



Via electronic submission

August 14, 2015

Hon. Kathleen Burgess
Secretary to the Commission
New York State Public Service Commission
Agency Building 3
Albany, New York 12223-1350

Re: Case 14-M-0094, Proceeding on the Motion of the Commission to Consider a Clean Energy Fund

Dear Secretary Burgess,

On behalf of Northeast Energy Efficiency Partnerships (NEEP)¹, please accept our comments regarding the New York State Energy Research and Development Authority's (NYSERDA) Clean Energy Fund Information Supplement ("the Supplement"), submitted on June 25, 2015. NEEP is a regional non-profit that works to accelerate energy efficiency in homes, buildings and industry across the Northeast and Mid-Atlantic states. Our Policy Outreach and Analysis group serves as an information resource for policymakers, advocates and program administrators to support the adoption and implementation of public policies and programs that advance energy efficiency.

1. Introductory Comments

We congratulate NYSERDA and Staff for their tireless efforts to improve upon processes and practices which are already some of the best in the nation. We are encouraged by many aspects of the Supplement, and pleased to see deliberate consideration of stakeholder comments on the earlier draft. Any guidance offered below is primarily for the benefit of our colleagues at NYSERDA as they consider update and finalization of the Supplement and subsequent planning documents, but also for the benefit of the Commission as they consider approval of the Supplement. Our greatest hope is that New York State's ambitious Reforming the Energy Vision (REV) proceeding and related dockets will build on the strength and past successes of all program administrators and delivery models, delivering on the goals of the Cuomo Administration and fulfilling the objectives of the recently published state energy plan.

2. Goals

We applaud the goals of the Clean Energy Fund Information Supplement, and its potential for supporting the 2015 New York State Energy Plan's target of 600 trillion BTU increase in statewide energy efficiency by 2030.² As

¹ These comments are offered by NEEP staff and do not necessarily represent the view of the NEEP Board of Directors, sponsors or partners.

² 2015 New York State Energy Plan: The Energy to Lead. Page 112. Available at: <http://energyplan.ny.gov/-/media/nysenergyplan/2015-state-energy-plan.pdf>



the plan explains, energy efficiency is “[T]he most powerful tool at New York’s disposal to achieve the State’s aggressive GHG reduction goals.”³ We appreciate NYSERDA’s planned contribution to these goals, which the Supplement states will be tracked using metrics such as: CO₂e reduced; reductions in customer energy bills; MW, MWh, and MMBtu savings; and public/private investment in clean energy solutions.⁴ We encourage inclusion of specific project level indicators beyond these high level metrics in any further revision of the Supplement, in addition to the annual investment plans and any publications related to the newly proposed “test, measure, and adjust” evaluation mechanism.

3. Portfolios and Proposed Initiatives

We support the Supplement’s inclusion of new language around “bridge” incentives, and encourage NYSERDA’s use of all available tools including direct upstream energy efficiency incentive programs to achieve the Empire State’s aggressive clean energy goals. We suggest that NYSERDA explicitly outline a mechanism for coordinating with utility resource acquisition efforts, using “test, measure and adjust” to determine the most effective programs, pilots and strategies in the push for market development. A regularly convening working group or council whose actions are transparent and open to stakeholder input can help to fulfill this need.⁵

We suggest the Commission and NYSERDA continue to support transitional programs until empirical evidence of market development and associated energy savings from new initiatives can be verified. Additionally, NYSERDA could provide forecasted budgetary allocations for transitioning programs. Such continuing support and budgetary details would provide a level of certainty that markets require for functional long-term planning.

4. Market Development Initiatives and Previously Authorized Programs

Borrowing from the knowledge set within our organization, as well as in-state stakeholders’ understanding of energy efficiency program implementation, we offer some observations and recommendations on specific elements of the Market Development Portfolio below. Observations and recommendations are organized according to the Commission’s suggested outline, using the sub-headings from within the Supplement itself.

4.1 Commercial

The Supplement outlines a number of commercial initiatives on which NEEP offers comment, including:

- (1) Remote Auditing and Related Information Assets
- (2) Building Energy Labeling/Asset Scoring
- (3) Previously Authorized Commercial Programs

4.1.1 Remote Auditing and Related Information Assets

The Supplement notes that “NYSERDA will partner with utilities, technical experts, energy service providers, and industry trade and research associations as well as governmental organizations to develop and then expand the

³ *id.* at Page 77.

⁴ NYSERDA Clean Energy Fund Information Supplement. Page 42.

⁵ Surrounding states offer many examples of successful stakeholder energy efficiency boards, including Conn., Mass., R.I. and Del.



reach of remote auditing.”⁶ We support this initiative to combine Software as a Service (SaaS) tools with readily available data to quickly and cost-effectively screen buildings for potential efficiency upgrades. Potential energy savings in existing commercial building are often left untapped due in part to the time — and funding — intensive nature of currently available building assessment methods.

To assist NYSERDA in their efforts surrounding remote auditing, we direct them to similar efforts within the region, and suggest that they review finding from Phase 1 of the [Massachusetts Building Asset Rating Pilot](#).⁷ The pilot sought to minimize on-site assessment time for audits, with an initial analysis concluding that remote audit data can lower audit costs, but that site visits hold a valid purpose for assessing the validity of remote audit data. A forthcoming report on Phase Two of the pilot is due for publication in September 2015.

Additionally, NEEP’s Regional EM&V Forum (‘the Forum’) is currently conducting research to better understand experience to date with SaaS tools that support remote auditing, and in some cases also automated measurement and verification (M&V), with a focus on opportunities, challenges and regulatory considerations for use of such tools to help streamline and enhance current practice. For more information on this, we suggest review of our recent webinar on the [Changing EM&V Paradigm](#).⁸

4.1.2 Performance Contracting Model Expansion

The supplement states that “NYSERDA will partner with financial and technical experts, energy service providers, and industry trade and research associations as well as governmental organizations to develop new models and opportunities for performance contracting, performing potential studies in 2016-18 to ensure replication.”⁹ We applaud these efforts and believe that the Commercial HVAC market in particular stands poised to integrate exciting new business models as emerging HVAC technologies offer the potential to capture a variety of new value streams. The challenge will be to expose those value streams and package them in such a way that drive new business relationships.

NEEP is poised to publish the forthcoming Northeast/Mid-Atlantic Advanced Roof-Top Unit (ARTU) Transformation Strategy Report by the end of August.¹⁰ As part of the Market Strategies Report, the following strategies were identified:

- Distinguishing, developing and making new program models available;
- Supporting and engaging various stakeholders to adopt these solutions; and
- Tracking and communicating progress across the region’s implementation.

⁶ Supra, at Note 4, Page 51-2.

⁷ Northeast Energy Efficiency Partnerships, Building Asset Rating Pilot Website. Available at: <http://www.neep.org/initiatives/energy-efficient-buildings/building-asset-rating>

⁸ NEEP. The Changing EM&V Paradigm. Available at: http://www.neep.org/sites/default/files/resources/NEEP%20DNVGL%20EMV%2007292015%20Final_4.pdf

⁹ NYSERDA Clean Energy Fund Information Supplement. Page 55.

¹⁰ NEEP. Northeast/Mid-Atlantic Advanced Roof-Top Unit (ARTU) Transformation Strategy Report. Available at: <http://www.neep.org/initiatives/high-efficiency-products/advanced-rooftop-units-artu>



A key strategy recommendation of the report will be to further explore new business/program models that leverage new market actors and new ownership models that eventually lead to the installation of higher efficiency HVAC equipment. We estimate that approximately 51,969 RTU units are sold annually in New England and the Mid-Atlantic region. Given the state breakdown, 2014 annual shipments in New York are estimated at 16,175. While there are a variety of barriers to choosing an ARTU unit, including financial, business, and cultural, the potential annual savings from combined early replacement and new sales is and estimated to be between 107MW and 78 GWh annually.¹¹

Our pending report suggests that the strategies presented, while effective individually, are most successfully implemented at the regional level. Such a campaign should leverage the collective experiences of a regional working group to facilitate knowledge transfers, identify best practices, and scale up through combined efforts. We plan to continue to advance the opportunities of ARTUs and should be considered a resource available to NYSERDA as they work in this space.

4.1.2. Commercial Real Estate and Tenant Efficiency Initiatives: Building Labeling/Asset Scoring Initiative

The Supplement notes that “The Building Labeling/Asset Scoring initiative will promote the development and promotion of a labeling system and/or an asset scoring tool for buildings that identifies those that are high performing.”¹² We support this initiative to help make the energy usage of the state’s commercial buildings more recognizable, easier to understand, and comparable to other similar buildings. Along with providing a useful “miles per gallon” type feature for use in real estate transactions, asset rating allow property owners and building managers to identify the most cost-effective upgrade opportunities in a building or across a portfolio of properties.

To assist NYSERDA in their efforts surrounding building Labeling/Asset Scoring, we recommend that NYSERDA consider use of the [U.S. DOE Commercial Asset Score tool](#),¹³ and the protocols developed through Phase 2 of the above-mentioned Massachusetts Building Asset Rating Pilot when shaping the labeling/scoring program.

4.1.3 Previously Authorized Commercial Programs

The Supplement states that “The Existing Facilities, Flex-Tech and Green Jobs Green NY (GJGNY) small commercial audit programs will be combined into a single offering in the Commercial Sector.”¹⁴ When combined, these initiatives represent a significant portion of the New York State’s energy savings portfolio. In order to provide the level of certainty necessary for clean energy businesses to plan long-term strategies, we suggest that the Supplement explicitly outline funding levels for the proposed offering.

4.2 Industrial

The Supplement outlines two of industrial initiatives on which NEEP offers comment, including:

¹¹ *id.*

¹² NYSERDA Clean Energy Fund Information Supplement. Page 57.

¹³ US Department of Energy Building Energy Asset Scoring Tool. Available at: <http://energy.gov/eere/buildings/tool-basics>

¹⁴ NYSERDA Clean Energy Fund Information Supplement. Page 59.



- (1) Strengthening Clean Energy Partners through Technical Assistance and Standardized Tools
- (2) Evolution of Previously Authorized Industrial Programs

4.2.2 Strengthening Clean Energy Partners through Technical Assistance and Standardized Tools

The Supplement states that “NYSERDA proposes conducting a Strategic Energy Management³⁹ (SEM) cohort pilot in 2016 to accelerate the adoption of a systematic, lasting, business process that integrates clean energy into a company’s core business process,” and that “NYSERDA will also host Best Practice Forums and Emerging Technology Forums and create industry specific best-practice toolkits, available in an online clearing house.”¹⁵

The Industrial sector uses more energy than the residential and commercial sectors combined. It will be essential for NYSEDRA to continue to engage activities that drive efficiency in this sector to achieve long term energy use reductions. Strategic Energy Management (SEM) is an emerging tool to provide industrial customers the tools they need to effectively manage their energy and ultimately reduce their energy use. The implementation of SEM by efficiency programs across the country have begun to come back with impressive results.

NEEP will be facilitating a regional initiative in 2016 that will aim to leverage new opportunities to advance the adoption of energy efficiency in the Industrial sector, and one of those opportunities is the development of SEM. There continue to be different “flavors” of SEM — level SEM, ISO 50001, DOE’s Superior Energy Performance, to name a few — and different approaches to promoting its adoption with customers such as the cohort approach, or embedded energy managers. NEEP invites NYSEDA to engage in our [regional initiative](#) in alignment with NYSEDA’s goals of accelerating SEM adoption.¹⁶ NEEP is currently working closely with the DOE’s Advanced Manufacturing Office to assist in information exchange between the resources they are developing and market including customers and programs.

4.2.3 Evolution of Previously Authorized Industrial Programs

The Supplement states that “Industrial and Process Efficiency Program (IPE) will be available under the CEF to reduce market disruptions, and to help ensure continued investment in energy efficiency and process efficiency projects... [and that] NYSEDA, in partnership with utilities, will work to address gaps in the market subsequent to the institution of self-direct programs provided by the utilities.”¹⁷

The IPE program represents a significant amount of New York’s annual energy savings. We applaud NYSEDA’s decision to continue the IPE under the CEF, noting that in many cases around the region, large commercial and industrial users choose not to self-direct because they lack the technical expertise necessary to ensure cost-effective savings. Continuing the IPE in coordination with the self-direct program will help ensure that all large

¹⁵ *id.* at Page 63.

¹⁶ See Generally, NEEP’s Industrial Energy Efficiency Initiative. Available at: <http://www.neep.org/initiatives/high-efficiency-products/industrial-energy-efficiency>

¹⁷ NYSEDA Clean Energy Fund Information Supplement. Page 65.



commercial and industrial customers receive some type of offering regardless of resources available for measurement and verification activities.

4.3 Multifamily

We support NYSERDA's continued focus on the hard-to-reach multifamily market. The Supplement describes a number of multifamily initiatives on which we offers comment, including:

- (1) Multifamily Building Energy Performance Labeling
- (2) Zoning and Permitting Tools

4.3.1 Multifamily Building Energy Performance Labeling

The Supplement states that "NYSERDA proposes to create and support the administration of a building energy performance label to measure and ultimately publicize the energy performance of multifamily buildings" and that "the development process will commence in 2015 by convening a national working group of individuals and organizations involved in building rating systems and labels"¹⁸

We support NYSERDA's efforts to evaluate existing building rating systems in order to determine which systems would provide the most clarity into the multi-family housing market in the state. A state-wide rating system would create more market certainty and increase investments in energy efficiency through the proper valuation of building energy usage characteristics.

Further, we applaud NYSERDA's commitment to working on a national scale to share knowledge and identify best practices, and suggest NYSERDA coordinate their effort with a number of regional and national multifamily professional groups including NEWHAB, Efficiency for All, and the Energy Foundation.¹⁹ We are active participants in these networks and believe they can provide great value in terms of knowledge sharing. For a perspective on multi-family efforts within the region, we suggest review of NEEP's [Increasing Energy Efficiency in Small Multifamily Properties in the Northeast](#).²⁰ The paper contains extensive baseline data on small multi-family properties in New York and throughout the Northeast, a discussion of relevant barriers to improved efficiency, a discussion public policies that might overcome market barriers, and several case studies.

4.3.2 Zoning and Permitting Tools

The Supplement states that "NYSERDA proposes working with municipalities to adopt best-practices toolkits to reduce the costs associated with permitting, licensing, and inspections."²¹

One opportunity for reducing market barriers associated with permitting, licensing, and inspections is electronic plan revue submission and online permitting. Rhode Island, Washington, D.C., and New Jersey offer electronic

¹⁸ *id.* at Page 71.

¹⁹ The Network for Water, Energy, and Health in Affordable Buildings (NEWHAB). Available at: <http://energyefficiencyforall.org/newhab>

²⁰ NEEP. Increasing Energy Efficiency in Small Multi-Family Properties in the Northeast. Available at: <http://www.neep.org/increasing-energy-efficiency-small-multifamily-properties-northeast>

²¹ NYSERDA CEF Supplement, Page 72.



plan review submission, online permitting, or both electronic plan review submission and online permitting. We suggest NYSERDA explore implementation of such a system in New York State as a means of surmounting barriers to building energy improvements.

4.4 Residential

The Supplement describes two residential initiatives on which we offers comment, including:

- (1) Incorporating the Value of Energy Efficiency into Homes
- (2) Evolution of Previously Authorized Residential Programs

4.4.1 Incorporating the Value of Energy Efficiency into Homes

The Supplement states that in 2015 NYSERDA plans to begin “testing the effectiveness of a home efficiency rating score, piloting a home performance certificate that is issued upon completion of a home performance project in a home, incorporating this information in Multiple Listing Service (MLS) real estate listings, and working with the real estate sector to help both buyers and sellers understand the value and opportunities associated with energy efficiency information at the time of sale.”²²

We support this initiative to help drive efficiency improvements and incorporate the value of energy efficiency into residential real estate transactions. In addition to consumer empowerment and long term market transformation, the proposed initiative would yield more immediate and tangible energy savings through increased energy retrofit activity, as demonstrated by similar programs in states like Connecticut and Massachusetts.

We also support the state’s proposed continuation of its current efforts to investigate the effectiveness of [U.S. DOE’s Home Energy Score tool](#) and the feasibility of an auditing/labeling requirement at time of listing, but *recommend that statewide implementation of such a program be included as a part of this plan*. Requiring residential asset rating will hasten the effective use of efficiency as a consistent decision criterion by prospective home buyers, sellers, owners, and renters.

We offer our assistance in the shaping of this labeling/scoring program to leverage and align with other efforts outside the state, since several other states in the region are currently undertaking home energy labeling efforts. We applaud NYSERDA’s recognition of the need to engage the real estate sector as a part of this initiative, including incorporation through the Multiple Listing Service (MLS). NEEP can assist with the development and of resources targeted to realtors, appraisers, lenders, and the general public as well as general outreach to these audiences. Our existing resources include a [checklist](#) and [recorded webinar](#) for realtors providing guidance on incorporating energy efficiency into their sales process.

4.4.2 Evolution of Previously Authorized Residential Programs

The Supplement states that “NYSERDA will measure and validate [market] changes, gradually reducing and eliminating incentives over time. In doing so, caution will be given so as to not disrupt progress that is being

²² *id.* at Page 77.



made, to build on successful program attributes, and in recognition that incentives may remain necessary, particularly as transition vehicles.”

We applaud NYSERDA for their willingness to utilize all necessary tools to help animate markets, including incentives. We support the *gradual* rechanneling of NYSERDA’s efforts from one-time rebates and incentives to initiatives that empower the market and embrace the investment multipliers associated with a more informed and better equipped home energy efficiency marketplace. Such an approach could be combined with empirical evidence of savings resulting from new programs under the “test, measure, and adjust” mechanism to determine when markets have actually been transformed and incentives should be drawn down.

4.5 Low-to-Moderate Income

We support NYSERDA’s efforts to reach the low-to-moderate income sector, as these customers are often the most in need of energy efficiency services but also the least likely to invest in upgrades. The Supplement describes a number of multifamily initiatives on which NEEP offers comment, including:

- (1) Green Physical Needs Assessment
- (2) Demand Aggregation Pilot and Demonstration Projects

4.5.1 Green Physical Needs Assessment

The Supplement states that “NYSERDA will explore the development of a Green PNA Tool, which will standardize energy assessments in buildings when they undergo evaluations for other capital improvements and upgrades.”²³

We applaud NYSERDA for their embrace of financing best practices such as Green Physical Needs Assessments aimed at the multi-family market. As mentioned within the Supplement, the U.S. Department of Housing and Urban Development developed a Green Physical Needs Assessment tool several years ago. A NEEP staff member worked on early version of the green assessment tool and is available to assist NYSERDA in their development of such a tool. Furthermore, we hope to disseminate NYSERDA’s efforts around financing best practices through our forthcoming resources on financing strategies for public buildings, a state-specific financing matrix, and a white paper on PACE financing.

4.4.2 Demand Aggregation Pilot and Demonstration Projects

The Supplement states that “NYSERDA proposes to explore models of demand aggregation such as that used in the Netherlands’ “Transition Zero” initiative that harness market forces to motivate the construction and energy industry to develop deep energy solutions that meet criteria set by building owners and management companies.”²⁴ We support NYSERDA’s embrace of demand aggregation, as such aggregation can be a powerful force for overcoming traditional market barriers such as lack of understanding or access to financing.

²³ *id.* at Page 85.

²⁴ *id.* at Page 86.



In addition to the “Transition Zero” Initiative to the ambitious Energiesprong program, we recommend that NYSERDA also investigate domestic examples of demand aggregation, such as the [Bonded Builders Warranty Group](#).²⁵

4.6 New Construction

The Supplement describes a number of new construction initiatives on which we offers comment, including:

- (1) Zero Net Energy Roadmap
- (2) Information, Tools, and Technical Assistance for the Design and Construction Communities

4.6.1 Zero Net Energy Roadmap

The Supplement states “NYSERDA proposes developing a New York State-specific roadmap that identifies a sequence of key actions to increase the level of market adoption and scalable, sustained engagement in deep energy savings projects.”²⁶ We support NYSERDA’s development of a NY specific roadmap engineered to fit the needs of all relevant stakeholders in the state.

We offer as a resource our similarly intentioned regional [Roadmap to Zero Net Energy Public Buildings](#), which was developed by regional stakeholders and provides actionable information on market barriers, current initiatives, and important next steps to drive the market towards zero net energy buildings.²⁷ Later this year we plan to release a regional Zero Net Energy progress report which will further highlight the opportunity and pathway forward for states and jurisdictions.

As exemplified by Governor Cuomo’s BuildSmart NY initiative, initial focus should remain upon public buildings, which possess the unique ability to lead by example within the design community. Such buildings play an important role in the pathway to Zero Net Energy. Schools in particular are often the centers of a community, seeing broad foot traffic and offering lessons on efficient design and construction to all who enter. One forward thinking school design criteria that provides a pathway to zero net energy is the [Northeast Collaborative for High Performance Schools \(NE-CHPS\)](#) criteria.²⁸

While New York currently has its own version of CHPS which was created in 2007, it does not include a clear pathway for schools to achieve zero net energy. Last year, working with regional stakeholders – including NYSERDA and related participants such as the healthy schools network — NEEP updated NE-CHPS to [Version 3.0](#), which illustrates a clear path toward zero net energy. This path requires a target Energy Use Intensity (EUI) that can be paired with renewable energy, with both being measured on the zero Energy Performance Index (zEPI)

²⁵ Bond Builders Warranty Group. Available at: <http://bondedbuilders.com/>

²⁶ NYSERDA Clean Energy Fund Information Supplement. Page 91.

²⁷ NEEP. Roadmap to Zero Net Energy Public Buildings: Recommended Steps for the Northeast and Mid-Atlantic. Available at: http://www.neep.org/sites/default/files/resources/Report_zne-public-buildings-neep-2012.pdf

²⁸ NEEP. Northeast Collaborative for High Performance School. Available at: <http://www.neep.org/northeast-collaborative-high-performance-schools-criteria-ne-chps-version-30>



scale.²⁹ The criteria is a valuable model for school districts seeking to reduce operating costs while paving the way to zero net energy school buildings.

The state of Massachusetts once had their own state-specific version of CHPS, but recently embraced the regional NE-CHPS protocol for its pathway to zero net energy. Recognizing that upstream market actors such as architects and engineers often operate across state lines, we encourage New York to consider adoption of NE-CHPS and offer our assistance to NYSERDA surrounding any such adoption. Mandating NE-CHPS in New York would ensure that all new schools are built to the highest standard one that prioritizes New York's unique climate, energy code and educational priorities. We are happy to assist with this effort.

4.6.2 Information, Tools, and Technical Assistance for the Design and Construction Communities

The Supplement states "NYSERDA proposes to engage the architectural, engineering, construction and other supporting communities to develop and strengthen their capacity to create and deliver deep energy savings and zero net energy performance buildings."³⁰

We applaud NYSERDA's proposal to continue supporting the architectural, engineering, and construction communities. The design stage represents a "make or break" stage for compliance with codes and standards and achievement of higher performance outcomes in commercial buildings, so focusing technical guidance on "upstream" actors in the construction process such as engineers and architects is a wise use of resources. We offer our support to NYSERDA in the development and dissemination of technical guidance resources targeted at construction and design practitioners as well as the real estate community.

Properties featuring significant energy efficiency information typically comprise only a small proportion of a realtor's transactions, which has limited this audience's embrace of energy efficiency thus far. Supporting efforts such as a statewide building rating program and the incorporation of this information into Multiple Listing Services and other consumer-facing platforms in the state should lead to an increase in educational efforts within this community that would not need to be funded by the state.

4.7 Codes

The Supplement states "NYSERDA activities will focus on strengthening compliance and enforcement of existing codes and on advancing adoption of codes with higher performance goals." We support the emphasis on code compliance, enforcement, and the possibility of a stretch energy code.

Indeed, as the 2015 New York State Energy Plan explains, in order "to improve compliance and enforcement of the energy code, DOS and NYSERDA will provide in-person and online training for architects, engineers, contractors, and code officials, as well as other support resources such as technical publications."³¹

²⁹ See Generally, New Building Institute's zEPI Scale. Available at: <http://newbuildings.org//zero-energy-performance-index-zepi>

³⁰ NYSERDA Clean Energy Fund Information Supplement. Page 92

³¹ 2015 New York State Energy Plan. Page 82. Available at: <http://energyplan.ny.gov/-/media/nysenergyplan/2015-state-energy-plan.pdf>



We support the mobilization of third party specialists to help relieve limitations of building officials to effectively enforce the energy code, thereby shifting this responsibility to individuals trained specifically to fulfill plan review and inspection tasks. We have helped other states in the region to develop their program and can assist this initiative by providing case studies of states and jurisdictions in the region employing third party energy specialists and recommended language for its codification.

Furthermore, data acquisition and analysis techniques for better targeting efforts to specific code provisions and/or specific municipalities with the largest potential for energy savings. We can offer assistance on this initiative by assembling the latest regional and national energy efficiency resources and information in our [Code Compliance Toolkit](#) for inclusion in the guidance materials.³²

We also suggest the development of voluntary stretch codes as a way of achieving additional energy savings and accelerating market preparedness for future technologies and requirements. We maintain a model stretch code and have assisted both Massachusetts and Vermont in the adoption of a stretch code. We also offer our assistance in the development of the NY Stretch Code by providing resources such as our forthcoming revised model stretch codes for residential, commercial, and multi-family applications as well as our [Code Adoption Toolkit](#).³³

4.8 Emerging Technologies

The Supplement notes that “NYSERDA will identify promising underutilized and emerging products and integrated systems and their associated barriers to adoption and potential energy savings.”³⁴ We remain eager to continue working with NYSERDA on identifying products and technologies with promising potential,³⁵ especially those which may be well-suited for regional market transformation opportunities. We offer comment on a number of these technologies, including:

- (1) Renewable Thermal: Air Source Heat Pump Opportunities;
- (2) Products and Integrated Systems: Home Energy Management Systems; and
- (3) Smart Buildings: Advanced Wireless Sensor and Control Systems.

4.8.1 Renewable Thermal: Air Source Heat Pump Opportunities

The supplement state that “For both geothermal and air source heat pumps, NYSERDA proposes to develop and update tools and resources to reduce soft costs and improve market understanding of the benefits of these technologies. NYSERDA will also explore the potential to provide incentives for such technologies in both the residential and commercial space as a bridge to an economically sustainable market.”³⁶ We applaud this support of renewable thermal technologies and offer our assistance in the market for air source heat pumps.

³² NEEP Code Compliance Toolkit. Available at: <http://www.neep.org/sites/default/files/resources/Compliance-Toolkit.pdf>

³³ NEEP Code Adoption Toolkit. Available at: <http://www.neep.org/sites/default/files/resources/Adoption-Toolkit.pdf>

³⁴ NYSERDA Clean Energy Fund Information Supplement. Page 113.

³⁵ *id.* at footnote 83. Describing opportunities for collaboration that “[W]ould include working with CEE, NEEP, and EPRI to identify products/technologies with promising potential.”

³⁶ *id.* at Page 112.



We believe that ultimately — as the 2015 New York State Energy Plan explains — “A targeted strategy for on-site renewable thermal solutions to reduce fossil heating fuel consumption will also become part of an integrated approach to promote the efficiency of all sources of energy use within buildings.”³⁷

We have facilitated a regional initiative around the development of the air source heat pump (ASHP) market since 2013. We agree that this technology offers some unique opportunities to both save net energy and GHG, but that managing its impact on the grid is vital to its promotion by states and programs. NYSERDA is invited to stay engaged with our regional Initiative to address key market barriers/opportunities at a regional level. Some of the areas of priority in 2016 may include discussions around grid level impacts of a broad deployment of ASHPs, the next generation of ASHP control systems, system selection/sizing guidance, and examination of emerging business models.

On behalf of energy efficiency stakeholders across the region, we also currently manages the *Cold Climate Air-Source Heat Pump (ccASHP) Specification* and a listing of units that meet the specification’s requirements. The [NEEP ccASHP requirements](#) include both specific performance levels and a series of reporting requirements.³⁸ We work in coordination with energy efficiency programs that promote and leverage the ccASHP specification for their offerings. By collaborating with program implementers, the listing to-date has registered 88 units and is represented by five different manufacturers.

Ultimately, the specification aims for regional consistency and uniformity across program requirements for efficient cold-climate heat pumps. As is demonstrated in our [incentive chart](#), there are currently a wide range of program offerings and requirements for the technology.³⁹ While NEEP has already begun discussions with NYSERDA’s home performance program, there are opportunities to align all of NYSERDA’s ASHP offerings with the NEEP specification in an attempt to achieve regional uniformity. By utilizing the NEEP ccASHP specification, stakeholders can leverage the cumulative power of the region to lower energy, cost, and carbon for their customers.

4.8.2 Products and Integrated Systems: Home Energy Management Systems

The Supplement states that “Examples of residential products that would be targeted initially under the CEF support new construction and existing home retrofit activities and include...home energy management systems.” We appreciate NYSERDA’s identification of Home Energy Management Systems (HEMS) as an opportunity to focus efforts.

We have convened a HEMS Working Group since 2014, with NYSERDA staff participation, and intend to continue to engage with HEMS stakeholders through the HEMS Working Group in 2016. We invite NYSERDA’s continued

³⁷ 2015 New York State Energy Plan. Page 78. Available at: <http://energyplan.ny.gov/-/media/nysenergyplan/2015-state-energy-plan.pdf>

³⁸ NEEP. Cold Climate Air-Source Heat Pump Specification. Available at: <http://www.neep.org/sites/default/files/resources/NEEP%20cold%20climate%20Air-Source%20Heat%20Pump%20Specification.pdf>

³⁹ NEEP. 2015 Air-Source Heat Pump Incentive Summary. Available at: http://www.neep.org/sites/default/files/resources/Regional_Air-Source_Heat_Pump_Incentive_Snapshot.pdf



participation. To support NYSERDA's efforts in this area, we suggest review of our recent working group publication, "[Establishing Common Understanding for Home Energy Management Systems \(HEMS\) in Efficiency Programs](#)."⁴⁰ Additionally, in 2015 we led the development of a HEMS Research Report with the support of NYSERDA staff and funding. This research report will better identify the various energy solutions association with differing HEMS systems, and we invite NYSERDA to use the results of this report — planned for release in the third quarter of 2015 — as they move forward in their pending HEMS program deployments.

4.8.3 Smart Buildings: Advanced Wireless Sensor and Control Systems

The Supplement states that "NYSERDA proposes to invest in advanced wireless sensor and control systems [that] will enable data analytics, advanced algorithms, energy management as a service (EMaaS), demand response, transactive energy (transactions based on the information and value of energy), building standards development, real time energy monitoring (to avoid deterioration in building performance), and the expansion of smart equipment." We applaud the effort to embrace smart building technologies such as advanced wireless sensor and control systems in both the residential and commercial sectors, and are prepared to support NYSERDA in their efforts as described below.

In the residential sector, we offer our technical assistance and stakeholder network to support NYSERDA's focused work in residential advanced lighting fixtures and controls. We have been leading regional efforts focused on Residential Lighting for several years, and recently released an update to our [Northeast Residential Lighting Strategy](#),⁴¹ along with an accompanying [webinar](#).⁴² With lighting moving towards automation and adding intelligent control features, this is a space we will be working within and focusing on moving forward. We encourage NYSERDA's continued participation in these efforts.

In the commercial sector, our [Commercial Advanced Lighting Control \(CALC\)](#) project is designed to address market barriers and enable widespread adoption of ALC technology in commercial buildings and exterior environments.⁴³ Thanks to the sponsorship of NYSERDA and a number of other program administrators, the CALC project will produce several demonstration projects and a product specification in the near term. We look forward to working with NYSERDA as they continue to explore the expansion of emerging program areas such as lighting controls.

4.8 Market Enabling Strategies

The Supplement proposed a number of market enabling strategies on which we offer comment, including:

- (1) On-line Communications and Resource Platform;

⁴⁰ NEEP. Establishing Common Understanding for Home Energy Management Systems (HEMS) in Efficiency Programs. Available at: <http://www.neep.org/sites/default/files/resources/HEMSCommonUnderstandingFinal7-29.pdf>

⁴¹ NEEP. Northeast Residential Lighting Strategy: 2014-2015 Update. Available at: <http://www.neep.org/sites/default/files/resources/2014-2015%20RLS%20Update.pdf>

⁴² Northeast Residential Lighting Strategy: 2014-2015 Update Webinar. Available at: <http://www.neep.org/sites/default/files/RLSUpdatePublicWebinar12-18Final.pdf>

⁴³ NEEP. Commercial Advanced Lighting Controls Project. Available at: <http://www.neep.org/initiatives/high-efficiency-products/commercial-advanced-lighting-controls-calc>



- (2) Funding for Advanced Actions;
- (3) Enabling Community Solar and Other Demand Aggregation Activities: Street Lighting; and
- (4) Workforce Development.

4.8.1 On-line Communications and Resource Platform

The Supplement proposes creation of a New York State Community Partnerships (NYSCP) initiative that will serve “Municipalities and communities across the state via an online platform that will act as the centralized hub for local access and information on clean energy initiatives, services, and offerings.”⁴⁴

We support the implementation of strategies that leverage community-based action and assist local governments in setting and reaching their energy reduction goals. Streamlining the existing Climate Smart Communities Certification program and creating an on-line communications and resource platform will make it easier for time and budget constrained local government staff to access the resources they need to implement comprehensive energy reduction plans. We recommend NYSERDA consider the [U.S. Department of Energy’s Better Buildings Solution Center](#) as a model for an on-line “one stop shop” for communities seeking resources tailored to their needs.⁴⁵ We offer our assistance in the development of best practice resources for the on-line platform, based on successes from the state and across the region.

4.8.2 Funding for Advanced Actions

The Supplement states that “NYSERDA will allocate dedicated performance incentives to communities choosing to pursue such advanced and high impact local clean energy projects and solutions, such as implementing stretch building codes, adopting local benchmarking and disclosure laws, or installing advanced electric vehicle infrastructure.”⁴⁶ We applaud this efforts, noting that the proposed incentive provided by dedicated funding and technical assistance will ensure communities are equipped to implement advanced actions that lead to deep energy savings.

Many of the components described within the “Funding for Advanced Actions” section appear to resemble municipally-based programs that were implemented under Massachusetts’ [Green Communities Act](#). We recommend that NYSERDA borrow from best practices which have been identified via the successful Massachusetts program, and are prepared to support NYSERDA’s efforts by serving as a liaison between relevant officials through our regularly convened [Public Buildings Leadership Group](#).⁴⁷

Since building energy rating and disclosure policies appear to be a cornerstone of the “funding for advanced actions” initiative, we also recommend that NYSERDA review best practices from across the region identified

⁴⁴ NYSERDA Clean Energy Fund Information Supplement. Page 117.

⁴⁵ US Department of Energy. Better Buildings Solutions Center. Available at: <http://betterbuildingssolutioncenter.energy.gov/>

⁴⁶ NYSERDA Clean Energy Fund Information Supplement. Page 122

⁴⁷ NEEP. Public Buildings Leadership Group In-Person Meeting Agenda. November 12, 2014. Available at: <http://www.neep.org/sites/default/files/Final%20Agenda%20November%2012%20Public%20Buildings%20Meeting.pdf>



within our report, [Building Energy Benchmarking and Disclosure Policies Update and Lessons from the Field](#).⁴⁸ We offer our support in helping to guide implementation of Benchmarking and Disclosure policies with lessons learned from throughout the region.

4.8.3 Enabling Community Solar and Other Demand Aggregation Activities: Street Lighting

The Supplement notes that demand aggregation networks established for community solar network might be used in the future to “build consortiums of communities to aggregate municipal streetlight purchases for LED retrofits.”⁴⁹ We applaud NYSERDA’s embrace of demand aggregation as it presents great potential to lower soft costs for energy upgrades. In our experience, initiatives that leverage groups of communities to aggregate investments in clean energy or efficiency allow for greater economies of scale and therefore a better return on investment.

In this context, we suggest reviewing NEEP’s recent publication, [LED Street Lighting Assessment and Strategies for the Northeast and Mid-Atlantic](#), which provides a quantitative analysis of the regional street lighting efficiency opportunity and a recommended strategy to address the barriers and achieve large scale conversion.⁵⁰ In fact, the document contains aggregation case studies on page 18. Additionally, we suggest review of our recent [webinar](#) on the issue.⁵¹ We offer our assistance to NYSERDA in the potential development of best practice resources using cases from across the state and region that successfully leverage community aggregated street light retrofits.

4.8.4 Workforce development

The Supplement notes that “NYSERDA proposes to focus workforce development initiatives on opportunities where the availability of skilled labor is a constraint to business growth and thus where NYSERDA’s interventions will have the greatest impact on successful job placement and advancement.”⁵² Ensuring that we have a qualified and robust workforce is an important step to maintaining and improving the efficiency of our building stock. Within this context, we suggest alignment with other similar offerings, including the [Department of Energy’s Better Buildings Workforce Guidelines](#).⁵³

5. Evaluation, Reporting, and Transparency

NEEP’s Evaluation, Measurement, and Verification (EM&V) Forum is a collaboratively driven body working to develop and support the use of consistent savings assumptions and standardized, transparent guidelines and

⁴⁸ NEEP. Building Energy Rating and Disclosure Policies: Update and Lessons from the Field. Available at: http://www.neep.org/sites/default/files/resources/BER%20Supplement_FINAL%20DRAFT_2-25-13_0.pdf

⁴⁹ NYSERDA Clean Energy Fund Information Supplement. Page 123.

⁵⁰ NEEP. Regional LED Street Lighting Assessment and Strategies. Available at: <http://www.neep.org/led-street-lighting-assessment-and-strategies-northeast-and-mid-atlantic>

⁵¹ NEEP. Regional LED Street Lighting Assessment and Strategies Webinar. March 2015. Available at: http://www.neep.org/sites/default/files/resources/3.11.15%20Street%20Lighting%20Webinar%20Slides_0.pdf

⁵² NYSERDA Clean Energy Fund Information Supplement. Page 124.

⁵³ US Department of Energy. Better Buildings Workforce Guidelines. Available at: <https://www4.eere.energy.gov/workforce/projects/workforceguidelines>



tools to evaluate, measure, verify, and report the energy and demand savings, costs, and avoided emission impacts of energy efficiency.⁵⁴ It represents nine jurisdictions within the Northeast and Mid-Atlantic, and is steered by a committee of state public utility commissioners, energy office, and air agency representatives.⁵⁵ Borrowing from the knowledge set of EM&V Forum staff, we offer some observations and recommendations on specific elements of the Supplement's Evaluation, Reporting, and Transparency Chapter below.

5.1 Metrics

The Supplement describes the key high-level metrics of the Clean Energy Fund as energy savings, energy cost savings, emission reductions, dollars invested in clean energy, and market penetration of clean energy products.⁵⁶ We applaud NYSERDA's embrace of both emissions reductions and market penetration of clean energy technologies, which are often embraced only as secondary metrics for program implementation. We suggest that further iterations of the Supplement, associated Investment Plans, and market characterization studies include initiative-specific metrics for undertakings related to market transformation.

5.2 Pilot Testing and Test-Measure-Adjust

The Supplement notes that "[P]rinciples of Test-Measure-Adjust will also be applied to more established initiatives." We suggest established initiatives and tools include bridge incentives, and that these bridge incentives only be removed once empirical evidence is available via test-measure-adjust that a market has been completely transformed and is self-sustaining.⁵⁷ We also suggest that NYSERDA provide further clarity on reporting schedules associated with test-measure-adjust, and that a formal mechanism be provided for the utilities and NYSERDA to coordinate around the impact of their separate but interrelated resource acquisition and market development activities.

5.3 Statewide Macro-level Accounting

The supplement states "NYSERDA will engage in top-down econometric, macro-consumption studies to provide a more complete understanding of overall end-use energy reduction outcomes, including those associated with all clean energy initiative in the State."⁵⁸ We applaud NYSERDA's plan to analyze State-level impacts of clean energy investment on job creation and economic output, as these indicators can demonstrate the benefits of energy investments. We also recognize that macroeconomic modeling approaches can require lengthy, comprehensive high quality time series datasets; and even then may be challenged to generate significant results due to the large difference between the magnitude of energy reductions relative to other overall

⁵⁴ NEEP. Evaluation, Measurement, and Verification (EM&V) Forum. Available at: <http://www.neep.org/initiatives/emv-forum>

⁵⁵ EM&V Forum Leadership and Funders. Available at: <http://www.neep.org/emv-forum-leadership>

⁵⁶ NYSERDA Clean Energy Fund Information Supplement. Page 148.

⁵⁷ See Generally, NEEA's Definition of Market Transformation. Stating: "Market Transformation is the strategic process of intervening in a market to create lasting change in market behavior by removing identified barriers or exploiting opportunities to accelerate the adoption of all cost-effective energy efficiency as a matter of standard practice." Available at: https://neea.org/docs/default-source/marketing-tookits/neea_definition_of_markettransformation.pdf?sfvrsn=2

⁵⁸ *id.* at Page 150.



economic indicators. Accordingly, we encourage ‘bottom-up’ tracking of energy efficiency activity in conjunction with “data on public and private sector investment” over long time horizons.

5.4 Statewide Sector Building Stock and Potential Studies

The Supplement states “NYSERDA envisions conducting sector building stock studies (e.g., commercial and residential existing buildings) on building characteristics, energy use equipment characteristics, and behavioral and operational trends every 3-5 years.”⁵⁹ We support NYSERDA’s proposed sector building stock and potential studies to understand trends and changes in the building sector and provide accurate baselines from which to measure market development/transformation activities. We also suggest ensuring that NYSERDA tracking systems align with statewide sector building categories to facilitate future studies and reporting.

5.5 Market Characterization and Market Progress Studies

The Supplement states that market characterization and market progress studies will “include identifying outcomes and impacts associated with CEF initiatives on the broader market” and incorporate use of “data from other markets beyond New York.”⁶⁰

As a regional organization with a market transformation focus, we applaud NYSERDA’s commitment to work regionally, offering our staff as a resource and encourage NYSERDA staff participation in EM&V Forum projects and research to support market transformation and other clean energy advancement efforts. We encourage regional collaboration on technology adoption curves or related metrics such as price forecasts for new and emerging technologies to help inform pilot testing and market characterization. In most cases, upstream actors such as manufacturers, architects, engineers, and lenders move fluidly, offering their services and products to customers in many different states throughout a region.

5.6 Field Verification

The Supplement states that “NYSERDA envisions field verification to remain an important area of work, but to be less resource intensive than in the past. Field verification will not address attribution or net-to-gross analysis. Instead, market impacts will be addressed by the methods described in earlier sections.”⁶¹ As NYSERDA moves toward less resource intensive methods of field verification, we suggest that the utilities and NYSERDA establish a formal mechanism which assures inputs from utility field verification analyses are communicated to NYSERDA and are made publically available. Further, communication on the approach used to verify savings can be provided in a standardized format using the Forum’s recently developed [Standardized EM&V Methods Reporting Forms](#). We invite New York’s feedback on Version 1 of the [Digital EM&V Methods Forms](#), as they will be updated this fall based on pilots being conducted in several Forum states.

The Supplement also states “Data from other jurisdictions may also support field verification to the extent it is available and useful.” We applaud NYSERDA’s suggestion to employ relevant data from other jurisdictions to

⁵⁹ *id.* Page 151.

⁶⁰ *id.*

⁶¹ NYSERDA Clean Energy Fund Information Supplement. Page 152



support field verification where appropriate and note that this approach can be especially appropriate for products with developing markets. We encourage NYSERDA to utilize the resources offered by the EM&V Forum, which include field verification studies drawn from projects throughout the region to inform development of baseline assumptions or energy impacts.

As NYSERDA seeks to invest in new measurement and verification avenues that “harness technology, expanding statistical data sets, and identification of key informative proxy metrics,”⁶² we encourage NYSERDA to refer to the EM&V Forum’s current research on the [Changing EM&V Paradigm](#), which includes forthcoming case studies on experience to date with how ‘big data,’ data collection tools, and new data analytics are helping to streamline and enhance M&V practices with a focus on opportunities, challenges and regulatory considerations. NEEP also recommends that the work of Lawrence Berkeley National Laboratory (LBNL) to analyze the accuracy of emerging data analytic tools, which the Forum has been monitoring and reporting to the Forum states, be considered in NYSERDA’s application of new M&V tools going forward – see [How accurate is Automated, M&V 2.0?](#)⁶³

5.7 Reporting

The Supplement states that “NYSERDA is committed to regular, periodic reporting on CEF investments, outputs and outcomes. Standardized reporting metrics will focus on indicators of market change and progress toward State Energy Plan policy goals related to environmental, energy and economic benefits.”⁶⁴

We encourage NYSERDA and the broader New York Utilities to establish consistency in the approach to tracking energy impacts from all energy efficiency efforts. Such consistency would enable the aggregation of both NYSERDA *and* utility energy impacts for reporting at the state level. This change would facilitate transparency, reporting, some of above-described evaluation activities such as macro-level accounting and baseline updates, as well as the ability to analyze and compare results within the state and across states.

In addition, NEEP encourages NYSERDA specifically and New York in general to report energy efficiency program impacts in greater alignment with how those impacts are reported across the Northeast and across the country. In 2010, NEEP developed the [Common Statewide Energy Efficiency Reporting Guidelines](#),⁶⁵ which were adopted by NEEP’s EM&V Forum Steering Committee and where the states have reported their in the Forum’s [Regional Energy Efficiency Database \(REED\)](#), including New York.

The Guidelines include consistent regional definitions for energy efficiency savings elements like annual and lifetime savings, expenditures, cost of saved energy, avoided emissions, and job impacts. Consistent reporting of energy efficiency program savings enables energy efficiency to be viewed as a system resource just like supply-side investments and allows for programs in New York to be compared with programs from across the region to

⁶² *id.* at Page 152-3.

⁶³ How Accurate is Automated, M&V 2.0. Available at: http://www.neep.org/sites/default/files/resources/LBNL_M_VFinalFindingsWebinar_Final.pdf

⁶⁴ NYSERDA Clean Energy Fund Information Supplement. Page 154.

⁶⁵ NEEP. Common Statewide Energy Efficiency Reporting Guidelines. Available at: <http://www.neep.org/common-statewide-energy-efficiency-reporting-guidelines-0>



facilitate learning and information sharing across states on program best practices, underlying EM&V approaches, and key savings assumptions.

We also recommend use of [Loadshape Data Protocols](#) developed by NEEP to facilitate sharing of data from monitoring activities that are part of Field Verification.⁶⁶

6. New York Green Bank

We are encouraged by the potential of the New York green Bank to spur innovation and development, but also to aggregate demand and bring low-to-no up-front cost financing to residential and commercial buildings throughout the state. We are further encouraged by NYSERDA's embrace of bridge incentives and emphasize that in most cases, private financing serves to supplement—not supplant—ratepayer funding of energy efficiency programs.

7. Budget and Benefits

Overall, we were pleased to see maintenance of energy efficiency spending levels continue, and would encourage NYSERDA to only transition from their bridge incentives once empirical evidence is available to demonstrate that a market has been completely transformed.

7.1 Bill-As-You-Go Approach

Within the Supplement, "NYSERDA proposes that the Commission authorize NYSERDA and each utility to enter into new funding agreements wherein NYSERDA will receive an initial payment equal to 25% of the first year's authorized collections, and which represents an advance intended to cover three months of expenditures. NYSERDA would then submit reimbursement requests to each utility at the end of each calendar quarter, representing that utility's proportionate share of actual expenditures realized during the preceding three months."⁶⁷

We support the "bill-as-you-go" approach to avoid excess collection and redirection of funds. Experiences through the Northeast and Mid-Atlantic region have shown that funding collected for investment in energy efficiency but not yet invested is a prime target for filling budgetary gaps.⁶⁸ We believe the bill-as-you-go approach would prevent acquisition of energy efficiency funding for any purpose besides investment in energy efficiency.

7.2 Investment Plans

The Supplement states "NYSERDA will submit an annual Investment Plan, which will...provide detailed information, on an initiative level, of the approaches to be adopted in initiatives as well as the outputs

⁶⁶ NEEP. Load Shape Data Protocols. Available at: <http://www.neep.org/initiatives/emv-forum/forum-products#Loadshape> Research and Data Catalog

⁶⁷ NYSERDA Clean Energy Fund Information Supplement. Page 178.

⁶⁸ NJ Spotlight. Raids on Dedicated Funds Climb. July 2013. Available at: <http://www.njspotlight.com/stories/13/07/08/raids-on-dedicated-funds-climb-under-christie/>



anticipated as a result of implementing those initiatives.” We are encouraged by the proposed details for inclusion in the Investment Plans, and would further support a public comment and consideration period prior to publication of each investment plan.

7.3 Fuel Neutrality

The Supplement states “[F]uel neutrality’ is the lynch-pin to providing truly customer-centric clean energy initiatives and allows for new market opportunities to emerge – a desired outcome of the REV approach.”⁶⁹ We agree with NYSERDA’s approach toward applying services to customers in an even handed fashion, regardless of fuel source. This would allow a whole building approach that can capture efficiencies other jurisdictions cannot avail themselves to due to fuel source concerns.

8. Conclusion

NEEP commends NYSERDA, Staff, and the Commission for their continuing support of energy efficiency in the Empire State. It is our belief that continued coordination between Staff, NYSERDA, and the utilities can help grow the economic engine that is energy efficiency and provide savings for ratepayers for decades to come.

Please accept these comments in the spirit they are intended: to aid the Commission, NYSERDA, and, ultimately, the people of New York, in securing a more affordable, reliable, cleaner and sustainable energy future.

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⁶⁹ NYSERDA Clean Energy Fund Information Supplement. Page 196.