by cost. EV charging station in Mays Landing never used	4	6	5	3 Making certain that a deployed tech will work for the job being done long term	
Public Transit Expert	1 Hit 2050 goals	3 Policies need to capture all emissions sources	(not listed)	7 Red herring, and way to placate industries	2	(not listed)	(not listed)	
Alternative Fuel Vehicle Consultant	1	2 CA credits installation of EV infrastructure, but no guarantee that reductions take place	1	6	3	5	4	1 **Cost effective emissions reductions (emissions / $ spent)** Can't spend taxpayer money in a stupid way

Agreement (Average Score)	3	4	2	5	5	5	2	

Policies

Table of Stakeholder Policy Perspectives: Transportation

Note: the below comments represent stakeholder perspectives primarily, and may or may not correspond with findings from rigorous policy analyses. We recommend that the reader also look through the substantial research and policy studies that have already been performed in New Jersey.

	High Emissions Reductions	**Certainty of Emissions Reductions**	**Reasonable Cost**	**Equitable Across Industries**	**Equitable Across Communities and Socioeconomic Levels**	**Politically Feasible**	**Technically Feasible**
CARB enforcement: EV credits only after retail sale	(not discussed)	(not discussed)	(not discussed)	Positive: Doesn't favor manufactu-rers over retailers	(not discussed)	Positive: This would not violate federal standards and can be done at the NJ level since the location of the credits is a question of "enforcement," not of "policy" Negative: If CARB changes rules, legal challenges from auto makers could open up Clean Air Act to attack	(not discussed)

EV rebates ("cash on the hood")	Negative: California's transportation emissions increased since 2013 despite moderate success of EVs because of weak public transit and far travel to work	Positive: cost feasibility will help finally put the EV mandate goals within reach; proven example in CA - and in GA, where sales dropped when incentive was removed	If using societal benefits charge: increase cost to ratepayers in short term, but decreased costs in the long run.	Must be a sunset provision for when EV industry is mature	Negative: targeted to affluent vehicle purchasers, loss of jobs from car repair and fueling stations. Add sunset provision to mitigate.	Negative: NJ is a cash-strapped state. BPU/DEP can do things without the legislature but won't want to take a risk without backup	(not discussed)
Low Carbon Fuel Standard	(not discussed)	Positive: Public transit would be heavily incentivized, even if switching to the "right" alternative fuels doesn't work	Positive: no cost	(not discussed)	Positive: Good for EJ communities, especially if incentives are targeted at port communities to reduce NO_x emissions from heavy duty vehicles	Positive: In California, implemented administratively by the resources board in response to California's call for a 20% GHG emissions reduction (not legislatively, which would be tough in NJ) Negative: carbon pricing in general is tough to get passed in NJ	Positive: we could join the California market, which would be much simpler than making one "from scratch"
School bus EV rebate program (not a separate policy session)	(not discussed)	Danger of one-off type programs. To mitigate, focus on a single city	Negative: Expensive relative to CNG.	(not discussed)	Positive: Addresses health risks posed to children, and helps EJ communities where	Already a funding source: Appendix D funding for Lead by Example programs.	(not discussed)

		and get EVs in normal operation rather than spreading across agencies.	Positive: Large purchases would mitigate this, and tech is improving quickly		public transit operates.	Also, provides momentum for future feasibility, and gets people used to the idea of EVs	

California Air Resources Board (CARB) Credit-After-Retail Enforcement

The federal Clean Air Act (CAA) outlines specific standards for air pollution. Accompanying the federal CAA is a waiver for pre-existing air pollution regulations in the state of California, and an allowance for other states to elect to follow standards set by CARB rather than the federal CAA standards. Included in these standards is a provision that automotive makers must meet a quota of manufacturing and distributing electric vehicles. Automakers receive these EV "credits" once they sell the vehicles to car dealers. However, there is no specification in the current policies that requires the EVs to be sold to consumers and put into use.

Auto makers typically make EV sales to dealers at prices that are prohibitively high for dealers to profit off of retail sale of the EVs; the high retail price of the vehicles discourages consumers from purchasing them, and a large number of EVs distributed to dealers sit on the lot, eventually either becoming loaner cars or being sold at discounted prices due to the need to move product from the lot. On one hand, this results in increased consumer familiarity with EV technology when the unsold EVs are used as loaner cars. However, local car dealers must still bear the cost burden of unmovable product.

Stakeholders agreed that currently, government policies intended to reduce air pollution by promoting EVs are not successful in actually getting more EVs on the road. It was noted that the 1990 California ZEV mandate has yet to be achieved despite the strong push for EV; the power of government mandates are limited by issues of technology and cost.

Additionally, the effectiveness of EV credit systems are limited by the "traveling credit loophole" - dealers in one state (e.g. New Jersey) could sell EVs in another state (such as California) where the infrastructure is already in place and demand for the EV market is high, and the dealers would still earn EV credit for NJ despite the sale in a different state. The car company Tesla Motors generated subsidies from other automakers by selling credits to dealers that did not meet their mandate.

The traveling credit loophole is being phased out in 2018; however, this imminent change increases the cost burden on car dealers in NJ. Dealer associations cannot internally push for better pricing arrangements with automakers due to prohibition by federal antitrust laws. If this shift in cost burden were to be addressed, it would have to be done legislatively. The most straightforward policy option proposed during stakeholder discussions was a state enforcement policy that would apply the EV credits to automakers only after the EVs had been sold at retail price to consumers, thus incentivizing automakers to work with local car dealers on a pricing mechanism that would increase the probability for EVs on the lot to be within purchasing range for consumers. There was some concern raised about legal challenges to such a policy, as it relates to Section 177 of the federal CAA and the prohibition of states from creating "third car policies" that impose additional standards on industry. Based on legal interpretation, such a challenge may not prove valid as the credit-after-retail policy would be an enforcement mechanism rather than the addition of a new standard. However, all stakeholders noted that the existence of a possible challenge could open the federal CAA to scrutiny, which would be decidedly against the best interests of stakeholders on all ends.

Electric Vehicle "Cash on the Hood" Incentives

The upfront cost of electric vehicles has proven to be a major deterrent to consumers. Existing government policies have sought to reduce EV costs to consumers through tax rebates, which are applied after purchase of the vehicle, and do not entirely remove the barrier for consumers with lower disposable income from investing in EV. This is made worse by the fact that lower income consumers often don't pay enough in taxes to benefit from the exemptions.

A "cash on the hood" incentives policy would apply the costs savings at the time of purchase and concretely lower the upfront cost of EV to consumers. In other states with such cash incentives policies, particularly California, there is a robust EV market with notably higher adoption rates. Such a policy would create a high degree of certainty in emissions reductions, and the reasonable cost to consumers would help NJ reach the EV adoption goals set forth in previous government mandates. However, a direct cash incentives program would require a large investment of funds, which many stakeholders agreed would be difficult given New Jersey's status as a fiscally challenged state.

The funding required by this program would have to be found either through public or private funds, making "cash on the hood" incentives far less politically feasible. While some incentivizing action could be undertaken by the DEP or BPU without legislative

action, it is unlikely that state agencies would risk backlash over such a transfer in funding priorities without public backing from the legislature. The most-discussed funding source was the societal benefits charge, which represents about 4% of NJ energy bills and goes to various energy efficiency mechanisms.

Furthermore, it is unclear if this policy would be equitable across socioeconomic levels; even with substantial upfront reduction in cost, EVs may still be too expensive for many low-income people. The concern was also raised that other government policies that bolstered investment in fledgling industries ended up creating a constituency for those public benefits, such that when the industries matured and the public investment was no longer necessary, efforts to remove those funding supports became politically challenging. For this reason, many stakeholders recommended that any "cash on the hood" EV incentives policy for NJ must have a "sunset provision," where there would be a fixed future date at which point the monetary incentives would automatically be phased out.

The car dealer voice in the room noted that this would only exacerbate the problems mentioned with the current CARB credit policy, so that combined action on these fronts would be desirable.

Low Carbon Fuel Standard

The Low Carbon Fuel Standard (LCFS) program was pioneered by California, and has been replicated by a number of Canadian provinces. It is in essence a cap and trade program aimed at lowering emissions from transportation fuels. Stakeholders agreed that this would be the most equitable approach (in terms of not picking winners in industry) and that it would effectively incentivize switching to alternative fuel vehicles.

The natural gas representative noted that natural gas prices would significantly decrease as they did in California. What's more, a LCFS would promote the use of renewable natural gas. In particular, manufacturers of low carbon fuel (like renewable natural gas) would get paid by large companies struggling to meet their own standards, providing more revenue for building facilities. It was also noted that renewable natural gas (RNG) is close to being economically viable, so an LCFS could tip the scale pretty heavily. Some dairy farms in California make more off of the RNG from cow manure than from the milk.

On the topic of hydrogen fuel cells (which the car dealer representative thought could be the true technology of the future), LCFS wouldn't favor a winner as long as hydrogen comes from a renewable source. As of now, this isn't true in the US - 99% of hydrogen comes from reaffirmation of fossil fuels. But Germany has a "power to gas" program where they electrolyze water to create hydrogen.

Stakeholders in general knew far less about these policy options than the EV-relevant ones, so there was less room to discuss details. A general point brought up by the regulatory representatives was that there needs to be more modeling and understanding of the externalities. However, there was consensus on the broad point that emissions should be capped or priced.

Buildings

Stakeholder Priorities

The group's seven stakeholders represented a labor group, two environmental advocacy groups, a business group, a state senate position, a local non-profit, and a charitable environmental organization. Stakeholder priorities included high emissions reductions and certainty of emissions reductions, due to a common concern about global warming and a desire to meet the 2 ^{o}C target given in the Paris Agreement. It was felt that climate change will affect all areas and socio-economic groups in NJ. In addition, technical feasibility was another important issue, as this is seen as a necessary criteria to successfully reduce emissions. Further discussed was the desire for any environmental solution to be equitable to the communities involved, especially workers and labor groups that may be affected by shifts in industry. The need to educate and incentivize people was seen as a necessary step to ensure support amongst communities for environmentally-friendly legislation. It was commonly expressed by many stakeholders that political feasibility would naturally follow from the need to reduce emissions, as well as from the technical feasibility and the cost effectiveness of the methods to do this. The group also noted that reducing emissions in the buildings sector is widely related to other areas that were discussed at the forum, including the need to develop our renewable energy generation. As such, this discussion forms only one part of a much wider picture.

Table of Stakeholder Priorities: Buildings

Note: the below rankings represent stakeholder perspectives primarily, and may or may not correspond with findings from rigorous policy analyses. We recommend that the reader also look through the substantial research and policy studies that have already been performed in New Jersey.

Princeton Student Climate Initiative
September 28th, 2018

*1 indicates the most important priority for the stakeholder.

	High Emissions Reductions	**Certainty of Emissions Reductions**	**Reasonable Cost**	**Equitable Across Industries**	**Equitable Across Communities and Socioeconomic Levels**	**Politically Feasible**	**Technically Feasible**
Labor Group	4	3	5	6	2	7	1
Grassroots Environmental Advocacy Group	1 Need a rapid reduction of emissions	3	5	7	2	6	4
Grassroots Environmental Advocacy Group	1 Rapid transition/ sequestration of GHG	3	6	5	2	7	4
Business	1	3	6	5	4	2	(not listed)
Government	(not listed)	(not listed)	(not listed)	(not listed)	(not listed)	(not listed)	(not listed)
Non-Profit	1 Critical to meet GHG goals and stay under 2^{o} C of warming	(not listed)	2 Evaluate cost of not acting	(not listed)	3	4 Policy will be feasible if it hits these other criteria	
Charitable Environmental Organization	1	2	5	7	4	6	3

Policies

Table of Stakeholder Policy Perspectives: Buildings

Note: the below comments represent stakeholder perspectives primarily, and may or may not correspond with findings from rigorous policy analyses. We recommend that the reader also look through the substantial research and policy studies that have already been performed in New Jersey.

	High Emissions Reductions	**Certainty of Emissions Reductions**	**Reasonable Cost**	**Equity Across Communities and Socioeconomic Levels**	**Politically Feasible**	**Technically Feasible**
Sustainable Materials	Recycling will divert materials from landfills and extend product life	Will reduce transportation and mining emissions of new materials	Use the market to drive incentives or a carbon fee	(not discussed)	(not discussed)	(not discussed)
Incentivizing Switch from Natural Gas to Electric Heating	(not discussed)	Creates a larger demand for electricity, but NJ gets much of electricity from natural gas	Electric heating costs much more than natural gas	Electric heating is very expensive and could be unfair for low and middle class citizens	(not discussed)	(not discussed)
Mandating Energy Audits	(not discussed)	Would greatly reduce GHG emissions in NJ	Incentives would alleviate cost	Could save money for all	Has been done in other states and cities with great success	Technology is already in use

Sustainable Materials

Two main topics were discussed regarding sustainable materials. The first was having state and local municipalities incentivize the recycling of building materials. This could be done with financial incentives and better infrastructure to reduce the cost and inconvenience of recycling. The application and use of Recycled Concrete Aggregate (RCA) concrete was discussed. This included mandating or incentivizing its usage.

With regard to recycling, stakeholders agreed that it is important to structure a market that drives demand for recycling. Many municipalities, such as Woodbridge, currently require the recycling of building materials. The state and local government can create this demand by providing collection points and sorting facilities to contractors and homeowners. Stakeholders agreed that it is not a good idea to mandate recycling because that would increase the price of a construction project. It was also stated that a one-size-fits-all policy will not work; there have to be separate approaches for residential and commercial buildings, which often require different materials in their construction. These programs should be executed at the local level, with possible oversight by the state. People and contractors should be educated on recycling, and some financial incentives could be put in place. Stakeholders agreed that people should not be forced to participate.

The second policy concerned investment into further research and development of sustainable materials. Stakeholders were interested in the research and development of RCA concrete. They agreed that it was a good way to reduce GHG emissions through reduced mining and transportation of fine and coarse aggregates. This process can be done locally and can reduce cost. There was consensus that the exact application of RCA concrete should be determined and then a policy for enacting its use could be discussed.

Heating Incentives

The policy discussed was incentivizing the switch from natural gas heating to electric heating in households and large buildings. Stakeholders agreed that moving away from natural gas heating was a positive step to take, but also agreed that this is very tough to do regarding how cheap natural gas is. Stakeholders were concerned that monthly electric bills would be too costly, and that incentives would not be enough to aid low income households. The group agreed that this policy is not congruent for homeowners and renters as most renters do not have a say in how their home or apartment is heated. This policy also is difficult to enact for low income communities. Finally, the group noted that in general, the housing stock in NJ is older and could have other issues that would make the switch to electric heating too daunting.

Additionally, the infrastructure is already in place for natural gas. It would be an uphill battle to retrofit buildings to electric heating. Stakeholders agreed that a gradual transition would have to take place, but this transition should be coupled with increased renewable energy usage. At the same time, energy efficiency improvements should be made to reduce demand. Overall, stakeholders agreed that this switch will only happen with policies that increase renewable energy use in the state and policies such as mandating energy audits

to increase the efficiency of buildings. They also observed that heat pumps and geothermal heating would be an acceptable and potentially viable option in place of natural gas heating.

Energy Audits

The policy discussed in this session was whether or not to mandate energy audits on commercial and residential buildings. Stakeholders agreed that the NJ Clean Energy Program has great programs in place to lower household and commercial energy consumption, but some programs could be better advertised. Furthermore, the group wished that energy auditing and enacting the improvements recommended by the audits was more straightforward. Stakeholders agreed that energy audits are a very good way of addressing and improving energy efficiency in buildings. The group concluded that energy audits should be mandated on homes for sale, on apartment buildings, and on commercial buildings. Stakeholders wanted landlords to disclose monthly electricity and heating bills to potential tenants before signing the lease, in order to create a competitive market for rental properties that are energy efficient. This will indirectly incentivize landlords to perform energy audits on their properties and make efficiency improvements. Overall, the group asserted that mandating energy audits is the clearest way of reducing GHG emissions in the state. Stakeholders highlighted other cities that have adopted policies like this with great success. Stakeholders also agreed that a carbon fee would be a good way to raise funds to support all of the policies discussed.

Economic Transition

Stakeholder Priorities

The group's six stakeholders represented an environmental group, an environmental justice group, a utility, a government office, and two labor groups. Political and technical feasibility were some of the more important criteria because without feasibility, no progress can be made. The environmental and environmental justice groups argued in favor of aiming for high emissions reductions first, because it is best to aim high and make progress. Perspectives from labor and environmental groups promoted equitability across all different socioeconomic communities, making this criteria a common theme throughout the day. Protecting workers creates good jobs and alleviates existing social disparities.

Table of Stakeholder Priorities: Economic Transition

Note: the below rankings represent stakeholder perspectives primarily, and may or may not correspond with findings from rigorous policy analyses. We recommend that the reader also look through the substantial research and policy studies that have already been performed in New Jersey.

*1 indicates the most important priority for the given stakeholder.

	High Emissions Reductions	**Certainty of Emissions Reductions**	**Reasonable Cost**	**Equitable Across Industries**	**Equitable Across Communities and Socioeconomic Levels**	**Politically Feasible**	**Technically Feasible**
Environmental Group	1	2	3	4	2 Employing people and ensuring reductions in different communities will result in a certainty of emissions reductions	3	2
Environmental Justice	1 If we don't have a focus on major reductions, we might not have an economy to manage.	2	6	7	5	4	3
Utilities	6	1	2 New Jersey already has one of the lowest	7	4	5	3

			CO_2 emissions already; if we are directing money, it should make a difference				
Government **(rankings not listed)**	(not listed)	(not discussed)	If it's technically feasible but costs too much, it won't be technically feasible	(not listed)	(not listed)	(not listed)	(not listed)
Labor	2 Political feasibility comes naturally with worker protection and with that high emissions reductions have to be the goal	3 Without mandate, the plan is not going to happen	(not listed)	1	1 Must protect workers, create good jobs and alleviate existing social disparities	1 Political landscape is a moving terrain that we shape by bringing many stakeholders together	(not listed) Must be workable
Labor 2	6 Want to have a large input, but incremental change is also important	4 Similar to technical concerns	5 Compound to the risk of not acting, mitigating should be cheaper	7 Business-es fail	3 I am personally very concerned with equity	2 Certainty is important, small steps do add up to change.	1 If not technically possible, none of the others matter! Might waste resources on something that doesn't work.
Agreement		Labor, Utilities,	Utilities and			Most agreed that	

		Green, and EJ generally agreed that the certainty of emissions is important, even if they didn't rank it as high as political/technical feasibility	government noted that if it costs too much, then it won't be politically feasible			political and technical feasibility are the most important, so we focused on what they prioritized after that	

Policies

Table of Stakeholder Policy Perspectives: Economic Transition

Note: the below comments represent stakeholder perspectives primarily, and may or may not correspond with findings from rigorous policy analyses. We recommend that the reader also look through the substantial research and policy studies that have already been performed in New Jersey.

	High Emissions Reductions	**Certainty of Emissions Reductions**	**Reasonable Cost**	**Equity Across Communities and Socioeconomic Levels**	**Politically Feasible**	**Technically Feasible**
Rate Decoupling	Positives: Eliminates disincentive for deployment of renewable energy	(Not discussed)	Positives: Can happen without sharp rate changes. Negatives: Concerned it won't be used in the most efficient way due to lack of transparency	Negatives: Hard to understand	Positives: Would help companies show customers their savings	Positives: The top 10 states in energy efficiency have adopted rate decoupling Negatives: Must be tied to energy efficiency policy; simply adding electricity demand strains utilities
NY CCPA /		Negatives:		Positives: Walkable	Positives: Would	Negatives: NY has a

Carbon Pricing		Emissions reductions are less certain than with cap-and-trade (RGGI)		communities would reduce the need for cars Negatives: Tricky to allocate funds to EJ communities	automatically go under fair labor standards Negatives: "Tax" is a dirty word in NJ Hard to guarantee revenue allotment	different grid system; NJ should aim for a regional approach
NJ Senate Bill 359		Need to match job training with more green programs that employ workers and reduce emissions		Positives: Focuses on green jobs to help the workforce Overall, need to inform young workers of these opportunities	Positives: Would help utility industry's job crisis Could help keep students in-state with economic incentives and schooling for vocational jobs	Need to define what a clean energy job is Negatives: People may not want to stay in NJ - child care is expensive and can't do without cars

Rate Decoupling

Rate Decoupling separates utility revenues from total electric or gas sales, and allows investment in energy efficiency as a complementary policy. The Top 10 states for energy efficiency had decoupling as part of their process.

According to the group, one advantage of rate decoupling is that it eliminates the disincentive for deployment of renewable energy programs. Stakeholders also said it results in less price volatility and more stability in the market. Finally, they asserted that well designed rate decoupling can happen without sharp rate changes. On the other hand, stakeholders were concerned that higher electricity usage would fail to benefit the utility companies (which would especially be a problem with increased usage of electric cars). Without policies to improve efficiency, increased energy demand would also increase the strain on infrastructure and increase emissions. The reduced ratemaking transparency may also make consumers uncomfortable, but this can be mitigated by utility companies showing how much consumers are saving. Finally, if policies do increase energy efficiency, the group was wary of customers using more energy as a possible rebound effect.

New York Climate and Community Protection Act

The New York Climate and Community Protection Act (CCPA) prioritizes allocating funds to the health and safety of people in disadvantaged communities affected by climate change. Group members liked that it focused on identifying these disadvantaged groups and concretely allocating funds (40%). However, some were concerned that it may be difficult to identify the actual disadvantaged groups and write it into law. The funding mechanisms for the bill was also unclear, but ideas such as carbon pricing and especially cap and trade were discussed (due to the ongoing re-entry of New Jersey into RGGI). Leaving carbon pricing and cap and trade to regional or federal policies would allow for a greater benefit to New Jersey, through cooperation with neighboring states.

NJ Senate Bill 359: Green Jobs Initiative

Finally, the group discussed NJ Senate Bill 359, which focuses on building a green job initiative that promotes workforce training and developing jobs in the clean energy sector. Stakeholders supported the focus on creating green jobs, which is almost universally agreed upon as an action that will improve the economy and energy efficiency in the long run. Labor groups mentioned that New Jersey might want to pursue a system similar to the German educational system: instead of secondary students pursuing an arbitrary field, they would be recommended a certain degree, intern with a business, and finally have a job guarantee. This would be more effective for small colleges in New Jersey and vocational schools. The group was also excited by the potential creation of a hub for startup incubators to allow for the growth of entrepreneurship and job creation. Still, stakeholders noted that green jobs would not be enough alone. This program should be coupled with actual jobs created in the market and helping students to find those jobs. A way to improve job retention in New Jersey, where only 50% of students pursue a college degree, would be to create a program where counselors convey the jobs available, especially vocational careers.

Coastal Resiliency

Stakeholder Priorities

The group's seven stakeholders represented two environmental groups, an environmental law firm, a consumer advocacy group, a government office, a green business, and an environmental consulting firm. Unlike the other groups, no ranking activity was performed among the stakeholders and the group discussed criteria in the context of policies.

The distinction between resilience and adaptation was identified from the start as a vital one for effectively framing the discussion. A key concern was the importance of focusing on long-term solutions instead of quick fixes, although it was brought up that short-term solutions may be unavoidable. Overall, nature-based solutions were viewed favorably by the committee, as was the Blue Acres program, though it was stressed that no single solution fits all. In addition, it was pointed out that sometimes overly complex resiliency solutions are not the most effective. A coordinated response was stressed as being crucial. The need to educate people and to incorporate the needs of vulnerable communities and populations were two other common concerns.

Table of Stakeholder Priorities: Coastal Resiliency

Note: the below rankings represent stakeholder perspectives primarily, and may or may not correspond with findings from rigorous policy analyses. We recommend that the reader also look through the substantial research and policy studies that have already been performed in New Jersey.
*1 indicates the most important priority for the stakeholder.

	High Emissions Reductions	**Reasonable Cost**	**Equitable**	**Politically Feasible**	**Technically Feasible**
Environmental Group 1	Coastal restoration has the co-benefit of carbon sequestration and improving habitat	Natural solutions often cheaper and simpler than hard solutions; they can restore habitat compared to hard solutions which can degrade environment. In some areas, is it worth cost to make more resilient?	(not discussed)	Major changes in green infrastructure (e.g. in Philly) often implemented only because EPA incentivizes it Don't be stronger than the storm, be smarter than the storm Nuisance flooding can be just as powerful to incentivize people to move out	In favor of natural solutions, particularly tidal restoration; still an unsolved problem to restore in areas that have already been flooded by seawater
Environmental Group 2	(not discussed)	(not discussed)	Vulnerable communities (e.g.	There is increasing awareness among local mayors that they need	Science is well known, but there is lack of communication

			Hoboken) vs vulnerable populations (e.g. senior citizens)	to collaborate, but they are often overwhelmed - they would appreciate knowing from the federal government what measures they're supposed to take, and whether their municipality is prioritized	between scientists and policymakers
Environmental Law	(not discussed)	Eminent domain and high property values are biggest obstacle to buyouts	(not discussed)	Solution can't be top down, need to go from local up Home rule can be big obstacle, create tragedy of the commons Education is key	(not discussed)
Consumer Advocacy	Private industry can be the answer (e.g. with electric vehicles) if they're incentivized properly by the market	Utilities are not incentivized to reduce costs, since the more they make the more they spend Any taxes on them would be passed onto ratepayers	Know your communities, tailor your solutions to them Solutions are often geared towards the richest communities	Utilities are not as against reform as one might think (e.g. with carbon market)	Engineers can create solutions, the question is how much it costs and is it appropriate (e.g. planting trees instead of building a wall)
Government	(not discussed)	(not discussed)	Vulnerable communities are most affected even though they're the least responsible - need to simplify grant process	Need coordination among several groups - designers, planners, community organizers, not just engineers	Sand is important resource, we're running out

Green Business	(not discussed)	(not discussed)	Wealthier communities with rich tax base are more able to retreat	Need to educate people on what resiliency is about - not just building walls	Some resiliency measures actually encourage people to develop because they think it's safe
Environmental Consulting	(not discussed)	(not discussed)	(not discussed)	Towns need contingency plans	Need engineers who understand ecology (multidisciplinary)
Agreement	2 Cutting emissions is major issue underlying coastal resiliency	2 A big question is who will pay - carbon tax is possibility	2 Hard questions need to be asked about which communities need to be saved, which cannot - adaptation vs resilience	1 The federal and state governments are probably too slow - there needs to be local coordination across municipalities; major problem is not lack of solutions but lack of leadership	3 Feasibility of engineering solutions usually isn't the problem; rather whether it's appropriate and cost effective Local solutions are best; no one size fits all

Policies

Table of Stakeholder Policy Perspectives: Coastal Resiliency

Note: the below comments represent stakeholder perspectives primarily, and may or may not correspond with findings from rigorous policy analyses. We recommend that the reader also look through the substantial research and policy studies that have already been performed in New Jersey.

Note: Because this group focused less on the criteria framing, the table is organized by group member and policy.

	Vulnerable Communities	**Managed Retreat**	**Nature-Based Solutions**	**Hard Structure Solutions**	**Funding & Buyouts**	**General Considerations**
Environmental Group 1	Some vulnerable communities don't have the means to	There is no way to get a	Green infrastructure, building oyster reefs and land restoration programs	Seawalls are good for storm surges, but are bad for	Many projects (such as those done by the Army Corps of Engineers) are	People don't care about the long-term

	go through the paperwork to implement projects. Making the paperwork easier could help Affordable housing should not trump the environment; building houses in floodplains is a bad idea	thoughtful managed retreat; the only way it might happen is from the economic breakdown from another storm	like Blue Acres are good solutions Trying to mimic natural resource systems is often a good policy due to the co-benefits, though it might not work in dense urban areas like NYC We don't know how to rebuild land that has been hurt by sea level rise	neighboring communities, as they cause scalloping of nearby beaches Sometimes engineers forget to look at the costs of a project, particularly those that occur to other communities	costly to maintain; are they worth it?	
Environmental Group 2	Data shows that the money isn't going to the areas that need the most help Many communities that are vulnerable to flooding are also disproportionately burdened with other things (such as bad health and air pollution) The distinction between vulnerable communities and vulnerable	(not discussed)	Restoring forests and wetlands can sequester carbon Long-term solutions are better than 'band-aid' solutions	We need big picture problem solving, particularly for engineering. Why build a wall if trees can work just as well?	A survey revealed that people don't want to pay, but they are fine with letting their children, or outsiders pay (i.e. with a hotel / motel tax) Communities are more willing to accept property buyouts if they are informed and know what is going on behind the scenes	New Jersey is an industrial state After Hurricane Sandy, local communities didn't know how to respond Science is not systematically used in our policy planning in NJ Need a coordinated plan - NJ's last coastal management plan was in 1981

	populations is key Often the most affected people don't get their voices heard Would like to see how affordable housing and vulnerable areas overlap					The best policy might be to end poverty We aren't sending the signal to incorporate incentives, standards and education into the lives of daily people
Environmental Law	One challenge is that non-affected constituents are likely to complain that they are paying for other communities' flood insurance	Can't implement with a top-down approach; there is no political will We won't retreat from some areas (Hoboken)	(not discussed)	Hard solutions are good in the short-term. In each location one should look at the costs, including the indirect costs	We must strategically decide where to invest Tax discounts and increasing population density are two possible ways of incentivizing change Many industries have recognized risk, and are avoiding it	People are more responsive if they know where the money is going
Consumer Advocacy	The wealthiest people are those coming up with solutions; the poorest people	Lots of people don't understand what	(not discussed)	After Sandy, many politicians were in favor of seawalls. When you build a wall,	We must have plans to buy out property before the towns are wiped out There is never any political	We need better preparation for when a storm hits. Once someone elevates their house,

	don't have the resources to deal with the problem or the representation to fight against certain solutions. Cost involved here Know your community - NJ is uniquely diverse Atlantic City has a significant low income population past the coastline, and can't afford the same solutions that richer areas like Hoboken can	resilience is		what happens to the water? Representatives often only worry about their municipalities, not nearby areas Flooding doesn't always come from the sea / river Sometimes simple solutions can work best, i.e. planting trees instead of building a large wall	will to increase taxes, but one can find less obvious ways to get them passed Industries don't object to a carbon tax as much as one might think. A carbon tax would also shift our economic reality, and would help us get rid of our 'addiction' to carbon Private industries can be the mechanism for change (i.e. electric vehicles), though they are profit-driven	they are unlikely to want to move Lots of people don't know what the people in this room know - we take knowledge for granted
Government	We need to think beyond municipal boundaries, and include an area's entire population NJ has many affordable housing laws, but are these locations really the	No one can retreat in some locations like Manhattan or New Orleans, due to their population	The natural ecology of an area is important to take into consideration Sand is an important resource, and one that is finite: Miami ran out of sand and now needs to import it from other states	A wall is good at protecting against storm surges, but not against rainfall. You need to know what you are building against, and can't always prepare for everything	In Louisiana, people couldn't wait for federal funding, so they paid for their resiliency programs through a locally adopted sales tax and the BP settlement. Political will is a key consideration; New Jersey is far from having this will, as Hurricane	Planning must be done on a large scale Adaptation and resilience are complementary Everything must be a localized solution. Urban and rural areas

	place to bring poor people? The wealthy can afford to stay in a vulnerable area almost indefinitely	and cultural identity		Some areas require hard armor	Sandy has become a distant memory	have very different conditions for resilient solutions
Green Business	The back bay can be very vulnerable. You can keep rebuilding the beach with federal money and dunes, but no one has a solution for the back bay, where most year-long residents live	There is a lot of resistance to retreat; municipal-ities have a financial incentive to oppose retreat	Multiple benefits come with using natural infrastructure. One should structure the solution to the specific landscape Oyster reefs are a good way to diminish wave energy, as are marshes, without which hundreds of millions of dollars could have been lost	(not discussed)	Evacuating people is a large cost for municipal services	It is vital to educate people about climate resiliency Municipal officials and local politicians are key players to get on board
Environmental Consulting	Inland flooding is an often overlooked concern. Just because the map doesn't show a danger doesn't mean there is no risk New York has been	(not discussed)	Nature-based solutions, such as reforestation, protecting forests, and preserving wetlands, have many co-benefits such as carbon sequestration Oyster reefs that absorb wave energy can be a good solution	Hybrid solutions can be a good option Sometimes engineering solutions are more complex and expensive than they need to be	What can we do to incentivize the private market to make places greener?	New Jersey has better environmental laws than most states

	mining sand; this increases the vulnerability of the areas from which the sand was taken		New York's Blue Belt is a good example of a natural solution			

We had planned to discuss two main areas of focus: Solutions to Sea Level Rise and Vulnerable Communities. We found that the topics overlapped enough to make it worth merging the discussions. Some other items that drew considerable discussion were funding and communicating with communities.

Solutions to Sea Level Rise

An important observation was that coastal resiliency is not only about response, but also about being proactive in preparing for the future. To this end, New Jersey communities need to plan for the long-term effects of sea level rise and increased flooding, rather than fortifying after a storm hits. One policy option is to offer buyouts to flooded and at-risk homes immediately after a big storm hits, as residents can see the immediate impact. Coastal flooding is not the only issue; nuisance flooding is an often forgotten but costly problem. Protecting for one can help protect for the other. We also discussed the implications of New Jersey being a home-rule state, which can be problematic because it prevents municipalities from coordinating their efforts. Often, the science is well known and solutions have been studied, but they are not being communicated properly to mayors. Political rhetoric can also trump safer policy decisions. Knowing our communities is crucial, as is bridging the gaps between the people, the science, and the law.

We also touched on vulnerable communities and the question of who will pay for retreat and fortification. Vulnerable communities are often disproportionately affected by climate change but contribute the least towards it, and lack the resources to deal with the problem. Questions of long-term costs and financial responsibility affect whether municipalities decide to stay or relocate.

Vulnerable Communities

We discussed the difference between vulnerable communities, which are geographically defined (e.g. Hoboken), and vulnerable populations, which are demographically defined (e.g. seniors). This is an important distinction when figuring out which groups are the

most likely to suffer from sea level rise, and who should be paying for the costs. A vital issue is deciding whether the money should come from the federal, state, or local level. Federal and state-level funding may be too slow, so levying the costs as a tax on the local level could be an option. This could help distribute the costs, but would be difficult to pass politically, unless the situation were dire, such as in Louisiana. We also discussed what the logistics of coastal resiliency would look like, including wetland restoration and tree planting, which have added ecological and emissions benefits. However, they may not work for certain areas that are already flooded, and are not enough for heavily populated areas. Although no one solution fits all, some solutions can address multiple issues. In most places a custom combination of hard solutions (dikes, sea walls, etc.) and soft solutions (marsh and wetland restoration, Green Acres, etc.) will be needed.

Putting it All Together

Education, dissemination of information and the political execution of any solutions were the main topics of discussion for our recap. We touched on the carbon tax as a possible solution, and discussed how to make it revenue neutral by investing the money into coastal resiliency and adaptation. New Jersey's property rights laws make it difficult to implement natural solutions without invoking eminent domain, and we are running out of the sand needed for beach replenishment. However, if flooding repeats every year and it becomes financially difficult to stay in floodplain properties, the political situation becomes different. Unfortunately, there will probably be no top-down solution for managed retreat until another storm comes, so disaster preparation needs to happen now. However, as a society, we need to focus on vulnerable communities, particularly those that are susceptible to "sunny day" flooding.

On the topic of education, the group stressed the importance of informing communities of the risks and options available to them, as well as including climate and coastal flooding topics in schools, starting as early as middle school. The latter serves the twofold need of educating the future generation and communicate the issue's importance to their parents. It is important to know that there is a coordinated effort being made on all sides, which can help ensure that implemented solutions are sustainable rather than a quick fix. We reiterated the differences between sustainable vs. restorative solutions, resilience vs. adaptation, and reactive vs. proactive responses. Finally, we noted that the private market can play a key role in implementing effective coastal resiliency measures.

Resource Management

Note: This sector was previously called "Solid Waste" but was renamed to "Resource Management" to reflect the need to view waste as wasted resources that could be used even after disposal.

Stakeholder Priorities

The group's ten stakeholders included three municipal coordinators, four green business representatives (including consulting), and representatives of an environmental justice group, a green education group, and a concerned business. Most stakeholders agreed that emissions reductions are essential to consider as well as cost. The solid waste industry is a very localized business, and methodology has to be adopted and practiced on a local level that is affordable and cost-effective. In addition, many industry leaders felt that technical feasibility was critical, while members of the government and green/EJ communities believed that the feasibility of a technology should not be a major barrier but rather a chance to innovate. An additional criterion, education and behavior change, was highlighted by many as being critical to the success of waste reduction policies, especially on the local level. Stakeholders agreed that we should change the session subject of solid waste to resource management, since all "waste" can be viewed as additional resources for which disposal should be reconsidered. Stakeholders also recognized that all of the priorities were interconnected, and that policies should be tailored to local contexts.

Table of Stakeholder Priorities: Resource Management

Note: the below rankings represent stakeholder perspectives primarily, and may or may not correspond with findings from rigorous policy analyses. We recommend that the reader also look through the substantial research and policy studies that have already been performed in New Jersey.
*1 indicates the most important priority for the stakeholder.

	High Emissions Reductions	**Certainty of Emissions Reductions**	**Reasonable Cost**	**Equitable Across Industries**	**Equitable Across Communities & Socioeconomic Levels**	**Politically Feasible**	**Technically Feasible**	**Other Criteria**

Government (municipal coordinator)	1 Most important considering the urgency of the climate crisis	(not listed)	2 Important to keep costs down (relates to equity)	(not listed)	4 Essential to enhance equity through keeping costs low	3 Highlighting benefits to the public will allow political leaders to effectively push solutions	(not listed)	(not listed)
Government (municipal coordinator)	(not listed)	1 Most important to know that emissions reductions will happen	2 Cost is essential in solid waste and correlates highly to political feasibility	(not listed)	3 EJ communities have to be considered, especially because they've been historically hurt by solid waste policies	Essentially equivalent to the cost criteria	The technology is here and communities can make relatively quick changes by contracting with industries	(not listed)
Environmental Justice	(not listed)	(not listed)	(not listed)	(not listed)	1 Solid waste should not unfairly affect EJ communities as it has in the past. But practices should be clean everywhere where they are implemented	2 Critical to have political feasibility on the most local level (solid waste is an incredibly local practice) -- people need to know where their waste goes	3 The missing technical link is people. The technology is here, but people don't know how to use it properly (e.g. recycling)	Education has to happen. We need to start reaching people at a young age in schools.

Green Business (consulting)	(not listed)	(not listed)	(not listed) Partly driven by technical feasibility, but cost can also affect political feasibility	(not listed) Not as important because certain industries won't necessarily succeed - that's natural	(not listed)	(not listed) While this is important, people can drive public policy from the grassroots level	(not listed) This is clearly important. It has to be demonstrably sustainable	(not listed) We need to consider all of these criteria at once. All are equally important but won't be effective when implemented in solidarity
Green (education)	1 Emissions reductions are the most important, and politicians need to start making decisions based off of data and scientific findings	2	6	2 Solutions should produce social sustainability and be affordable	5 This is also important	4 Decision-makers need to use science to inform their decisions and policies	3 We have the technology available and need to utilize it now. For instance, anaerobic digestion (AD) is here -- we need to just go for it and stop saying that it's not feasible	(not listed) We need a closed loop economy. We can't have materials being made anymore just to be thrown away
Concerned Business	2 If there isn't a significant emissions reduction,	4 Going along with technical feasibility, we need to make	3 It's not equitable if we mandate technologies	6 Be equitable to all	6 Be equitable to all	5 The public should support any decisions made	1 This is the most important. If it's not	(not listed)

	there's no point	sure that our actions actually result in emissions reductions	that aren't currently affordable. We need to consider cost!				feasible, it can't be done.	
Green Business (organics diversion startup)	3 Most desirable	1 A given	3 Net justifies higher cost	5	5 Someone is always going to lose out.	2 We can't rely on politics to influence the industry - will take too long	1 No speculative investment -- technology has to be feasible	(not listed)
Green Business (environmental consulting firm)	1 most important to my clients	(not listed)	2 make sure it's reasonable	(not listed)	(not listed)	(not listed)	(not listed)	(not listed)
Green Business (environmental consulting firm)	(not listed)	(not listed) Important to track results. If we don't have the data, establish a baseline	2 Cost is always a factor.	(not listed) It's a free market. There are always going to be losers	(not listed)	(not listed) This is important in the long term. Politics change over time	1 Technical feasibility is critical. If it's not possible, it can't be done	(not listed) I agree that we need to consider all of the criteria together
Government (municipal coordinator)	(not listed) Align with state emissions reductions goals	(not listed) Any diversion or reduction is a step in the right direction	(not listed) Municipalities should be run like corporations are -- with cost	(not listed) We should take advantage of existing infrastruct-	(not listed) Statewide policies are hard to implement in NJ. It's such a diverse state. We	(not listed) Municipal leadership is the key to success in order to create	(not listed) Don't let the lack of feasibility deter progress. Instead,	(not listed) Culture and habits are the most important aspects. Every municipality is

			in mind	ure from past practices and retrofit it for new ones	need leadership on the municipality level	concrete changes on the local level	allocate seed funding to promote growth in new technologies	unique. In my town, we tackle organic waste by recycling oyster shells. That's specific to our municipality, and we're creating positive habits.

Policies

Table of Stakeholder Policy Perspectives: Resource Management

Note: the below comments represent stakeholder perspectives primarily, and may or may not correspond with findings from rigorous policy analyses. We recommend that the reader also look through the substantial research and policy studies that have already been performed in New Jersey.

	High Emissions Reductions	Certainty of Emissions Reductions	Cost	Equity Across Communities and Socioeconomic Levels	Political Feasibility	Technical Feasibility
Organic waste ban	Higher reduction from AD than from large-scale composting -- some emphasized that AD should be	There is a high certainty for some emissions reductions, though the	By diverting organics, money can be saved by not paying landfill tipping fees. However, the	Make sure that facilities aren't built in EJ communities.	A bill along these lines is currently in the state legislature and has the potential to pass (according to some stakeholders).	The technology exists for both large-scale composting and AD but is costly in some cases. This shouldn't be seen as a barrier necessarily -- policy should

	prioritized because of greater emissions reductions. Further reductions can occur by promoting the use of the end compost product for services like fertilizers and erosion control	actual magnitude of such reductions may need to be further assessed due to the high water content of organic waste compared with other wastes.	infrastructure doesn't exist yet and costs a lot to construct. Financial incentives should be considered to fuel growth. Some stakeholders emphasized that composting should be prioritized over AD due to its lower cost.		Local political feasibility is difficult because of issues with siting facilities (e.g., odor control issues and costs). Any organic waste program also needs to include a heavy education component	aim to address the cost of the existing technologies. Diverting organics can also extend the life of current landfills
Recycling enhancement (several policies discussed and agreed upon -- see recap)	Enhancing recycling reduces emissions, as fewer virgin materials are used (preserving those materials for future use), although the magnitude varies per each material and is often not clear	Reduction of emissions is certain to occur, but quantifying these reductions is incredibly difficult	Recycling is getting more costly (due to restrictions on contaminated recycled material sales markets, e.g., China), so we need to act somehow (many agreed on this). Standardizing recycling standards across New Jersey to reduce contamination was seen as a potential way to reduce rising costs or allow for	Recycling is often not easily accessed or is difficult to do in certain communities. Education and expansion of recycling should be prioritized to reduce the production of wasted resources, which can reduce the amount of waste incinerated or in landfills. Also, recycling facilities shouldn't harm the	Enhancing recycling can be very difficult politically, due to opposition from industry groups and local municipalities. For instance, local municipalities are often against a bottle bill because it reduces their revenues from their local recycling programs. Industries may be against product stewardship programs because it puts more work/costs	A lot of materials made aren't clearly recyclable. Stakeholders agreed that the burden should be put on the manufacturer to make sure that their materials are recyclable. Another technical barrier that is slowly being addressed is the inability of certain sorting systems to distinguish among materials in the recycling stream. As technology improves, more recyclables will be able to be successfully sorted, and thus cleanliness of the

			sales of recycled materials to additional markets (e.g., China).	surrounding communities	on their end	streams will increase
Pay-as-you-Throw (PAYT)	Clear reduction in waste in most cases, although actual data on waste reduction can be shaky (lack of clear data identified, including on any growth in recycling contamination and waste volume increases in neighboring municipalities after adoption of PAYT)	Lack of reliable data on actual waste reduction led to uncertainty of the amounts of emissions reductions	Generates revenue that can be used to run the trash and recycling collection systems. Could cost some municipalities that own their own landfills -- less revenue with less waste going to the landfill	Can be unaffordable for some low-income residents -- should be kept in mind (discount/ coupon systems could be utilized). Also, can hurt landfill operations and maintenance because of a lack of waste to put in the landfill	Politically not feasible on a statewide level and in many municipalities in New Jersey. Possibly adopting the practices within PAYT but not calling it “PAYT” may lead to greater acceptance	Technology is there for PAYT and has been used widely. New technology like bins with RFID tracking technology can help enhance data on how residents are disposing of waste (but potentially present a privacy invasion to some residents).

Organic Waste

Our discussion centered around how to deal with organic waste in New Jersey in a more sustainable fashion. Currently, organic waste (composed of food waste and most yard waste except leaves) is mostly sent to landfills or incinerators, which may result in significant greenhouse gas emissions. There are more sustainable alternatives, the most popular two being composting (i.e., aerobic digestion, in which organic waste is turned into a usable soil amendment) and anaerobic digestion (AD) (i.e., a breakdown process which occurs inside a closed system excluding air, generating biogas that can be used for energy production as well as a pre-compost product that can eventually be used as a soil amendment).

The policy discussed was an organic waste ban, which would require large generators of food waste (e.g., around 100 tons/week) to divert their food waste to a composting or AD facility if it is within a certain distance from their site. Stakeholders quickly identified that a food waste ban would fail unless the infrastructure is in place to transport the organic waste to facilities. A food waste ban that applies only in areas with existing facilities may actually help encourage the growth of new facilities. Open pile composting facilities have previously failed in New Jersey due to issues such as odor control, so several stakeholders believed that AD should be prioritized. Other composting methods like aerated static pile (ASP) compost facilities also hold potential. Some suggested that composting could follow AD, with AD being used to recover fuel and composting being used to produce a usable soil amendment. However, other stakeholders argued that AD is too costly. The need for incentives for new AD and compost facilities was identified, as well as a more streamlined permitting process, in order to create the infrastructure. AD facilities could also be encouraged by mandating the use of more biogas in renewable energy portfolios in New Jersey by creating a biogas renewable energy credit (REC).

In addition, siting of facilities was identified as a challenge. Co-location of composting/AD facilities at sewage treatment plants or landfills can reduce the detection of odor issues while making collection of waste easier and compact. Larger industries can also place systems on-site to reduce transportation costs and to create small-scale, more sustainable facilities that don't require costly permitting processes (if the facilities are on-site). Placing facilities at existing leaf composting facilities in New Jersey was identified as a possibility but quickly dismissed by some due to the need for significant facility retrofits and potential for sensitivity to odors. Finally, stakeholders agreed that creating a market for the end compost product was essential and that agencies like NJDOT could play a key role by committing to using compost to address issues like soil erosion. This not only creates the need for more compost but also reduces erosion and the need for chemical fertilizers.

Recycling

We discussed possible policies to enhance recycling. Increasing recycling has been shown to potentially have a positive effect on the climate since recycling materials uses less energy than extracting virgin materials. Recycling has become less profitable because foreign markets in countries like China have started to deny US recyclables due to the high contamination in the US recycling stream. The overall recycling rate in New Jersey seems to have stagnated somewhat recently and should be increased.

Four general policies were discussed, starting with a standardization of New Jersey's recycling regulations. New Jersey municipalities all have different regulations on what they accept for recycling. Many stakeholders were in favor of standardizing New Jersey's recycling regulations to create one set of regulations for the entire state. This could decrease contamination since it would be

easier for people to know what they have to recycle, regardless of their location in the state. New Jersey's recycling system was historically set up through home rule (a standard policy in New Jersey), which allows each jurisdiction to set its own local rules; thus, statewide recycling regulations weren't permitted under home rule. Although passing statewide regulations now could be politically difficult given the number of diverse municipalities in the state, with the growing costs of recycling, many municipalities are requesting standardized recycling regulations to reduce contamination and enhance effectiveness, even if it means shifting away from home rule. Thus, this policy could be more feasible today than it has been in the past. New statewide regulations should take into account the ability of materials recovery facilities (MRFs) to sort different recyclables -- one stakeholder identified the ability of MRFs to separate materials as often being a limiting factor. Another thought proposed by some stakeholders is to move away from single-stream recycling to source-separated recycling, requiring the consumer separate materials (e.g., put plastics in one bin while putting paper in another bin and so on). This, however, could lead to more regulatory difficulties and was generally decided to be difficult to implement currently in New Jersey.

A second policy mentioned was shifting the responsibility onto the manufacturer for proper material management. Currently in the US, manufacturers are generally not responsible for making products that can be easily recycled. As a result, for many products, it is unclear whether the material can be recycled or not. Stakeholders agreed that manufacturers should be made responsible to manage their materials, and thus be incentivized to create products that are easily recyclable. This system is called product stewardship, which many other countries such as Germany and Canada practice to a significantly higher degree than the US. A significant barrier to product stewardship that was highlighted was political feasibility. Manufacturers can have powerful lobbyists that advocate against product stewardship because it shifts more costs to them. However, there are examples of industries embracing these type of policies, such as the New Jersey paint industry, who recently set up a third party system to collect fees and recycle paint properly. Stakeholders agreed that New Jersey could adopt wider product stewardship standards to encourage the production and sale of more recyclable materials.

A third policy that was discussed but deemed largely infeasible in New Jersey was a bottle bill, a law that would put a bottle deposit on each beverage container. New Jersey has historically been opposed to this type of bill (although the bill exists in nearby states including New York) since it increases costs on beverage distributors and creates a need for new transportation infrastructure to collect the bottles, though they account for only 5% of the waste stream. Municipalities also are commonly opposed to this type of bill since it would decrease their revenue from their recycling stream by removing a valuable portion of the stream (bottles, cans) and separating it into another recycling stream carrying no revenue for them. While it has been shown that a bottle bill increases recycling

rates and can reduce contamination in the recycling stream, it was largely decided that a bottle bill is not feasible in New Jersey currently, largely due to the aforementioned political opposition.

Another new policy idea discussed was one that would put a fee on materials made using virgin materials, thus incentivizing the use of recycled materials for manufacturing. This would create a larger market for recycled material from the waste stream, especially materials that don't currently have robust markets (e.g., #3-7 plastics). Stakeholders identified a key barrier in the development of a pricing system on virgin materials. For instance, how would prices be determined? Another issue here is political feasibility and the lack of popularity of imposing a new fee. The specifics on such a fee would need to be developed extensively. However, such a policy could be implemented on a much smaller scale -- one stakeholder suggested that businesses on the local level, especially in urban areas, could be rewarded for using recovered/recycled materials in their manufacturing. Another stakeholder suggested policies that incentivize the purchasing of materials manufactured using recycled content by large entities like businesses (for instance, the New Jersey state government has an internal policy that mandates the purchase of recycled content paper).

Finally, the need for more education on how recycling is done was identified as a major priority. This could be coupled with standardized New Jersey recycling regulations (mentioned above). Ultimately, residents of New Jersey need to understand why recycling is important -- by creating a closed loop economy, we can reduce resource use and, along with that, carbon emissions.

Pay-As-You-Throw

We discussed the Pay-As-You-Throw (PAYT) program, which charges residents a fee based on the amount of waste generated (generally a fee per bag). PAYT is used in only 12 towns in New Jersey and has the potential to be more widely adopted. This policy has been proven to greatly reduce waste, and can generate revenue for the state or municipality to run its trash and recycling programs.

Stakeholders discussed successful case studies in New Jersey. For instance, one town distributed standardized trash and recycling bins with tracking chips (i.e., RFID) chips that could be used to determine whether individual residents are recycling/disposing of trash weekly. Although the name "PAYT" can be politically unpopular, adopting some of the techniques of PAYT (and not necessarily the title of "PAYT") can still result in increased revenues and waste reduction. However, it was recognized that PAYT may increase illegal dumping of waste into neighboring municipalities without PAYT. PAYT may also not be equitable across industries because reduced waste disposal does not reduce landfill operation and maintenance costs, which can be an issue for counties who have already invested heavily in such facilities. A state-level PAYT policy would not be feasible; PAYT likely could only be implemented on a case-by-case basis for each municipality, with the potential for expansion into neighboring municipalities. Methods of encouraging PAYT policies for more municipalities not currently using PAYT were not identified.

Reflections

Successful Aspects

Many of our stakeholders agreed that the forum was a chance for civil discussions despite a relatively broad diversity of opinions: the free flow of ideas was essential to learning from one another's perspectives. They also agreed that the pre-calls we had with attendees were important for hitting the ground running on the day of. Stakeholders thought that the focus on NJ state-level policy was refreshing and important. Finally, many of our stakeholders appreciated that this was a low-waste event, and that encouraged reusable coffee mugs and bottles.

As volunteers and organizers, we found that having multiple dry runs with advisors was crucial for execution on the day-of. Although the first few practices were messy, we think that the moderators did an excellent job guiding discussions and adhering to the structure of the forum.

Areas For Improvement

Stakeholders agreed that registration was disorganized, and that we should have had more volunteers stationed inside and outside of the building to direct stakeholders to the opening room. Almost all stakeholders mentioned that the event should have started earlier and ended later, and that it would have been better on a weekday. From a logistical standpoint, we should have gone even lower waste than we did: eliminating primer printouts, printing on recycled paper, and avoiding single-use plastics like coffee creamer cups.

Many of our stakeholders wanted more interaction with other focus groups ("cross-pollination"). Our audience members also mentioned that they would have enjoyed more opportunity to participate in the discussion, and stakeholders wanted to engage in discussion with them. We still could have used more diversity than we had: more conservatives, community leaders, industry players, different races, affected communities, and lower income stakeholders. On a related note, one stakeholder points out that we only had a single female moderator. Finally, some stakeholders mentioned that we could have done a better job of focusing on specific policies rather than discussing topics in general terms.