Submitted via E-Mail

June 12, 2024

Attn: Sherri L. Golden
State of New Jersey, Board of Public Utilities
44 South Clinton Ave., 1st Floor
PO Box 350
Trenton, NJ 08625-0350

RE: Docket No. QO24020126 – 2024 Energy Master Plan

Secretary Golden:

The Natural Resources Defense Council ("NRDC") is pleased to submit these comments on New Jersey's 2024 Energy Master Plan.

Respectfully Submitted,

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A. INTRODUCTION

On May 23, 2019, Governor Murphy signed Executive Order No. 28 ("E.O. 28"), which directed the New Jersey Board of Public Utilities ("BPU") and other state agencies to develop the 2019 Energy Master Plan ("EMP"), intended to chart a policy pathway for New Jersey that will achieve 100% carbon neutral energy by 2050. On January 27, 2020, the state issued its final 2019 *New Jersey Energy Master Plan: Pathway to 2050* ("2019 EMP"), following a series of stakeholder sessions and additional opportunities for comment, outlining the key goals of the EMP and seven overarching strategies to meet New Jersey's clean energy goals.[1] Those seven strategies are:

(1) Reduce energy consumption and emissions from the transportation sector;

(2) Accelerate deployment of renewable energy and distributed energy resources;

(3) Maximize energy efficiency and conversation and reduce peak demand;

(4) Reduce energy consumption and emissions from the building sector;

(5) Decarbonize and modernize New Jersey's energy system;

(6) Support community energy planning with an emphasis on encouraging and supporting participation by low- and moderate-income and environmental justice communities; and,

(7) Expand the clean energy innovation economy.[2]

On May 13, 2024, the BPU issued a Notice and Request for Information ("RFI"), seeking public comment on key discussion questions to inform the update to the 2019 EMP, to be issued in accordance with New Jersey statutory requirements. According to the RFI, "[t]he 2024 EMP will serve as a whole-of-government progress report on the goals and strategies in the 2019 EMP, outline the changing landscape of State and federal support for climate action, and determine the basis for the development of actionable next steps to reduce GHG emissions and maximize clean energy uptake economy-wide."

The Natural Resources Defense Council ("NRDC") applauds the State's efforts thus far, including those of the BPU and other state agencies, to advance New Jersey's climate and clean energy vision, and appreciates the opportunity to provide comments to help shape the development of the 2024 EMP. New Jersey's leadership on these issues is pivotal, not only to ensure that the State achieves its goals, but also to ensure that the benefits that accompany a transition to clean energy accrue to its residents and businesses, while also serving as an important model for other jurisdictions across the country. NRDC respectfully provides the following recommendations across the Building, Power, Transportation, and Industrial sectors to help ensure that New Jersey continues to forge a path forward. We look forward to working with the State to ensure the successful implementation of the 2024 EMP, which can truly serve as a

[1] NJ Board of Public Utilities, NEW JERSEY ENERGY MASTER PLAN: POLICY VISON TO 2050 (Jan 27, 2020) ("2019 EMP").
[2] 2019 EMP.

blueprint for New Jersey's leadership in the clean energy economy that achieves the goals of the Clean Energy Act of 2018 ("CEA") and Global Warming Response Act ("GWRA") while supporting the needs of the LMI sector and overburdened communities.

B. BUILDING SECTOR

Since the publication of the 2019 EMP, the Governor's Office of Climate Action and the Green Economy, the BPU, and stakeholders have done tremendous work to rapidly expand energy efficiency and conservation programs. The results of the past five years have been incredibly successful in decreasing customers' energy bills and usage, achieving clean energy targets, and increasing the number of clean energy jobs in the state. Achieving that success took tremendous effort from all parties involved, including numerous studies, stakeholder meetings, straw proposals, and plan filings.

On the strength of those efforts, energy policy has moved beyond just standard energy efficiency programs in the last five years to a broader suite of programs that promote building decarbonization and other innovative approaches. The 2024 EMP must not only prioritize energy savings, but commit to maximizing building electrification and ensuring a managed transition from the fossil gas system, especially for low-income customers and residents in overburdened communities, to achieve the goals of the GWRA and Executive Orders 316 and 317. In designing the 2024 EMP, New Jersey should:

- draw on best practices from other states to address gaps in accessibility to efficiency and programs;
- emphasize a whole-home approach for electrification;
- pursue all cost-effective energy efficiency;
- promote all-electric new construction; and,
- develop a framework for a managed, strategic and affordable transition off fossil fuels in buildings.

Achieving New Jersey's climate targets cannot be accomplished without the rapid decarbonization of New Jersey's building sector. Building sector emissions are the second largest source of climate pollution in New Jersey, accounting for more than a quarter of the state's greenhouse gas ("GHG") emissions. Moreover, the indoor combustion of fossil fuels is responsible for significant amounts of indoor air pollution that harm building occupants. Emissions from the building sector are so significant that both the 2019 EMP and the Department of Environmental Protection's ("DEP") 80x50 Report call for the rapid decarbonization of the building sector through the widespread deployment of highly efficient cold-climate heat pumps and other electrification technologies. Specifically, Strategy 4 of the 2019 EMP recommends "the development of a transition plan to a fully electrified building sector and the incentivizing of the transition to electrified heat pumps, hot water heaters, and other appliances."[3] Moreover, the DEP found that "any delay in the building electrification

[3] NJ BPU, 2019 New Jersey Energy Master Plan Pathway to 2050.

transition will lead to stranded assets, higher costs, and limited flexibility to further reduce emissions."[4]

1. New Jersey should draw on best practices from other states to address gaps in accessibility to EE and electrification programs, especially for LMI and Overburdened Communities

To provide equitable program access, NRDC recommends the 2024 EMP consider adopting common statewide program design criteria to standardize some portion of program design for certain rate classes. There are multiple variables that affect whether program offerings result in equitable participating opportunities and outcomes. These include the stopping and starting of efficiency programs, lack of adequate incentive levels and marketing, or missing entire customer segments during the program design phase. It is program design and implementation, in addition to program administration, that determines whether customers have equitable program access.

Moreover, the CEA explicitly directs utilities, not the New Jersey Clean Energy Program ("NJCEP"), to "identify market barriers" that may prevent customer participation in energy efficiency programs. Following this statutorily required identification, NRDC recommends those customers that are known to regularly face barriers to EE investments be addressed at the outset of the analysis and design process. Customer classes known historically to be "hard to reach" include the LMI Sector, the Small C&I Sector, the Multifamily Sector, and certain types of large industrial customers. For these types of customers, it may be appropriate to set minimum program standards that are uniform across the state and reflect best practices from across the country. Other states with ambitious climate policies have been grappling with the best way to achieve climate goals in buildings and there are a variety of lessons to draw from experience in other jurisdictions.

Prioritize energy efficiency and improving the building envelope before electrification retrofits. It is important to improve the energy performance of the building first. This will reduce energy use in buildings and also ensure that electrified equipment can be appropriately sized, which will reduce up-front investment costs. This is particularly true in colder climates. New York State has been emphasizing this approach in its ongoing New Efficiency: New York ("NENY") regulatory proceeding.

Understand that efficiency program design needs to reflect more complex retrofits and longer timeframes. Building envelope measures can take multiple years for capital planning and roll-out, particularly for larger buildings. Programs need to be updated to allow for these longer timeframes. Soft costs associated with building shell measures can be reduced by having clear program rules, timely reimbursement of contractors, quality assurance using pictures or video instead of in-person visits, and the creation of a pool of qualified contractors that can be updated on an ongoing basis.

[4] NJ DEP, New Jersey's Global Warming Response Act 80x50 Report, Evaluating Our Progress and Identifying Pathways to Reduce Emissions 80% by 2050 (Oct. 15, 2020) at 50.

Improve customer education and access. Consumers still require extensive education about what decarbonization entails, what weatherization is, and how all the pieces of the process fit together. It's important that information campaigns are well-funded, coordinated with implementers and contractors across the state, easy to understand, and drive consumers to a website with comprehensive information, including contractors and all available incentives, programs, and financing tools. Efficiency Maine provides a good example with their website that includes a searchable list of qualified contractors by zip code.[5] California's BAYREN, a regional entity in the Bay Area, organizes information by building segment (i.e., single family homes, multifamily buildings, small commercial), providing each segment with an overview of the retrofit process specific to their building type, links for qualified contractors, an overview of all available incentives and financing, and online access to a technical advisor that can answer questions.[6]

Expand workforce development programs. Existing plumbers, pipefitters, electricians and HVAC professionals all need to be trained on building electrification, while contractors need to understand whole building efficiency solutions. Adequately addressing workforce issues entails developing a clear understanding of the current status and needs of workforce programs and creating an efficient pipeline that takes candidates through hands-on training, career service planning, and certification, and then into the workforce. MassCEC published a comprehensive assessment in July 2023 that is helping guide the State's efforts to expand its clean energy workforce.[7]

Phase out gas equipment incentives for efficiency programs. To align with New Jersey's climate goals and promote long-term affordability for customers, gas equipment incentives should be phased out of energy efficiency offerings. The Energy Master Plan Ratepayer Impact Study determined that by 2030, a customer that was electrified would face lower total energy costs than a customer that remained on the fossil fuel system.[8] For example, New York will not allow any incentives for natural gas-fired equipment as of January 1st, 2026.[9] The New York Public Service Commission ("NY PSC") classified gas equipment incentives as a "Non-Strategic Measure/Program" that would either increase fossil fuel usage, be counterproductive to the advancement of efficiency and/or electrification programs, promote increased usage rather than conservation, have a life of less than 6 years, or would likely be adopted in the absence of incentives or financing.[10]

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[5] See https://www.efficiencymaine.com/.
[6] See https://www.bayren.org/get-started.
[7] See https://www.masscec.com/sites/default/files/documents/Powering%20the%20Future_A%20Massachusetts%20Clean%20Energy%20Workforce%20Needs%20Assessment_Final.pdf.
[8] Brattle, New Jersey Energy Master Plan Ratepayer Impact Study (Aug. 2022).
[9] State of New York Public Service Commission, ORDER DIRECTING ENERGY EFFICIENCY AND BUILDING ELECTRIFICATION PROPOSALS, Case 18-M-0084, pg. 35-36. https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={E0F27489-0000-CF14-9DBB-3BE183AC4793}.
[10] *Id.* at 34-35.

2. Electrification programs should address barriers as part of a comprehensive program design, especially for LMI customers and Overburdened Communities

The conclusions of the 2019 EMP, that rapid decarbonization of the building sector is necessary, was further bolstered by the DEP when it released its "GWRA 80x50 Report."[11] The Report stated unequivocally that "in order to achieve the 80x50 goal, emissions from the residential and commercial building sectors must be reduced by 89% to 2.7 MMT CO2e by 2050."[12] It further determined that "90% of buildings must be converted to 100% clean energy systems to meet the 2050 emission goals."[13]

The impacts of achieving the targets laid out in the 2019 EMP and GWRA 80x50 report were studied in more depth in two important reports adopted by the BPU. First, the Board released its "Final Report: Analysis of Natural Gas Capacity to Serve New Jersey Firm Customers."[14] That report found that demand-side non-pipeline alternatives such as "energy efficiency improvements, demand response programs, targeted electrification, and innovative rate designs. . ." are a means of "reliably meeting natural gas demand that offset, defer, or avoid the need for new pipeline capacity."[15] Next, the Board released its "Energy Master Plan Ratepayer Impact Study."[16] That study determined that by 2030, a customer that was electrified would face lower total energy costs than a customer that remained on the fossil fuel system.[17]

Building sector space heating, water heating, appliances, and industrial use are a significant source of climate pollution, and account for nearly 30% of New Jersey's GHG emissions. Therefore, the 2024 EMP should include building electrification as a key pillar of its GHG reduction strategy. NRDC recommends the 2024 EMP approach building decarbonization/electrification with an emphasis on combining heat pumps for space and/or water heating with deep energy efficiency in both new construction and building retrofits.

Electrification and energy efficiency programs should also address pre-weatherization and electrification needs, especially for LMI customers and those in Overburdened Communities. Many homes and buildings may need basic health and safety upgrades such as mold abatement and structural repairs before installing any program measures. Panels in older buildings may need to be replaced or upgraded to ensure that the building has an adequate and safe power supply. Other electrical infrastructure may also require upgrading for larger buildings. New Jersey can draw on best practices from other states in addressing these barriers. California has included funding for panels through their TECH program statewide and several regional entities are also providing incentives for panels if other electrification retrofits are made. Massachusetts also funds other barrier removal, such as dealing with dangerous knob and tube wiring or

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[11] NJ DEP, New Jersey's Global Warming Response Act 80x50 Report, Evaluating Our Progress and Identifying Pathways to Reduce Emissions 80% by 2050 (Oct. 15, 2020).
[12] *Id.*
[13] *Id.*
[14] London Economics International, Final Report: Analysis of Natural Gas Capacity to Serve New Jersey Firm Customers (Nov. 5, 2021).
[15] *Id.*
[16] Brattle, New Jersey Energy Master Plan Ratepayer Impact Study (Aug. 2022).
[17] *Id.*

vermiculite that may impede other retrofits. Mass Save offers $7,000 for moderate income households to address these issues and covers the full cost for low-income households.

NRDC supports a primary focus on residential, LMI, and delivered fuel customers, but electrification programs for all customer classes and fossil-fuel types, including regulated natural gas, are necessary to meet the State's goals. While the EMP is right to focus on delivered fuels as a "low-hanging fruit," customers who receive regulated natural gas are of equal or greater importance. Natural gas is far-and-away the biggest contributor to GHG emissions from buildings, with the DEP's 80x50 Report finding that "natural gas used to heat space and water is responsible for 85% of the 24.6 MMT CO2e from [the building sector]; fuel oil and propane use make up the balance (3.7 MMT CO2e)."[18] The same report found that NJ households are the "highest consumers of natural gas used in residential heating in the country," and that tackling natural gas use in the building sector will be "more complex and impactful" than addressing propane.[19]

Beyond the relative share of natural gas usage in New Jersey, the 2024 EMP should prioritize electrifying natural gas end uses because, as stated best by the DEP:

> Any delay in the building electrification transition will lead to stranded assets, higher costs, and limited flexibility to further reduce emissions. This is because the infrastructure necessary to support consumption of fossil fuels in buildings, including consumer items such as boilers and appliances, as well as the underlying utility infrastructure, has decades of anticipated lifespan. Further, because the building sector's GHG emissions are so significant, efforts to restrict building electrification will increase pressure in other sectors of New Jersey's economy to reduce emissions in ways that are less feasible and more expensive.[20]

The 2024 EMP should therefore affirm that electrification must target all fuel types, including natural gas, even while developing marketing plans to electrify delivered fuels for customers as an initial priority.

3. <u>The 2024 EMP should recommend pursuing all cost-effective energy efficiency</u>

New Jersey can set annual energy efficiency targets greater than the 2% electricity target floor and 0.75% gas target floor in the CEA. NRDC recommends that New Jersey commit itself to achieving all cost-effective energy efficiency available, determined using a cost-effectiveness test that values the environmental and public health attributes of energy efficiency investments. Under such a regulatory scheme, New Jersey's annual energy savings can exceed the floors established in the CEA, which permits the BPU to set more ambitious targets than those in the CEA so long as the programs are cost-effective. The 2019 Energy Efficiency Market Potential Study by Optimal Energy recommended net annual statewide energy savings targets of 2.15%

[18] NJ DEP, New Jersey's Global Warming Response Act 80x50 Report, Evaluating Our Progress and Identifying Pathways to Reduce Emissions 80% by 2050 (Oct. 15, 2020), at 40.
[19] *Id.* at 41,49.
[20] *Id.* at 51.

for electric utilities and 1.10% for gas utilities by 2024.[21] Given the maximum economic potential exceeds these targets, NRDC believes the increased targets are achievable and should be explicitly included in the 2024 EMP to better reflect the actual energy efficiency potential in New Jersey.

NRDC further believes that the ramp-up rates outlined in the Market Potential Study are achievable. The 2020-24 savings ramp-up rate set forth in the Study is appropriately ambitious and achievable with the proper regulatory framework in place to ensure that utilities can deliver these savings. As explained in the "Aiming Higher" report by Synapse Energy Economics, the fundamental driver of high savings in leading energy efficiency states like Massachusetts and Rhode Island has been aggressive regulatory policies.[22]

4. The New Construction Program must prioritize building electrification and avoid "locking-in" building sector emissions from gas appliances

The sum of NJ's energy policy and the best available science is clear—New Jersey cannot meet its climate targets if it continues to provide incentives for gas appliances in its state-run energy efficiency programs. The NJDEP's 80x50 report states that "ultimately the best opportunity to electrify is when a building is being built."[23] Therefore, the New Construction Program should focus on all-electric new construction and phase out existing incentives for gas appliances that pollute the climate and harm the health of building occupants. In developing the current New Construction Program, NRDC and other commenters recommend the removal of gas incentives from the Bundled Pathway, and the addition of more substantial incentives for all-electric appliances.

NRDC had similar concerns with the High-Performance Pathway, which awards incentives to projects that achieve certification from a national standard or meets a minimum performance threshold. Not all building performance certifications have the same level of stringency; at a minimum, we recommend an incentive structure that further encourages decarbonization requirements such as zero energy homes and Passive House by removing incentives for equipment that combusts fossil fuels. One way to better incentivize fully electrified buildings is to set program prerequisites that buildings must meet before being eligible for higher tier incentives. This could include minimum requirements for building envelope performance and electric HVAC equipment, as well as solar and electric vehicle (EV) readiness.

On the residential side, the Mass Save program provides an "All-Electric Home Incentive" that provides up to $40,000 in financial assistance as well as technical assistance for builders, developers, and homeowners in new-home construction to reduce energy consumption when compared to homes built to code minimums.[24] A key design element of this program is that each

[21] Optimal Energy, Draft Energy Efficiency Potential in New Jersey, at 6 (May 9, 2019).
[22] Synapse Energy Economics, Aiming Higher: Realizing the Full Potential of Cost Effective Energy in New York (Apr. 22 2016) available at: https://www.synapse-energy.com/sites/default/files/Aiming-Higher-NY-CES-Whitepaper-15- 056.pdf.
[23] GWRA 80x50 Report at 51.
[24] See, https://www.masssave.com/en/saving/residential-rebates/all-electric-home.

incentive level requires a heat pump for space heating, electric cooking, and EV readiness. Alongside the incentive, Mass Save partnered with Passive House Massachusetts to launch the "Passive House and All-Electric Homes Training" program to support workforce development and market transformation in the energy efficiency and building construction industries. New Jersey should use holistic programs such as these as a model for its own programs.[25]

5. The BPU should develop a framework through the Future of the Natural Gas Utility proceeding that positions New Jersey for a managed, strategic and affordable transition off fossil fuels in buildings

To meet New Jersey's climate goals, there will need to be a major reduction of fossil gas use, especially in the building and power sectors, and a transition of the vast majority of gas utility customers to electricity for heating and hot water. Importantly, the strategic transition of the gas system needs to start as soon as possible to manage the long-term cost, affordability, and equity impacts because the more gas infrastructure we build or replace today, the more expensive the gas transition will be.

Gas utilities are continuing to rapidly invest billions to fortify and expand their fossil gas systems—potentially squandering our best opportunities for strategic, cost-saving downsizing. According to Synapse Energy Economics, statewide, there are over 3,100 miles of leak-prone mains and 85,000 leak-prone service lines, which New Jersey's gas utilities plan to continue replacing for years (*see attached,* "The High Cost of Gas Utilities' Leak-Prone Pipe Replacement Programs"). According to Synapse, this new gas infrastructure will cost customers $90 billion, with more than half of this cost hitting bills after 2050 when the replaced pipe will likely be a stranded asset.

To achieve New Jersey's ambitious climate targets by 2030 and 2050, the BPU must act decisively to implement Executive Order 317, by establishing clear standards for gas utility long-term planning consistent with climate goals, and by carefully inspecting existing gas policies to halt continued expansion of the natural gas pipeline system. To that end, the BPU must continue to move forward with its "Future of the Natural Gas Utility" proceeding, required pursuant to Executive Order 317 and initiated by the BPU in March 2023. NRDC recommends that the BPU adopt the recommendations included in the joint comments of the Environmental Defense Fund, NRDC, Sierra Club and New Jersey Conservation Foundation filed on September 6, 2023, in accordance with that proceeding.

C. POWER SECTOR

It is critical that New Jersey's policies regarding clean power generation provide the backbone to enable economywide decarbonization of transportation, buildings, and industry, ensuring the state remains on track to hit its greenhouse gas reduction targets. The State should ensure the timely development and integration of clean energy resources by doing the following:

[25] https://www.masssave.com/saving/residential-rebates/passive-house-training.

1. Take necessary steps to ensure the goal of achieving 100% clean electricity by 2035 is attained

NRDC strongly supports the administration's goal of 100% clean electricity by 2035, as adopted by Executive Order 315, and urges the BPU and other State entities to take the necessary steps to ensure that goal is achieved, including through the enactment of a 100% by 2035 Clean Energy Standard ("CES") in statute. Achieving this goal is one of the most important steps that New Jersey can take to combat the climate crisis and decrease air pollution that harms the well-being of New Jersey's residents. It will not only reduce emissions from the power sector, but will also provide clean electricity to decarbonize our buildings and vehicles.

Ensuring that this target is met will also increase economic development and grow the number of in-state clean energy jobs. According to a 2023 report by Environmental Entrepreneurs or E2, New Jersey is the fourth-fastest growing state for clean energy jobs. The growth of the clean energy sector is outpacing the rest of the New Jersey economy by 36%, and three out of five new energy jobs in New Jersey are in the clean energy sector. This did not happen by accident; it's the result of smart policy, like the CEA, which established our current Renewable Portfolio Standard of 50% renewable energy by 2030.

Multiple credible analyses have demonstrated that New Jersey can achieve a 100% clean portfolio by 2035. Adopting policies and programs to ensure this goal is met, including through the enactment of a CES in statute, would help ensure the state doesn't backslide in the future, particularly with increased load growth driven by data centers, increased industrial loads, and scaled up building and transportation electrification.

2. Stay the course on offshore wind

While the industry has recently faced some headwinds due to inflation and supply chain challenges, New Jersey can remain a steadfast leader on this front. The BPU should continue to aggressively pursue any and all steps necessary to ensure these projects come to fruition, thereby delivering on Governor Murphy's bold commitment to develop 7,500 MW by 2035.

3. Continue New Jersey's strong PJM leadership

New Jersey has recently been playing a pivotal role in collaborating with like-minded PJM states to push for the more comprehensive and holistic long-term transmission planning necessary to prepare for a decarbonized grid. We urge the state to continue that leadership, on issues from offshore wind transmission to the PJM Long-Term Regional Transmission Planning ("LTRTP") process, and now its implementation of FERC's Order 1920 to further bolster regional transmission planning.

4. Push for a bold RGGI 3.0

In October 2008, New Jersey was at the forefront (along with New York) to launch the nation's first ever multi-state cap-and-invest program to cut carbon from the power sector, with the adoption of the Regional Greenhouse Gas Initiative ("RGGI"). Today, the wildly successful program is undergoing a Program Review to explore what the next iteration of RGGI will look like. We strongly urge New Jersey to be a champion voice in those interstate deliberations, and adopt an aggressive but achievable post-2030 cap trajectory that continues to cut pollution while generating billions of dollars to reinvest in communities.

D. TRANSPORTATION SECTOR

Reducing pollution from the transportation sector is crucial for New Jersey, as it accounts for the largest share of the state's total GHG emissions and is the largest source of local air pollution, as well.[26] The State has taken many steps forward to lead in this area, including the adoption of Advanced Clean Cars II (ACCII), which requires that all new light-duty vehicles sold in New Jersey be zero-emission by 2035. To ensure that New Jersey continues to forge a path forward in reducing emissions from this sector, NRDC suggests additional actions to address identified barriers and support the expansion of electric vehicle (EV) charging infrastructure, ensuring alignment with state and federal regulations, including ACCII.

Electric vehicles can not only lower household transportation fuel expenditures, but also put downward pressure on electric rates to the benefit of all utility customers. EVs have increased utility revenues more than they have increased utility costs, which has put downward pressure on electric rates for both EV owners and non-EV owners. EV charging can spread the costs of maintaining the grid over more kilowatt-hours, reducing the price per kilowatt-hour to the benefit of all customers. This phenomenon has already been observed in the real world. Synapse Energy Economics reports that from 2011 to 2021, customers across the US contributed $3 billion in net revenue, and, in New Jersey alone, EV customers have contributed $85.3 million in excess of the cost of serving EV load. [27]

Collaboration among electric utilities, regulators, charging providers, and stakeholders is crucial to accelerate transportation electrification while benefiting all utility customers. By investing in necessary electric grid infrastructure, New Jersey can achieve its reliability, affordability, and clean energy goals, balancing energy costs for residents while reducing climate and air pollution. To accelerate transportation electrification, NRDC recommends that the 2024 EMP include direction for the State to pursue: (1) make-ready infrastructure rules to reduce the cost of installing charging infrastructure; (2) affordable, equitable, and sustainable rates designed for

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[26] *See* https://dep.nj.gov/stopthesoot/.

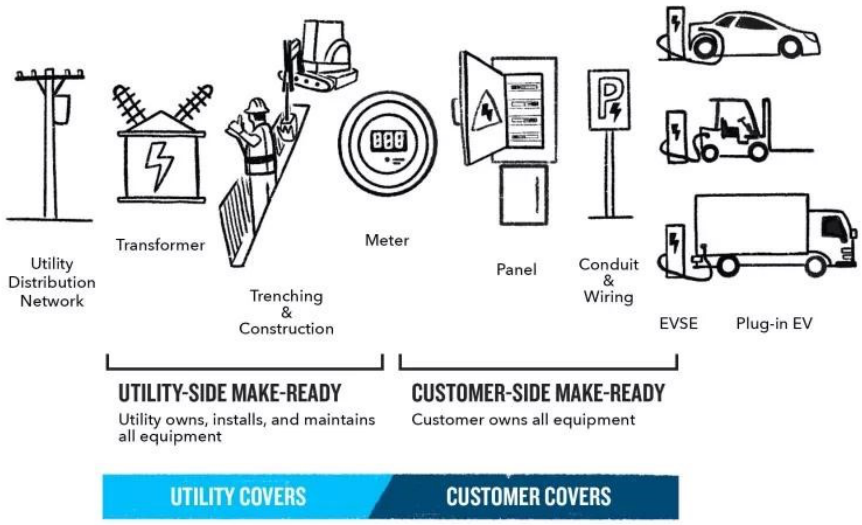
[27] Synapse Energy Economics, *Electric Vehicles Are Driving Rates Down for All Customers* (January 2024) (online at https://www.synapse-energy.com/sites/default/files/Electric%20Vehicles%20Are%20Driving%20Rates%20Down%20for%20All%20Customer%20Update%20jan%202024.pdf).

residential, commercial, and public EV charging; and (3) the establishment of target energization timelines for utilities to make grid investments and meet customer needs.

1. <u>The BPU should adopt make-ready infrastructure rules</u>

Make-ready infrastructure rules support the build out of electrical infrastructure all the way to where vehicles will be charged. These rules reduce project capital costs by 25 percent, taking hundreds of thousands of dollars out of the cost of installing charging stations at a typical site. They also provide consistent baseline support upon which charging companies, state programs, and targeted utility programs can build out the charging network needed to meet air quality, climate, and equity goals.

Regulatory rules can provide long-term and more predictable support for infrastructure necessary to facilitate transportation electrification. For example, in some states, utilities are required to provide the make ready infrastructure on the utility side of the meter. Make ready tariffs can take hundreds of thousands of dollars out of the cost of installing charging stations at a typical site and provide a consistent baseline level of support upon which charging companies, state programs, and targeted utility programs can build out the charging network needed to meet air quality, climate, and equity goals.



Source: NRDC

The BPU should implement a make ready tariff to require the provision of EV grid infrastructure to be part of the normal course of utility business. For example, in California, the state Public Utilities Code specifies that the provision of "make-ready" infrastructure on the utility side of the meter should be "core utility business, treated the same as other distribution infrastructure authorized on an ongoing basis in the electrical corporation's general rate case."[28] This rule is

[28] California Public Utilities Code § 740.19.

reducing the costs of installing charging stations for cars, trucks, and buses by about 25 percent, fundamentally improving the economics of electrifying the transportation sector.[29]

2. The BPU should adopt rates designed for EV charging

EVs have the potential to provide substantial benefits to society by reducing emissions while lowering both transportation fuel costs and electricity rates. The BPU should adopt rates that facilitate the adoption of EVs, as effective EV rate design is critical for ensuring that these benefits are realized. Such rate design would allow electric utilities to take advantage of their unique position to ensure that EVs charge in a manner that minimizes costs to the grid, while providing customers with fuel savings, which helps drive further EV adoption.

Unfortunately, traditional commercial and industrial electricity rates are a barrier to EV adoption by erasing the EV fuel cost savings relative to gasoline or diesel. Traditional rates were generally designed for large buildings, rather than for public fast charging for light-duty passenger vehicles or depot charging for trucks and buses. As a result, those rates do not reflect the unique costs or flexibility of EV charging and can end up charging commercial EV customers much more than the true cost of service.

3. The BPU should take key steps to getting the necessary infrastructure built and energized

The inability to address delays and backlogs in energizing charging stations could undermine compliance with state and federal vehicle standards. Utilities should be required to make long-term investments to get ahead of EV charging needs. The BPU should set requirements for utilities to make the grid investments necessary to meet federal, state, regional, and local climate, air quality, and equity regulations, laws, and goals.

The BPU should establish average and maximum target energization timelines and hold utilities accountable to meet those timelines. In addition, utilities should be required to hire and strengthen the career pipeline necessary to build the grid we need to support the electrification of the transportation and building sectors. There should also be a process allowing for the timely recovery of associated costs. Without necessary grid planning and investments, electric trucks that could be displacing diesel engines that contribute to climate and dangerous air pollution are sitting idle. The BPU should ensure that utilities are grid planning to timely accommodate energization needs and get ahead of demands.

Electric Power Research Institute (EPRI) analysis at the circuit/feeder level shows what portions of the electric grid are likely to need upgrades. EPRI's publicly available data and interactive mapping show the approximate amount of energy needed at a local level to electrify transportation over time for light-, medium-, and heavy-duty EVs.[30] This is an example of the type of data that should inform utilities' proactive efforts to meet expected electricity demands.

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[29] California Public Utilities Commission, *Resolution E-5167* (October 7, 2021) (online at https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M413/K061/413061495.PDF).
[30] *See* https://eroadmap.epri.com/.

The ability to proactively plan and make grid upgrades to meet expected demands is also necessary to meet national EV infrastructure plans. On March 12, 2024, the Biden Administration announced its *National Zero-Emission Freight Corridor Strategy* to guide the national deployment of zero-emission medium- and heavy-duty freight transportation vehicle charging and fueling infrastructure.[31] This strategy is intended to guide infrastructure deployment to meet growing market demands and support utility and regulatory planning and action at local, state, and regional levels. The first phase of this national strategy identifies priority freight hubs centered around areas with high freight volume, key ports, and disproportionate environmental and air quality burdens. Notably, the strategy's initial phase includes the I-95 corridor and the Port Authority of New York and New Jersey (PANYNJ).

E. INDUSTRIAL SECTOR

Hydrogen

A potential decarbonization tool for the hardest to clean sectors, like heavy industry, is hydrogen, but its production must be squeaky clean. Below are three recommendations for the 2024 EMP to address hydrogen's role in the clean energy transition.

1. Ensure clean production

The state should transition away from producing hydrogen from fossil fuels, the current dominant means of production. The cleanest and most preferred way to produce hydrogen is by electrolysis, however this is an energy intensive process, and it is only clean when the energy used is clean. The State should prioritize support for electrolytic hydrogen that runs on renewable energy that complies with the 3 pillars of: incrementality, hourly matching and deliverability, and, not siphoning off existing zero carbon resources that New Jersey is relying on to meet its electricity decarbonization goals. Of particular concern is the diversion of existing nuclear power to projects that are part of the Mid-Atlantic Clean Hydrogen Hub (MACH2). Federal hydrogen hub dollars and clean hydrogen tax credits supporting such projects would cause increases in climate emissions and air pollution from the state's fossil fuel power plants, as well as spiking power prices and an increased cost of achieving the State's power sector goals.

2. Target the use of clean hydrogen only in end uses that cannot be readily electrified and right-size hydrogen production to its appropriate role in the clean energy economy

NRDC only supports the utilization of hydrogen as part of a broader, aggressive economywide decarbonization portfolio—and within any such portfolio, we strongly oppose wasting what will be a very finite and expensive resource in the gas distribution system. Plans to use hydrogen in gas distribution networks for heating buildings are not only extremely inefficient, but are costly

[31] United States Joint Office of Energy and Transportation, *National Zero-Emission Freight Corridor Strategy* (March 11, 2024) (online at https://driveelectric.gov/files/zef-corridor-strategy.pdf).

and risk delaying the true solution of electrification for building emissions. The combustion of hydrogen also creates significant local air pollution in the form of nitrogen oxides, which pose a risk to human health. Instead, for the near- and medium term, hydrogen should be reserved only for the hardest to decarbonize sectors, namely industrial facilities (such as cement plants and steelmaking) for which there are currently no viable alternatives to significantly cut GHG emissions.

3. Meaningfully engage communities

There should be meaningful community engagement throughout the planning process for any hydrogen projects, ensuring there are real benefits to communities and no increases in local pollution.

F. CROSS-SECTOR

Embodied Carbon

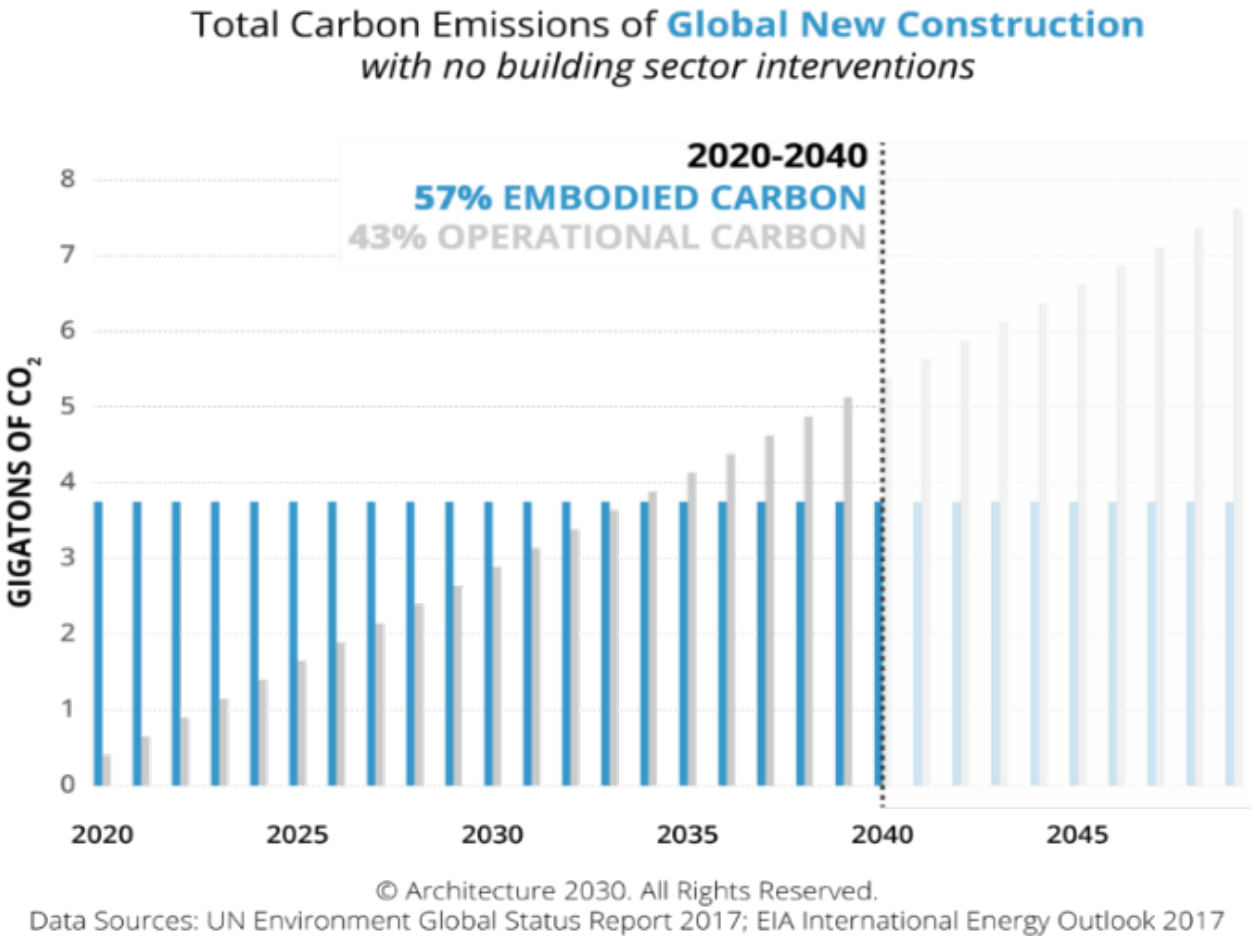
Reducing embodied carbon from building construction and transportation activities should be a key area of focus for New Jersey going forward. The concept does not appear in the 2019 EMP, which is why we are articulating key elements to include in the next iteration, below.

Embodied carbon, the emissions associated with the production of materials used in the built environment, contributes an estimated 11% of all global energy-related carbon emissions and stands to increase due to rapid growth of new construction.

1. Reduce embodied carbon in building construction

For the built environment, embodied carbon emissions occur in addition to those associated with operating the building (heating, cooling, lighting, etc.). These are referred to as *operational carbon* and are the purview of traditional energy efficiency programs. While these are essential for reducing emissions from fossil fuels used to heat, cool, and operate a building, they do little to address the emissions from the creation of the building, the materials and products in it, and their disposal at end of life.

Architecture 2030 estimates that between now and 2040, over half of the emissions from global new construction will be from embodied carbon.



We recommend that New Jersey call out reductions in embodied carbon emissions as a key strategy for the building sector in its 2024 EMP.

The most impactful way to reduce embodied carbon is to reuse existing buildings where practical, rather than demolishing and constructing anew. When new construction or renovation occurs, smart and integrated building design processes can significantly reduce embodied carbon at little-to-no added cost of construction. Moreover, in-state manufacturing can grow to produce low-carbon products. However, there is currently a broad lack of awareness in the industry of embodied carbon impacts from products in use in buildings, including among designers, contractors, and manufacturers.

To lower the embodied carbon of products and materials used in the buildings sector, we recommend New Jersey establish procurement requirements and design specifications for State-funded projects, building on the frameworks of other states, including those of New York under Executive Order 22 of 2021, and the US General Services Administration. This should include issuing operational directives and guidance for common construction materials to be used in projects using the state procurement process, including Global Warming Potential ("GWP") thresholds and reporting on quantities used.

To lower emissions associated with concrete use, New Jersey can build on the elements of the New Jersey Low Embodied Carbon Concrete Leadership Act ("NJ LECCLA") of 2023 directing the DEP, among other guidance, to set definitional GWP thresholds to encourage State agency procurement of low-carbon concrete via tax credits for suppliers. DEP currently has a rulemaking underway to develop guidelines for the implementation of this Act. We recommend that New Jersey approach the issue broadly and consider adopting definitions and approaches that can be both: 1) used across states agencies, and 2) expanded for other high embodied carbon materials, such as steel, glass, and asphalt. The NJ LECCLA provides for tax credits amounting to up to 8% of the contract for suppliers of concrete mixes for NJ State procurements. We encourage the DEP to consider an approach that encourages those who do more to get more. The State should also take actions to create broad carbon literacy regarding the impact of construction materials as well as support education, building reuse, building de-construction and material reuse, RD&D, and in-state manufacturing of alternative products. These efforts also will increase industry attention to carbon-sequestering products, such as hempcrete and sustainable wood products like mass timber.

To do so, we recommend New Jersey undertake the following activities, modeled on those in New York's Climate Action Council Final Scoping Plan of 2022.

- **Lead by example in New Jersey State projects:** In addition to implementing NJ LECCLA, the State should continue to drive embodied carbon reductions through a holistic approach for design and procurement in State-funded new construction projects, using concrete and other high carbon materials. A holistic approach would go beyond the Environmental Product Declarations ("EPD") and tax-credit incentives under NJ LECCLA, addressing whole building/whole project lifecycle analyses ("LCAs") and adopting a list of high embodied carbon construction materials, similar to New York State and the federal GSA/EPA.[32]
- **Make embodied carbon transparent:** In design specifications, the State should require EPDs for structural building materials where available and require the use of available modeling software and design tools for calculation of the project's embodied carbon budget. The State should adopt methodologies for calculation of carbon reduction, including use of a standardized database of values to support analysis for calculation of carbon emissions for use in EPDs. The methodologies, database, and analyses should leverage the efforts of the federal Buy Clean Initiative and Inflation Reduction Act directives for federal agencies to establish consistency and allow for a like for like comparison across different building materials.
- **Adopt and follow lower-carbon specifications:** The State should 1) adopt, and 2) require that State-funded projects follow lower-carbon specifications for the most carbon intensive construction materials and products (such as concrete, foam insulations, glass, and window units). We recommend New Jersey look to the PANYNJ, New York State, and the GSA for examples of low carbon specifications, in setting those for New Jersey.

[32] The EPA's interim determination identifies high carbon intensity materials and applies to building and transportation projects. https://www.epa.gov/system/files/documents/2023-01/2022.12.22%20Interim%20Determination%20on%20Low%20Carbon%20Materials%20under%20IRA%2060503%20and%2060506_508.pdf.

- **Set reduction targets for projects:** The State should set a target embodied carbon reduction level for projects that is below the established mean embodied carbon budget, as illustrated over the previous years.
- **Incorporate embodied carbon budgets into permitting:** The State should require an embodied carbon budget to be submitted as part of the permit process for all commercial and institutional new construction (and additions and alterations as applicable), immediately for State entities and no later than 2026 for local government entities. The State should provide funding for training and resources for designers and for State and local permitting entities to check carbon budgets for completeness at first and then for accuracy as the market improves in its abilities.
- **Encourage building reuse:** The State should identify and pursue financial incentives, changes to building codes, and other strategies to encourage building reuse, beginning in urban centers that are returning vacant buildings to use. Maintaining the existing building facade and architectural style can be an additional benefit to the embodied carbon reduction. This should include State support for local communities to establish and expand material reuse and exchange centers, as well as training for local crafts and trades people, to encourage the reuse, retrofitting, and repair of existing buildings and building systems and the deconstruction and reuse of building materials.
- **Support RD&D:** The State should support RD&D, demonstration projects, and technology transfer and commercialization for enhanced low-embodied carbon construction, including preference for reuse of existing buildings, as well as showcase low-embodied carbon designs and undertake industry outreach.
- **Expand in-state manufacturing for products**: The State should provide economic incentives and technical assistance to expand in-state manufacturing and assembly for products that are lower in embodied carbon or made of carbon sequestering materials (also known as biogenic or agriculture-based materials).
- **Incorporate embodied carbon specifications into incentive programs:** In the design of energy efficiency programs, lower-carbon specifications for the most carbon intensive products should be incorporated (such as foam insulation in homes).
- **Leverage federal efforts and policy development:** The Inflation Reduction Act directs the EPA to develop a program to support the development, enhanced standardization and transparency, and reporting criteria for EPDs for construction materials and products, through offering grants and technical assistance to manufacturers. New Jersey already participates in the federal Buy Clean state government partnership[33], an effort to expand markets for clean manufacturing and low-carbon materials across the U.S. To assist with standardization and methodological consistency, New Jersey should leverage tools being developed by the federal government, such as the EPD, product category rules ("PCR"), and labeling tools being created by the EPA, and the LCA being developed by the U.S. Department of Energy's Building Technology Office.

[33] *See* https://www.sustainability.gov/buyclean.

2. Reduce embodied carbon in New Jersey transit activities, NJDOT

The PANYNJ has been a leader in quantifying embodied carbon reductions for its projects, and in 2023 adopted GWP limits for all concrete mixes. Building on the excellent work of the PANYNJ in this area, New Jersey should adopt a procurement policy dedicated to securing low-carbon cement and concrete for all State agencies. As mentioned above, we recommend New Jersey create policies similar to those of New York State Executive Order 22 (2021), which includes reductions for all State agencies for embodied carbon its projects, including transportation and infrastructure contracts. NJDOT can play a key role among agencies in transforming the market by procuring low embodied carbon materials for its projects and adopting key interventions, outlined below.

Environmental Product Declarations

New Jersey should leverage EPD collection to inform preferred procurement of low-carbon concrete and cement. These tools can be deployed by transportation agencies today to reduce the environmental impact of infrastructure development.

The use of EPDs to inform climate-friendlier procurement decisions has been tried and tested across the state's building industry. Green building standards, such as the LEED rating system, have included EPD reporting for building materials for 10 years. Recently adopted state legislation and building code regulations, including California's CALGreen embodied carbon amendments, require EPD collection as a step in creating a framework to reduce the average carbon intensity of materials used in new construction. Compliance with this code requirement will further make these reporting tools standard industry practice.

NJDOT has received Federal Highway Association (FHWA) Climate Challenge grant funds[34] to develop EPDs by materials suppliers. EPA's EPD Assistance Program grants will directly support producers in developing EPDs, reducing or eliminating the cost burden for concrete and cement producers in New Jersey to report their emissions impact. The time is ripe for NJDOT to make EPDs mandatory for State-funded projects and give procurement preference to lower-carbon materials in construction.

To aid in development of EPD submission specifications, we suggest NJDOT look to the EPD protocol recommendations that RMI has put forward:

- Create a protocol to collect, process, and verify that EPDs have been submitted;
- Conduct market outreach to local concrete producers and contractors to socialize the EPD concept and assess how many producers are currently supplying them;
- Collect global warming potential (GWP) data from surveyed EPDs and establish regionally appropriate GWP benchmarks in alignment with Low Carbon Transportation Materials (LCTM) program guidelines;
- Deploy procurement processes incorporating GWP limits to qualify materials in accordance with LCTM program guidelines; and,

[34] New Jersey DOT has received $204,00 of FHWA funds for two projects: Project 1: Utilization of EPDs and LCA to Promote Sustainability in New Jersey's Pavements, and Project 2: Improve Sustainability of Asphalt Pavement Overlay in New Jersey.https://www.fhwa.dot.gov/infrastructure/climatechallenge/projects/index.cfm.

- Deliver performance bonuses or incentives to contractors that provide mixes that outperform GWP limits.

In addition, it is crucial to ensure that EPDs are collected as soon as possible for the most carbon-intensive materials, particularly concrete and asphalt. Collection of EPDs will enable New Jersey DOT to have data on the emissions of the mixes used on its projects, an essential first step for establishing emission benchmarks.

NJDOT has the potential to secure additional FHWA funding for low-carbon materials procurement, through the Low-Carbon Transportation Materials Grants Program, applications for which were due June 10th. We understand that the NJDOT had planned to submit an application for this non-competitive federal solicitation, which provides an opportunity for states to create their own transportation Buy Clean program. Federal funds can be used to develop a new program, as well as fund the incremental cost of new materials.

RMI has developed a toolkit which identifies four priority areas for a well-rounded low-carbon concrete program for a state DOT, as outlined below. We encourage the NJDOT to include these elements in the program funded by the FHWA LCTM program, should funds be awarded, as well as in other aspects of its day-to-day work:

1. **EPDs**: The objective of this initiative is to build capacity for public transportation agencies, their contractors, and material suppliers to incorporate EPDs into their material procurement process. Although this strategy is broader than concrete, focused attention to study and expand EPD availability at the state level is critical for concrete to account for regional variations in the ready-mix concrete supply chain.
2. **Specification adjustments**: The objective of the near-term specification adjustments initiative is to reduce the environmental footprint of concrete by altering material specifications to align with industry best practices.
3. **Performance engineered mixture ("PEM") demonstration projects:** The objective of this initiative is to establish and demonstrate performance-engineered mixes for low-carbon concrete, focusing on durability, strength, schedule, and environmental impact. Once DOTs have set up protocols for the use of EPDs allowing them to procure low-carbon materials, PEM design can be utilized to achieve a new level of reductions by unlocking innovation by engineers and contractors.
4. **Innovative, emerging low-carbon materials**: The objective of this initiative is to explore and validate the effectiveness of innovative materials in reducing carbon emissions. Leveraging the FHWA program funding is contingent on the availability of EPDs for each product; we believe that many of the technologies listed here will be available on the market with EPDs within the eligible time window for the LCTM program.

Another useful resource is the National Asphalt and Paving Association's ("NAPA") recently published EPD benchmark report with regional values for setting GWP limits. The report provides a standard value for A1 emissions, and guidance for selecting A2 and A3 emissions factors to aid states and local governments in establishing appropriate emissions limits for

asphalt product mixes. This report could be a valuable tool to inform emissions limits for asphalt mixes. NAPA has also sponsored the creation of their own EPD tool – the Emerald Eco-Label software – which is available for NAPA members to create EPDs for their asphalt mixes.

Advance Market Commitments (AMCs)

Another way that NJDOT can use its procurement power to advance climate action is through advance market commitments ("AMCs") -- binding contracts between governments and corporations that work as demand guarantees for developing technologies -- which can accelerate nascent markets for truly transformative decarbonization technologies. AMCs, which have been successfully used to bring vaccines to market, create a push for deep decarbonization technology by inducing the production of ultra-low emissions materials that are not yet commercially available, which will be necessary to reach net-zero cement and concrete.

If used for deep decarbonization technology, AMCs could bring to market game-changing innovations such as: use of alternative raw materials such as calcium silicate; alternative cement production processes such as low-temperature electrochemical lime production, etc.

Performance specifications for low-carbon concrete

NJDOT should work to modernize concrete material specifications to include performance-based standards, which specify the type of concrete to be used in a project based on performance characteristics, rather than rigid concrete mix design specifications that commonly overprescribe its most carbon-intensive ingredient, cement. Currently, overly prescriptive technical specifications establish the constituent components of a concrete mix, limiting innovation in low-carbon concrete ready mix design. Unlike Oregon, Colorado, Texas, and Minnesota, NJDOT's specs include minimum cement requirements.[35] These pose a barrier to emissions reductions because they prescribe how much cement must be used in concrete mixes regardless of whether that cement is needed to meet functional performance goals. RMI has developed this resource documenting near-term specification adjustments that will unlock significant environmental benefits.

In contrast, a performance-based standard would remove prescriptive criteria and, instead, establish functional performance criteria. The performance specification would include robust testing protocols to evaluate a set of key functional performance parameters, allowing ready mix designers to produce high-performance mixes with a wider array of innovative technologies and strategies. Performance-based standards can also include carbon performance criteria, enabling evaluation of environmental impact alongside functional performance criteria and allowing procurement officers to make climate-informed decisions. We recommend that NJDOT remove the requirement for minimum cement content in concrete mixes, and transition to performance-based standards.

Testing and Demonstration

State Departments of Transportation are responsible for approving new concrete mixes and constituent materials. An accelerated acceptance timeline of new, durable low-carbon materials, including low-carbon cement, is an immediate action NJDOT can take to promote the use of lower carbon materials. Building out a robust testing, validation, and demonstration program will

[35] https://rmi.org/wp-content/uploads/dlm_uploads/2024/04/roads_to_decarbonization_state_DOT_pavements.pdf.

build confidence in the market and drive large-scale adoption of low-carbon, cement, concrete, and other materials.

Testing and demonstration initiatives should focus on building market confidence for emerging low-carbon concrete products in the following innovation categories:

- Emerging blended cements (e.g., Limestone calcined clay cement);
- Emerging supplementary cementitious materials (e.g., natural pozzolans, manufactured SCMs); and
- Novel, near-zero or zero carbon cements.

G. CONCLUSION

NRDC appreciates this opportunity to provide comments in this matter. New Jersey is at a critical inflection point in its clean energy future, for which a strong 2024 EMP will play a key role, not only in tackling climate change, but also in improving air quality and public health outcomes, increasing economic development and creating good, family-sustaining jobs, and maintaining affordability. We look forward to continuing to work with the State to ensure the effective implementation of its climate and clean energy vision and the achievement of these goals.