

Matter Number 16-00681, In the Matter of the Clean Energy Fund
Investment Plan

Clean Energy Fund Investment Plan: Multi-Sector Solutions Chapter

Portfolio: Market Development

Submitted by:

The New York State Energy Research and Development Authority

Revised August 17, 2018

Clean Energy Fund Investment Plan: Multi-Sector Solutions Chapter		
Revision Date	Description of Changes	Revision on Page(s)
June 23, 2017	Original Issue	Original Issue
September 15, 2017	Added the Technical Services initiative.	Multiple
November 1, 2017	Added Clean Energy Advanced Market Performance (AMP) Challenge and Clean Energy Siting & Soft Cost Reduction initiatives.	Multiple
August 17, 2018	Added Pay for Performance Initiative	Multiple

21 Multi-Sector Solutions

NYSERDA is supporting the development and deployment of clean and renewable sources of energy, a more efficient and responsive grid, and more energy efficient buildings. The initiatives in this chapter will address cross-cutting barriers and opportunities that are not specific to one market sector, including reducing soft costs, providing technical assistance, and increasing confidence in clean energy solutions.

The first initiative described in this chapter is the Energy Efficiency Soft Cost Challenge. The objective of the challenge is to identify, develop and demonstrate innovative solutions that will encourage growth of energy efficiency in NY State by addressing soft cost barriers such as: customer acquisition, project and system design and development, training and workforce development, transaction costs, financing, quality assurance, and monitoring and verification. The challenge will act as a conduit to solicit commercially viable solutions from the private market, with the winning ideas ultimately being deployed in the market, enabling the expansion of energy efficiency.

The second initiative described is Technical Services. The initiative will engage consultants and customers in exploring approaches to providing and receiving clean energy recommendations through technical analysis. The strategy builds on NYSERDA's reputation as a source of objective and credible technical advice and information, while also catalyzing private market actors to take advantage of this market opportunity. Technical services will implement pilots to demonstrate the benefits of investing in energy management, increase knowledge, expertise, and confidence in clean energy approaches and technologies, and demonstrate new cost-effective and replicable approaches to clean energy projects. The initiative will also identify and distribute best practices, and continue to provide site-specific assessments through the FlexTech program. Previously filed initiatives have included sector and initiative specific technical services, but this initiative combines similar activities across sectors under one umbrella initiative.

The third initiative described in this chapter is the Clean Energy Advanced Market Performance (AMP) Challenge. The objective of the strategy is to increase the level of private investment in clean energy in New York State by allowing large commercial and industrial (C&I) customers to propose carbon reduction goals and funding requests. The projects developed through the challenge would increase market-based clean energy activity in a manner that results in benefits comparable to or better than public programs.

The fourth initiative described is the Clean Energy Siting & Soft Cost Reduction initiative. Its objective is to reduce market barriers inhibiting the deployment of clean energy technologies.

21.1 Energy Efficiency Soft Cost Challenge

21.1.1 Overview

<p>Present Situation</p>	<ul style="list-style-type: none"> • Current energy efficiency penetration in New York State is approximately 3-5%,¹ lower than would be expected from solutions with attractive returns on investment (ROIs) and relatively short payback periods (3-10 years). • This lack of penetration can be attributed, first, to the multi-stage and complex process building owners, service providers, and other market actors must undertake to originate and implement projects. Second, it can be attributed to lack of end-user confidence in the costs and savings. Third, it can be attributed to higher first costs, relative to non-EE alternatives, which are often given more weight in the decision-making process than the benefits of the anticipated saving. • Non-equipment costs (soft costs) often represent a significant fraction (in some cases as much as 30%) of overall energy efficiency project costs, and many of these soft costs can be reduced or eliminated by new tools or approaches. • Market actors are beginning to engage on addressing these soft cost challenges, offering a window of opportunity to meaningfully accelerate progress. For example, residential and multi-family companies like ESSESS and Bright Power are trying to develop analytical tools to identify high-probability customer leads to drive down the cost of customer identification and acquisition.
<p>Intervention Strategy</p>	<ul style="list-style-type: none"> • NYSERDA will launch a multi-phased challenge designed to accelerate the path to scale of energy efficiency in NY with market based solutions to soft cost barriers. In 2015, the DOE launched a similarly structured challenge called the Sunshot Prize that sought to reduce soft costs such as permitting times from an average 180 days to 7 days. The initial phase of the challenge was ultimately successfully, with five teams awarded prize money to create winning, market-based solutions that have since been tested in the market.² • In this challenge barriers to be addressed include: <ul style="list-style-type: none"> ○ Customer acquisition ○ Project/system design/development ○ Training/Workforce development ○ Transaction costs ○ Financing ○ Quality Assurance/Monitoring & Verification • Solutions can be proposed within or across several sectors: Low-to-moderate income (LMI), commercial, multifamily residential, single family residential, and industrial. • Two multi-stage challenges will be held to attract innovative ideas and support further development of market-based solutions designed to address cost barriers that are preventing growth of energy efficiency services. • For a visual representation of this strategy, please reference the flow chart entitled “Logic Model: The Soft-Cost Challenge,” which can be found in Appendix A.
<p>Goals</p>	<ul style="list-style-type: none"> • Attract market solutions that reduce or eliminate barriers to scale for energy efficiency solutions.

¹ This percentage reflects savings attributed to NYSERDA programs from 2009-2016 as a percentage of 2015 NYS energy sales.

² Winner of the competition (based on demonstrated results over an 18-month period) will be announced in June 2017. <https://energy.gov/eere/sunshot/sunshot-prize-race-7-day-solar>.

	<ul style="list-style-type: none"> • Increase uptake of energy efficiency solutions by making projects easier and cheaper to originate and complete.
State Energy Plan/Clean Energy Standard Link	<ul style="list-style-type: none"> • The New York State Energy Plan highlights the importance of energy efficiency and calls on NYSERDA to “seek to address the diverse set of remaining barriers with new programs and strategies that unlock the potential of energy efficiency to reduce operating costs, spur investment, and create jobs throughout the State.” This initiative is one approach to address these identified barriers. • This initiative also supports achievement of the Clean Energy Standard goal for renewable resource electric generation (50% renewable electric generation by 2030 – “50 by 30”) by reducing the overall electric load, and therefore the amount of renewables necessary to meet the 50 by 30 goal.

21.1.2 Target Market Characterization

Target Market Segment(s)	<ul style="list-style-type: none"> • The challenge will be market segment agnostic. The target market includes service providers (contractors, Energy Service Companies), energy decision makers (management companies, superintendents, facility managers, homeowners), and tool developers (software and others).
Market Participants	<ul style="list-style-type: none"> • Contractors and energy management systems providers • Building owners and building energy decision makers • Tool Developers • Solution providers • Service Providers for energy efficiency and on-site energy solutions • Real Estate/Management Firms • Software Developers • Financial Institutions • Quality assurance Providers • Marketing and Design Firms • Non-profit and Non-Governmental Organizations
Market Readiness	<ul style="list-style-type: none"> • NYSERDA, utilities, and other providers have made progress in educating building owners and service providers on the benefits of energy efficiency, yet the market for energy efficiency remains underpenetrated. • Energy efficiency projects often have an attractive ROI due to advancements in technology and service delivery, yet building decision-makers are often skeptical of energy projections, or are not made aware of energy saving opportunities in the right moment in their investment and maintenance cycles. • Applications in other industries, such as using photos for quality assurance and maps for customer acquisition for solar projects, prove that new tools and technological innovations can significantly decrease soft costs and increase customer acquisition and project deployment. • The energy efficiency industry is showing signs of innovation and investment in addressing significant soft cost barriers, such as financing and transaction costs, by offering shared-savings models that reduce the upfront capital required to execute energy efficiency projects, as well as by offering pre-packaged financing options through established relationships with lenders.
Customer Value	<p><u>Service Providers:</u></p> <ul style="list-style-type: none"> • Lower costs associated with customer identification and customer acquisition. • Increased access to potential financing options for customers, making it easier to sell solutions to customers (especially relevant to residential and LMI customers). • Decreased time cycle from pitch, diagnostic/audit to installation • Increased business.

	<p><u>Building owners/operators:</u></p> <ul style="list-style-type: none"> • Improved access to service providers. • Greater confidence in energy efficiency performance claims, and therefore in making capital investment decisions around energy efficiency solutions. • Reduced energy expenses. <p><u>Broader Market:</u></p> <ul style="list-style-type: none"> • It is anticipated that progress in addressing soft costs for energy efficiency will identify soft cost strategies with applications to distributed energy resources (DER), including on-site power, demand response, and energy storage.
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21.1.3 Stakeholder/Market Engagement

Stakeholder/Market Engagement	<ul style="list-style-type: none"> • Market interviews with utilities, service providers, building owners, university labs as well as other NYS agencies, confirmed the need for solutions to reduce soft costs for energy efficiency to reach significant scale in NYS. • NYSERDA has initiated discussions with several utilities and has received positive feedback on the objectives of the Soft Cost Challenge. • NYSERDA will continue to engage market actors in parallel to the challenge to help refine its learnings and surface additional market insights. • As a part of the challenge NYSERDA will also engage entities in possession of potentially useful data, such as municipal Department of Buildings and other permitting agencies to identify types and sources of relevant data.
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21.1.4 Theory of Change

Market Barriers Addressed	<ul style="list-style-type: none"> • High customer acquisition costs: Currently the costs associated with identifying customers, performing energy audits and signing of energy efficiency projects is high. This challenge will seek to develop solutions to make the cost of customer acquisition decrease by utilizing existing data to streamline identifying high-probability customer leads. Where possible, NYSERDA will share NYSERDA program data, as well as other available data sets, with challenge participants. • Lack of standardization of project/system design/development: Given the variability in building types across NYS the costs associated with customization of on-site energy efficiency solutions can be significant. This challenge will seek to surface potential standardization tools by building type, age, size, etc. to help limit costs linked to customization of project/system design. • Lack of appropriate workforce training: Many contractors in NYS do not have the training necessary to execute energy efficiency projects resulting in high training/opportunity costs for service providers. This challenge will seek to surface training tools such as easy to use energy modeling tools that will encourage growth of single-focus contractors into more complex energy efficiency service models. • High transaction costs: In NYS, there are high transaction costs, to the service provider as well as the customer, associated with project execution due to onerous service contracts and leasing structures. This challenge will seek ways to bring efficiency to this step in the service model. • Limited financing: Currently there are limited financing structures for energy efficiency projects which present a barrier for customers. This challenge will
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	<p>seek to surface financing tools that meet the risk objectives of the customer and the service provider.³</p> <ul style="list-style-type: none"> • Lack of unbiased system performance information: There is a significant disconnect between pitched ROIs for energy efficiency versus what customers believe. This trust gap is preventing uptake of energy efficiency services in NYS. This challenge will seek to make available transparent and customer-confident assessments of performance.
Testable Hypotheses	<ul style="list-style-type: none"> • If solution developers have access to NYSERDA funding support, plus critical data and customer sets, then they will be able to develop innovative solutions to existing soft cost barriers. • If the cost of acquiring new energy efficiency business goes down, and the value proposition to the consumer goes up, then companies will sell more energy efficiency solutions. • Additional barrier-specific hypotheses will be addressed based on solutions derived from pilot studies.
Activities	<p>The following challenge will occur twice, each time in four phases:⁴</p> <p><u>Phase 1: Develop Competitive Solicitation</u></p> <ul style="list-style-type: none"> • Engage market participants to help refine the content of the solicitation and raise interest in the challenge. Input will help determine key criteria for the challenge, such as feasible levels of carbon savings from soft cost reductions. • Engage philanthropic foundations and environmentally focused organizations to gauge interest in co-sponsoring the Soft Cost Challenge. • Release the competitive Soft Cost Challenge to solicit innovative solutions that address barriers to energy efficiency such as customer identification/acquisition, workforce training, financing of projects and measurement and verification of savings. • Hire an implementation consultant to assist with marketing and promotion of the challenge. • Hold a public forum to explain the goals and structure of the challenge and have a questions and answer session with potential participants. <p><u>Phase 2: Select Preliminary Winners</u></p> <ul style="list-style-type: none"> • Evaluate proposals based on criteria including but not limited to market-based approach, replicability by other entities, and applicability to a large portion of potential energy efficiency customers. Potential proposals may include: <ul style="list-style-type: none"> ○ Software based tools to better identify and measure energy savings for potential projects ○ Building data aggregation tools to create a heatmap of high potential energy efficiency opportunities ○ Innovative financing solutions that link performance to price of project • Select up to ten preliminary winners (in each of the two rounds of the challenge) providing good geographic coverage across the state for initial funding to develop an expanded proposal on how to reduce energy efficiency soft costs, including a detailed business plan that shows how their solution can achieve scale in the market.

³ As a part of the Soft Cost Challenge, NYSERDA wants to ensure that ensure that financing projects are included to cover all the potential solutions, and to account for the fact that some proposals could impact more than one barrier. Any particularly promising solutions identified through the challenge will be shared with the NY Green Bank to see if there is any potential role for them to play in further implementing it.

⁴ Upon completion of the two competitions, NYSERDA will assess the program performance and decide as to whether additional rounds (with additional funding) would be appropriate.

	<p><u>Phase 3: Select Grand Prize Winners:</u></p> <ul style="list-style-type: none"> • Preliminary winners present their business plans to a panel of judges comprised of entities such as: <ul style="list-style-type: none"> ○ Utilities ○ Financiers ○ Building owners ○ Philanthropies ○ Technology Companies ○ Private equity investors ○ Energy Service Companies (ESCOs) ○ NYSERDA ○ NYGB • This panel will then select the grand prize winners based on, at a minimum, the following criteria: <ul style="list-style-type: none"> ○ Potential for carbon reduction through 2030 based on proposer estimates. ○ Ability to increase energy efficiency uptake and reach commercial viability in the market. ○ Level of product differentiation from existing solutions in the market. • From the preliminary winners, up to five grand prize winners (in each of the two round of the challenge) will be selected to receive financial support, tied to progress-based milestones, to further develop their solutions to a point where they can be deployed in the market to address energy efficiency soft costs at scale. • Monitor progression in market for a period appropriate to the solution being tested. <p><u>Phase 4: Solution Deployment</u></p> <ul style="list-style-type: none"> • NYSERDA will work closely with the grand prize winners to help deploy their solutions by: <ul style="list-style-type: none"> ○ Assisting in the structuring and design of deployment strategies and pilots. ○ Providing in-house knowledge and expertise on the energy efficiency market. ○ Where possible under NDA, providing access to NYSERDA program data (anonymized to remove personal identifying information) that could assist in solution tool development. ○ Bringing other relevant state and city agencies into the process, if applicable. ○ Helping to attract potential private sources of development capital. ○ Setting up proper M&V vehicles to measure the impact of solutions/tools once deployed in the market to create fact-based case-studies.
<p>Key Milestones</p>	<p><u>Milestone 1 (2017)</u></p> <ul style="list-style-type: none"> • Issue competitive solicitation for first round of the challenge. <p><u>Milestone 2 (2017)</u></p> <ul style="list-style-type: none"> • Select an implementation consultant <p><u>Milestone 3 (2017)</u></p> <ul style="list-style-type: none"> • Hold bidder's presentation to answer questions on the challenge. <p><u>Milestone 4 (2017)</u></p> <ul style="list-style-type: none"> • Select preliminary winners.

	<p><u>Milestone 5 (2018)</u></p> <ul style="list-style-type: none"> • Contract projects with ten preliminary winners. • Monitor, provide assistance and resources to preliminary winners <p><u>Milestone 6 (2018)</u></p> <ul style="list-style-type: none"> • Hold business plan presentations to a panel of judges. <p><u>Milestone 7 (2018)</u></p> <ul style="list-style-type: none"> • Select up to five grand prize winners. <p><u>Milestone 8 (2018)</u></p> <ul style="list-style-type: none"> • Contract projects with first round grand prize winners. <p><u>Milestone 9 (2018)</u></p> <ul style="list-style-type: none"> • Issue competitive solicitation for second round of the challenge. <p><u>Milestone 10 (2018)</u></p> <ul style="list-style-type: none"> • Hold bidder's presentation to answer questions on the challenge. <p><u>Milestone 11 (2018)</u></p> <ul style="list-style-type: none"> • Select preliminary winners. <p><u>Milestone 12 (2019)</u></p> <ul style="list-style-type: none"> • Contract projects with ten preliminary winners. • Monitor, provide assistance and resources to preliminary winners <p><u>Milestone 13 (2019)</u></p> <ul style="list-style-type: none"> • Hold business plan presentations to a panel of judges. <p><u>Milestone 14 (2019)</u></p> <ul style="list-style-type: none"> • Select up to five grand prize winners. <p><u>Milestone 15 (2019)</u></p> <ul style="list-style-type: none"> • Contract projects with second round grand prize winners.
Goals Prior to Exit	<ul style="list-style-type: none"> • Grand prize winners are selected to address the six barriers identified across several market sectors. • Consistent with Phase 4, grand prize winners have launched these solutions in the market and contract tasks have been satisfactorily completed.

21.1.5 Relationship to Utility/REV

Utility Role/ Coordination Points	<ul style="list-style-type: none"> • The Program will seek winning solutions that will be market ready and designed to interface with the utilities. Utilities will be included in the winner selection committee to ensure solutions meet their needs and requirements and in ongoing progress monitoring.
Utility Interventions in Target Market	<ul style="list-style-type: none"> • The utilities have programs that provide direct incentives to residential and commercial customers for energy efficiency investments. Current utility programs are mainly focused on the end-user. This challenge will focus on developing tools to enable contractors and service providers to more easily sell energy efficiency to customers – these solutions should work as complements to existing utility programs.

21.1.6 Budgets & Expenditures

An annual commitment budget for all activities included in this chapter is shown in Table 1. The annual expenditure projection is included in Table 2. Budgets and expenditures do not include Administration, Evaluation, or Cost Recovery Fee; these elements are addressed in the Budget Accounting and Benefits chapter filing. The budget as presented in the Budget Accounting and Benefits Chapter will serve as the basis for any subsequent reallocation request. The additional level of detail presented within the table below is intended for informational purposes only.

Table 1: Annual Market Development Budget Allocation – Commitment Basis

Commitment Budget	2017	2018	2019	Total
Direct Incentives and Services	\$250,000	\$3,908,000	\$3,658,000	\$7,816,000
Implementation Support	\$592,000	\$592,000	\$0	\$1,184,000
Tools, Training, and Replication	\$500,000	\$500,000	\$0	\$1,000,000
Total	\$ 1,342,000	\$5,000,000	\$ 3,658,000	\$10,000,000

Table 2: Annual Expenditures Projection

Expenditures	2017	2018	2019	2020	2021	2022	Total
Total	2.5%	19.5%	19.5%	19.5%	19.5%	19.5%	100%

21.1.7 Progress and Performance Metrics

Table 3 provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in the initiative. Outputs are a key way of regularly tracking progress, especially in the early stages of an initiative, before broader market changes are measurable. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention. Outcome indicators will have a baseline value and progress will be measured periodically through Market Evaluation

Table 3. Initiative Specific Metrics

Indicators⁵		Baseline (Before/Current)	2020 (Cumulative)
Activity/ Outputs⁶ Level 1	Number of recipients of phase 1 development funding	0	20
	Number of Phase 2 grand prize-winning solutions	0	10
	Number of companies utilizing winning solutions	0	15
Outcomes	Number of companies that are early adopters of similar solutions outside of the Challenge	0	100
	Increase in number of contracts signed with Service Providers utilizing winning EE solutions	0%	45%

⁵A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

⁶ Level 1 Activity/Outputs represent indicators that can be measured during the Challenge and are not dependent on the types of solutions that are proposed. Level 2 Activity/Outputs (noted below) are defined by indicators that cannot be measured until after the Challenge has ended and various proposed solutions have been implemented. Furthermore, solutions will differ in the specific Activity/Outputs that are targeted and thus the impact on the associated indicators listed will vary.

In addition to the above outcomes, NYSEERDA will also assess the following broad outcomes, as applicable to the proposed solutions:

- Shorter energy efficiency sales cycle lifetime – decrease in time spent from assessment to plug-in
- More energy efficiency (based on increase in number of projects) will be deployed in the market by entities using the proposed solutions

Level 2 Activity/Outputs

- Reduction in customer acquisition costs in the pilots
- Number of QA/M&V approaches developed in the pilots
- Number of workers trained in the pilots
- Reduction in transaction costs in the pilots
- Number of financing structures developed in the pilots

Table 4. Direct Impacts⁷

Primary Metrics		2017	2018	2019	TOTAL
Energy Efficiency	MWh Annual	0	8,860	8,860	17,720
	MWh Lifetime	0	88,600	88,600	177,200
	MMBTu Annual	0	295,000	295,000	590,600
	MMBTU Lifetime	0	2,950,000	2,950,000	5,906,000
	MW	0	0	0	0
Renewable Energy	MWh Annual	0	0	0	0
	MWh Lifetime	0	0	0	0
	MW	0	0	0	0
CO ₂ e Emission Reduction (metric tons) Annual		0	23,300	23,300	46,570
CO ₂ e Emission Reduction (metric tons) Lifetime		0	233,000	233,000	465,700
Customer Bill Savings Annual (\$ million)		0	6	6	11
Customer Bill Savings Lifetime (\$ million)		0	56	56	111
Private Investment (\$ million)		0	3	3	7

Table 5. Annual Projected Initiative Participation

Additional Performance Tracking Metrics	2017	2018	Total
Participants ⁸	10	10	20

Benefits shown in Table 6 represent the estimated indirect market effects expected to accrue over the longer term as a result of this investment and follow on market activity. The indirect benefits

⁷ Note, the benefits in Table 4 are associated with phase 4 grand prize winners, which will be awarded in 2018 and 2019. While some budget will be committed in 2017 to reflect preliminary winners, benefits will not be committed until grand prizes are awarded.

⁸ Participants include Phase 1 and Phase 2 contest winners. The participants reflect all the preliminary winners selected. The number of participants will be down selected overtime to 10 ultimate grand prize winners. The benefits in Table 4 are associated with the grand prize winners, which is why there are reflected as commitments in 2018 and 2019.

that accrue from this investment will be quantified and reported based on periodic Market Evaluation studies to validate these forecasted values. Market Evaluation may occur within one year (-/+) of the years noted in the table and projected future indirect benefits and/or budgets necessary to achieve them may be updated based on the results of market evaluation. Indirect impact across NYSERDA initiatives may not be additive due to multiple initiatives operating within market sectors. The values presented below are not discounted, however NYSERDA has applied a discount of 50% to the overall portfolio values in the Budget Accounting and Benefits chapter.

Table 6. Estimated Indirect Market Impact

Indirect Impact		2020	2025	2030
Energy Efficiency	MWh Cumulative Annual	2,140	34,400	107,000
	MMBtu Cumulative Annual	71,400	1,150,000	3,560,000
Renewable Energy	MWh Cumulative Annual	0	0	0
	MW	0	0	0
CO2e Emission Reduction (metric tons) Cumulative Annual		5,630	90,300	281,000

21.1.8 Fuel Neutrality

Fuel Neutrality	<ul style="list-style-type: none"> • This initiative focuses on energy reductions related to building efficiency. As building systems and controls are often integrated, a successful strategy will support both electric and fuel efficiencies. • Across the residential, commercial, and industrial sectors, electric usage drives 36% of emissions; focusing on electric energy efficiency only would leave 64% of potential carbon reductions from being addressed. • Given the significantly large ratio of fossil fuel usage to electric usage in buildings, the potential economic benefits to NYS are greater with a fuel neutral strategy.
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21.1.9 Performance Monitoring and Evaluation Plans

Performance Monitoring & Evaluation Plan	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below.</p> <p><u>Test-Measure-Adjust Strategy</u></p> <ul style="list-style-type: none"> • Annual starting 2017: Assessment of the solicitation structure to test if this structure is successful in bringing forward compelling and innovative proposals. Assess the responsiveness and innovativeness of these proposals and adjust the program design or activity as needed. • Annual in Years 3 &5: Test to see whether and to what level resulting solutions have reduced soft costs and have increased the revenues attributable to these solutions; adjust the program design or specific activity as needed. • Annual starting 2017: Assess if the application of the resulting solutions has shortened the energy efficiency sales cycle lifetime and increased energy efficiency deployment in underserved markets. Adjust the program design or specific activity as needed. • Annually starting in 2018, assess the award structure for effectiveness in supporting development of solutions.
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Market Evaluation

- Market Evaluation will draw on the logic model and will include baseline and longitudinal measurement of key indicators of programmatic and broader market success.
 - Baseline measurements of key market indicators will occur soon following initiative approval and will provide additional insights that will allow NYSERDA to adjust the strategy. These include but are not limited to number of energy efficiency projects undertaken, number of companies using market solutions that reduce or eliminate barriers to scale for energy efficiency services, and energy efficiency sales cycle lifetime (i.e., time spent from assessment to plug-in).
- Regular (e.g., annual or biennial) updates to key performance indicators and measurement of market change, including but not limited to: reduction in customer acquisition and transaction costs, shorter energy efficiency sales cycle lifetime, and increased energy efficiency deployment in underserved markets.
- Sources of data include intervention data, public and commercially available data, and primary data collection through surveys of key market actors.

Impact Evaluation/Field Verification

- When program sponsored M&V is included in each soft cost strategy additional evaluation M&V will not be needed to confirm M&V savings. However, for some strategies, evaluation M&V will be conducted for a sample of participating spaces/buildings, per the International Performance Measurement & Verification Protocol (IPMVP) method(s) most appropriate given the improvements made.

Data from Field Verification/Impact Evaluation can be used to help lend confidence in the market, especially among other end users.

21.2 Technical Services

21.2.1 Overview⁹

<p>Present Situation</p>	<ul style="list-style-type: none"> • Despite the benefits of clean energy technologies, including energy efficiency, demand response, and renewable energy, end-users can be reluctant to make investments due to not fully understanding their energy-related needs, or the risks and opportunities associated with clean energy technologies. While there are energy focused firms that can assist with gaining this understanding, end-users are uncertain of contractor and firm qualifications, or the best approach to procure and engage in clean energy projects. • To address these barriers, NYSERDA currently offers the Flexible Technical Assistance (FlexTech) Program, approved in the Resource Acquisition Transition Chapter through 2019. FlexTech also provides farm energy audits through the Agriculture Energy Audit Program, also approved in the Resource Acquisition Transition Chapter through 2018. FlexTech has been successful at driving clean energy installations; to date the program has a measure adoption rate of 65% and has met or exceeded both its System Benefits Charge and Energy Efficiency Portfolio Standard savings goals. To maintain this success, there is a continued need to provide the reliable, objective, technical assessments of clean energy options that FlexTech offers. New York’s investor owned utilities have discontinued or reduced their study assistance programs and are coordinating with NYSERDA to direct the marketplace to FlexTech. • While FlexTech has been a valuable tool in increasing clean energy installations, and is expected to continue, it is limited in its ability to drive the scale required to meet New York State’s clean energy goals. To supplement this foundational approach, NYSERDA will explore other opportunities to drive greater scale and pace of installations. The pilots described herein are expected to decrease participation in the FlexTech Program as new approaches gain greater market traction. • The Industrial Chapter contains similar pilots and activities that this Plan intends to explore in non-industrial sectors. As example, the Industrial On-Site Energy Manager pilot was approved for a second round in the Industrial Chapter in July 2017. This Plan includes the launch and expansion of that effort to additional sectors.
<p>Intervention Strategy</p>	<ul style="list-style-type: none"> • NYSERDA will engage consultants and customers in exploring alternatives to site-specific cost-shared energy studies to advance clean energy installations. The strategy builds on NYSERDA’s reputation as a source of objective and credible technical advice and information, while also catalyzing private market actors through the following activities: <ul style="list-style-type: none"> ○ Implement pilots to demonstrate the benefits of investing in energy management, increase knowledge, expertise, and confidence in clean energy approaches and technologies, and demonstrate new cost-effective and replicable approaches to clean energy projects. ○ Identify and distribute best practices to various market actors, such as farm management best practices to the agriculture sector and feasibility study scope of work development best practices. • NYSERDA will also continue to provide site-specific assessments to drive clean energy adoption through its successful FlexTech Program.

⁹ Except where otherwise detailed this initiative lays out barriers, goals and activities that are applicable to the commercial, industrial (including agriculture), and residential and multifamily sectors.

	<ul style="list-style-type: none"> For a visual representation of this strategy, please reference the flow chart entitled “Logic Model: Technical Services,” which can be found in Appendix A.
Goals	<ul style="list-style-type: none"> Build the clean energy and energy management capacity, capability, and interest of consultants, energy service companies, and other energy-focused firms to serve the market and provide objective and credible guidance. Prove the efficacy of the pilots and approaches listed herein through participation rates. Stimulate demand for and investment in clean energy improvements by end-users. Increase the rate at which clean energy technologies are identified through studies or best practices.
State Energy Plan/ Clean Energy Standard Link	<ul style="list-style-type: none"> The 2015 State Energy Plan identifies buildings as a major source of energy use and greenhouse gas (GHG) emissions in the State. This strategy will reduce energy consumption and GHG emissions associated with buildings, both as a function of how buildings are operated and the efficiency of the installed equipment, contributing to State Energy Plan goals to reduce GHG emissions by 40% and to implement a 600 trillion BTU increase in statewide energy efficiency. This initiative also supports achievement of the Clean Energy Standard goal for renewable resource electric generation (50% renewable electric generation by 2030 – “50 by 30”) by reducing the overall electric load, and therefore the amount of renewables necessary to meet the 50 by 30 goal.

21.2.2 Target Market Characterization

Target Market	<ul style="list-style-type: none"> The target market includes firms that provide energy services, such as consultants, energy service companies, developers, and vendors who will be able to serve end-users within and across multiple market sectors, including commercial, industrial, agriculture, multifamily and single family residential. End users served by the programs and pilots including all commercial facilities (i.e. hospitals, colleges, commercial office space, retail, etc.), industrial facilities, data centers, agriculture facilities (i.e. dairy farms, greenhouses, vegetable farms and vineyards), and multifamily and residential dwellings.
Market Participants	<p>Market participants include:</p> <ul style="list-style-type: none"> Energy-focused firms such as consultants, energy auditors, energy service companies, developers and vendors. Building owners, managers, and facility operators Professional and industry associations as applicable to each sector (i.e., Manufacturers Association of Central New York (MACNY), New York State Department of Agriculture and Markets, etc.) New York State investor-owned utilities Trade Associations End users served by the programs and pilots including all commercial facilities (i.e. hospitals, colleges, commercial office space, retail, etc.), industrial facilities, data centers, agriculture facilities (i.e. dairy farms, greenhouses, vegetable farms and vineyards), and multifamily and residential dwellings.
Market Readiness	<ul style="list-style-type: none"> NYSERDA FlexTech Consultants have indicated that they are open to new opportunities and approaches beyond engaging end users in cost-shared assessments, with the goal to increase end user confidence and reduce end user reluctance to invest in clean energy. Other energy focused firm beyond those already working in FlexTech will also be engaged to test out new approaches.

	<ul style="list-style-type: none"> • Both end users and energy-focused firms have expressed interest in partnering with NYSERDA to help demonstrate and de-risk alternate mechanisms to identifying clean energy opportunities, such as on-site energy manager support and aggregated models. NYSERDA has been identified as the objective, trusted source for distributing this information. • End users have indicated that providing unbiased information, case studies and illustrating energy efficiency opportunities for their sector through a variety of trusted forms and approaches would provide assurance to pursue energy improvements. • Other states, including neighboring Connecticut and Massachusetts, have compiled and distributed best practice guides and have indicated success in engaging the businesses with energy efficiency and renewable opportunities.
Customer Value	<ul style="list-style-type: none"> • End users will benefit from the energy and cost savings associated with installed measures identified by energy-focused firms. • End users will be able to leverage the benefits of their clean energy investigations by applying the knowledge and operating methodologies learned from the initial information across their portfolios. • Identification of qualified energy-focused consultants to participate in pilots and serve customers engaging in pilots or cost-shared energy assessments will reduce customer procurement time and costs, as well as improve public perception of these firms and increase the visibility of actionable clean energy opportunities across multiple sectors.

21.2.3 Stakeholder/Market Engagement

Stakeholder/Market Engagement	<ul style="list-style-type: none"> • NYSERDA has conducted in-person meetings and webinars with end users and energy-focused firms to gather feedback on existing programs, publicly available information, and proposed pilots in this plan. Calls and meetings with FlexTech Consultants and commercial end-users confirmed interest in activities such as on-site energy manager and testing of new aggregation models. • Specific to the agriculture sector, through the Clean Energy Agriculture Task Force, Farm Management Best Practices working group, NYSERDA has investigated and obtained marketplace feedback confirming the value of a best practices guide to assist farms in improving energy efficiency decisions. • As this initiative is implemented, NYSERDA will continue engagement with industry experts and New York stakeholders to review progress and help guide the evolution of strategy to maximize impact, including soliciting suggestions for improving results and NYSERDA's role.
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21.2.4 Theory of Change

Market Barriers Addressed	<ul style="list-style-type: none"> • Lack of Information. Lack of information and understanding of the energy and non-energy benefits of clean energy improvements limits the likelihood that end users will pursue projects. This creates an opportunity for NYSERDA to develop and disseminate relevant information to encourage the adoption of clean energy. • Competing Priorities. Lack of consideration of clean energy opportunities, given other priorities when it comes to day-to-day management and operation of facilities, which limits potential energy savings from being identified and pursued. NYSERDA can highlight the positive impact of clean energy opportunities through engaging end-users in various pilots.
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	<ul style="list-style-type: none"> • General Market Uncertainty. Uncertainty of the best approach to procure and engage in clean energy projects is a barrier to end users moving forward on a project. Qualifying and vetting energy-focused firms and studies will increase consumer confidence and subsequently increase clean energy adoption. • Site specificity. Individual site assessments are frequently required to adequately align end user needs and financial ability with potential projects. These individual site assessments are a costlier method of achieving clean energy adoption. Customer acquisition and project identification costs may be reduced through aggregated business approaches, such as paying a fixed dollar amount per kWh or MMBtu of savings recommended, or a fixed dollar amount per end user that implements a minimum level of CO2 reduction, to achieve clean energy adoption at greater scale. • Seasonality. The timeframe to provide information to make energy efficiency improvements often competes with other priorities. For example, working with the agricultural community and leveraging the opportune times around harvesting times or for colleges and universities around semester start and end times. • Lack of comprehensive energy efficiency resource and information. By compiling information into easy to follow best practices, this initiative will make the process of learning about energy efficiency options easier and more effective.
<p>Testable Hypotheses</p>	<ul style="list-style-type: none"> • If NYSERDA technical services, such as support of new aggregation models, decrease customer acquisition and project identification costs, then the likelihood of clean energy projects moving forward will increase. • If end-users are provided technical and information resources, then they will have greater confidence in and improved understanding of the value of clean energy projects, leading to a greater number of projects being implemented. • If a customer is presented with a plan demonstrating potential energy savings, incremental project costs, and return on investment, then they will be motivated to choose energy efficient options, change behaviors and culture. • If case studies and testimonials from key market actors are developed then peers will have more confidence in the savings and will replicate energy efficient design and change behaviors and culture. Existing programs, such as FlexTech, do not offer case studies or peer sharing.
<p>Activities</p>	<p>NYSERDA will engage in targeted pilots and studies to develop and standardize methods, as appropriate, to optimize the identification and presentation of clean energy opportunities, with continued support for qualified consultants, training, and guidance. When administering the pilots and studies, NYSERDA will structure the offerings to best serve the end user or sector. For example, agriculture energy audits are offered as a component of the FlexTech Program with a different cost-share structure.</p> <p>NYSERDA will qualify consultants to provide the services as needed. This is currently administered by qualifying FlexTech Consultants through an open enrollment solicitation. NYSERDA will continue to assess whether all the expertise and qualifications needed to support each pilot are being provided through the open enrollment solicitation, and modify the process if needed.</p> <p><u>Pilot Activities</u></p> <p>NYSERDA will fund pilots that engage the energy consultant community through means other than cost-shared energy assessments to demonstrate the benefits of continuously investing in clean energy and energy management. The pilots will also</p>

	<p>engage end-users to demonstrate and prove the benefits of clean energy implementation through the alternative approaches.</p> <p>The pilots are expected to be market testing efforts. Once a pilot proves a successful approach to reaching scale and delivering energy savings, NYSERDA would issue a larger scale effort such as an open enrollment or competitive RFP. At that time, NYSERDA will examine if additional funds are needed and revise this initiative to increase the budget and benefits as needed.</p> <p>Initially, NYSERDA will issue a solicitation for an on-site energy manager pilot, in coordination with NYSERDA efforts outlined in the Industrial Chapter.</p> <ul style="list-style-type: none"> • The on-site energy manager pilot will provide energy management support through the engagement of existing on-site staff, contracted staff, new staff, or a hybrid approach. These staff will inform efficient day-to-day operation and longer-term capital planning of their facility(ies). Regardless of the staff leading the effort, the pilot will train and educate facility and energy managers to ensure transfer of knowledge from consultant to facility. • The pilot will target larger entities (e.g., colleges and universities, healthcare facilities); however, the offering will be open to facilities of all sectors and sizes. Note: the savings and impacts from industrial facilities appear in the Industrial Chapter while non-industrial facilities are accounted for under this Technical Services initiative. • For smaller facilities, one potential approach to explore is the efficacy of procuring energy management services for a combination of smaller facilities. In this instance, the applicant may be required to supply additional documentation to demonstrate how they would be able to coordinate, track, and effectively provide energy management activities across multiple facilities. <p>NYSERDA will also explore other technical services pilot opportunities, such as the opportunities identified below. NYSERDA will also consider additional pilots as new ideas emerge.¹⁰</p> <ul style="list-style-type: none"> • <i>New Aggregation Models.</i> NYSERDA will explore other opportunities for ways to reduce customer acquisition and project identification costs and provide technical services beyond site-specific energy studies, such as providing the services for an aggregation of sites. This will improve the predictability of returns from investments for end users by providing replicable approaches and assessment tools. To reduce the energy focused firms risk of piloting different customer acquisition and engagement approaches, NYSERDA will reward successful approaches by paying for the results (for example paying a fixed dollar amount per kWh or MMBtu of savings recommended, or fixed dollar amount per end user that implements a minimum level of CO2 reduction). • <i>Technical Review Services.</i> There is a market need for independent advisement, quality assurance, and validation of the findings of energy studies. NYSERDA will explore providing technical review for projects that do not receive cost-shared energy assessments that meet specific requirements for review. These requirements may include a willingness to provide copies of the scope of work, methodology, assumptions, and calculations.
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¹⁰Based on the results of initial solicitations, NYSERDA may revise the pilots included in this initiative to add additional pilots, run multiple rounds of the same pilot, or remove efforts that the market indicates are not necessary. NYSERDA will update the initiative if additional funding is needed or anticipated benefits are changed.

	<p><u>Studies</u></p> <p>NYSERDA will continue the FlexTech Program, which provides site-specific clean energy recommendations to improve the sites operations, align future investment opportunities, and prioritize those investments. NYSERDA will deliver sector specific approaches as necessary to achieve goals and serve the marketplace.</p> <p><u>Best Practices</u></p> <p>NYSERDA will also engage in the development of information, tools, and resources to demonstrate the benefits of clean energy investments and energy management. There is currently a lack of awareness among end-use customers on how to engage consultants, understand potential clean energy opportunities, and how to interpret the results and outcomes of energy studies. To overcome this awareness barrier, NYSERDA will gather in-house information and utilize a third-party technical resource to:</p> <ul style="list-style-type: none"> • Develop informational materials and templates around common measures and results, case studies, and testimonials across sectors to demonstrate potential clean energy opportunities. For example, NYSERDA will develop, market, maintain and update an energy-related, farm management best practice guide. • Provide best practices on scope of work development and review and interpretation of calculations for customers lacking resources knowledgeable on clean energy project development. • Develop tools and resources, for example, preventative and proactive maintenance checklists, for initiating, identifying, and interpreting projects and outcomes. • Explore sector specific needs, including analyzing data for commonalities across projects that could allow for standardization in approaches and measures across space and building characteristics. NYSERDA will leverage existing resources for this data, including FlexTech program data and impact evaluation results. • NYSERDA will share the findings from the aggregated data with the marketplace to spur replication, improve tools, and inspire advancements in technologies. This information could be used to better inform the energy-focused firms on end user commonalities, measure successes, and clean energy areas of opportunities. • NYSERDA will disseminate the best practice materials across multiple platforms, including the NYSERDA website, partner organizations, through trade allies such as sector-based organizations and consortiums, and other NYS entities with similar market participants. Farm management best practice guides will also be specifically delivered to end users. • NYSERDA will also establish peer-to-peer exchanges between and among end-users and consultants to solicit feedback on obstacles and successes as well as identify market needs.
<p>Key Milestones</p>	<p><u>Milestone 1 (2017)</u></p> <ul style="list-style-type: none"> • Identify qualified energy-focused consultants to participate in pilots and serve customers engaging in pilots or cost-shared energy assessments. <p><u>Milestone 2 (2018)</u></p> <ul style="list-style-type: none"> • Issue solicitation for On Site Energy Manager pilot. <p><u>Milestone 3 (2018)</u></p> <ul style="list-style-type: none"> • Award funding to initial entities selected under On-Site Energy Manager pilot.

	<p><u>Milestone 4 (2018)</u></p> <ul style="list-style-type: none"> • Issue solicitation, New Aggregation Models pilot. <p><u>Milestone 5 (2018)</u></p> <ul style="list-style-type: none"> • Contract with third-party to support best practices development including the farm management best practices guide. <p><u>Milestone 6 (2019)</u></p> <ul style="list-style-type: none"> • Award funding to initial entities selected under New Aggregation Models pilot. <p><u>Milestone 7 (2019)</u></p> <ul style="list-style-type: none"> • Disseminate best practices materials. <p><u>Milestone 8 (2019)</u></p> <ul style="list-style-type: none"> • Issue revised open enrollment Agriculture Energy Audit component of FlexTech. <p><u>Milestone 9 (2019)</u></p> <ul style="list-style-type: none"> • Begin examining the results of pilot(s) to determine if additional rounds of the same pilot are needed in the market or if new pilots are needed. Subsequent milestones will be updated accordingly based on the result of this review. <p><u>Milestone 10 (2020)</u></p> <ul style="list-style-type: none"> • Issue revised open enrollment FlexTech Program. <p><u>Milestone 11 (2022)</u></p> <ul style="list-style-type: none"> • Issue third pilot solicitation. It is anticipated that the third pilot will be available through 2024.
Goals Prior to Exit	<p>Due to the nature of this work, the lead time associated with customer acquisition and adoption, and end users fundamental need for credible and objective information, NYSERDA envisions continuing to pursue technical services for the duration of the CEF. Priorities and approaches will shift as the various pilots are tested and new market needs are identified. NYSERDA anticipates exiting the activities described in this initiative when:</p> <ul style="list-style-type: none"> • Consultants, energy service companies, and other energy-focused firms embrace the piloted business models and incorporate these models as a standard service • List of qualified energy-focused firms is used as a reference and resource by the marketplace without NYSERDA assistance. • Information provided by NYSERDA on clean energy best practices is incorporated in to other best practice efforts that currently lack this information. For the agriculture sector, this means NY Farm Bureau, Cornell Cooperative Extension and stakeholders trusted by the agriculture community incorporate clean energy best practices in to their activities.

21.2.5 Relationship to Utility/REV

Utility Role/ Coordination Points	<ul style="list-style-type: none"> • NYSERDA has shared information and met with each of the investor owned utilities (IOUs) as well as with the Joint Utilities (JU) to discuss various NYSERDA initiatives. Additional coordination will be undertaken on this specific initiative to provide a clear path for opportunities that are identified to seek out incentive support from IOU energy programs. The best practice guides may provide information on how to access utility programs to support the implementation of
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	<p>energy and process efficiency projects. NYSERDA will maintain current collaboration with the utilities to ensure the guides provide up-to-date information.</p> <ul style="list-style-type: none"> Starting in 2016, utilities have been removing or decreasing funds to support their own technical services initiatives and instead, directing potential customers to NYSERDA. NYSERDA will also take advantage of the Clean Energy Advisory Council (CEAC) Clean Energy Implementation and Coordination Working Group to coordinate planning and implementation with the New York State utilities.
Utility Interventions in Target Market	<ul style="list-style-type: none"> While none of the investor owned utilities currently have a dedicated Technical Services initiative, the target market is coincident with stakeholders targeted for utility initiatives. NYSERDA will coordinate with the investor owned utilities on key accounts to optimize the overall impact of both NYSERDA and utility offerings and to avoid confusion and multiple outreach efforts. Utility prescriptive and custom incentive programs currently exist in the market through National Grid, NYSEG, RG&E, Central Hudson, Con Edison, and Orange & Rockland.

21.2.6 Budgets & Expenditures

An annual commitment budget for all activities included in this chapter is shown in Table 7. The annual expenditure projection is included in Table 8. Budgets and expenditures do not include Administration, Evaluation, or Cost Recovery Fee; these elements are addressed in the Budget Accounting and Benefits chapter filing. The budget as presented in the Budget Accounting and Benefits Chapter will serve as the basis for any subsequent reallocation request. The additional level of detail presented within the table below is intended for informational purposes only. The budget reflects 8-years of funding for multiple rounds of pilots and continuation of FlexTech (which includes Agriculture audits) from 2019-2025 at reduced funding levels than currently approved in the Resource Acquisition Transition Chapter. It is anticipated that budgets and goals will be revisited annually with re-filings and specifically when pilot results are known.

Table 7. Annual Market Development Budget Allocation – Commitment Basis

Commitment Budget	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Incentives & Services	\$ -	\$2,025,000	\$1,639,000	\$3,789,000	\$2,539,000	\$2,764,000	\$1,764,000	\$1,354,000	\$1,004,000	\$16,878,000
Tools, Training, and Replication	\$ -	\$295,000	\$75,000	\$125,000	\$115,000	\$95,000	\$ -	\$ -	\$ -	\$705,000
Implementation Support	\$125,000	\$625,000	\$1,131,440	\$605,000	\$651,440	\$185,000	\$972,160	\$10,000	\$10,000	\$4,315,040
Total	\$125,000	\$2,945,000	\$2,845,440	\$4,519,000	\$3,305,440	\$3,044,000	\$2,736,160	\$1,364,000	\$1,014,000	\$21,898,040

Table 8. Annual Expenditures Projection

Expenditures	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total	1%	3%	11%	14%	13%	14%	14%	11%	10%	6%	2%

21.2.7 Progress and Performance Metrics

Table 9 provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in the initiative. Outputs are a key way of regularly tracking progress, especially in the early stages of an initiative, before broader market changes are measurable. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention. Outcome indicators will have a baseline value and progress will be measured periodically through Market Evaluation.

Table 9. Initiative Specific Metrics

Indicators¹¹		Baseline (Before/ Current)	2019 (Cumulative)
Activity/Outputs	Number of buildings participating in the pilots	0	26
	Number of qualified and active energy-focused firms (FlexTech Consultants)	39	49
	Number of case studies developed	0	2
	Number of best practice guides delivered	0	2,330
Outcomes	Number of energy-focused firms participating in pilots	0	5
	Increase or maintain the rate at which clean energy technologies are adopted by participants ¹²	65%	65%
	Increase the rate at which clean energy technologies are adopted by non-participants through sharing of best practices and case studies	25% ¹³	30%

Benefits shown in Table 10 and Table 11 are direct, near term benefits associated with this initiative's projects. These benefits will be quantified and reported on a quarterly basis and will be validated through later evaluation.

¹¹ A 0 (zero) denotes the actual value is currently believed to be zero for baseline/market metrics.

¹² The FlexTech Program has had the highest measure adoption rate (MAR) in the nation for individual cost-shared energy studies. Technical Services strives to maintain, and hopefully increase, this notable MAR through various cost-effective pilots.

¹³ The FlexTech Program has a current spillover rate of 25%, this initiative will strive to improve this.

Table 10. Direct Impacts

Primary Metrics ¹⁴		2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
Energy Efficiency	MWh Annual	20,200	12,300	19,600	10,900	12,300	5,700	3,470	2,880	87,310
	MWh Lifetime	343,000	208,000	333,000	186,000	209,000	96,800	59,100	49,000	1,484,000
	MMBtu Annual	114,000	54,900	121,000	62,900	73,200	26,900	12,500	5,930	471,300
	MMBtu Lifetime	1,940,000	933,000	2,060,000	1,070,000	1,240,000	458,000	212,000	101,000	8,012,000
	MW	-	-	-	-	-	-	-	-	-
Renewable Energy	MWh Annual	185	235	235	235	235	235	235	50	1,645
	MWh Lifetime	3,150	4,000	4,000	4,000	4,000	4,000	4,000	850	27,970
	MW	-	-	-	-	-	-	-	-	-
CO ₂ e Emission Reduction (metric tons) Annual		16,900	9,540	17,000	9,280	10,600	4,580	2,630	1,860	72,280
CO ₂ e Emission Reduction (metric tons) Lifetime		287,000	162,000	288,000	158,000	179,000	77,800	44,600	31,700	1,229,000
Customer Bill Savings Annual (\$ million)		\$3.4	\$2.0	\$3.4	\$1.9	\$2.1	\$0.93	\$0.54	\$0.42	\$14.66
Customer Bill Savings Lifetime (\$ million)		\$58.2	\$33.7	\$57.5	\$31.7	\$35.9	\$15.8	\$9.23	\$7.17	\$249.2
Private Investment (\$ million)		\$19.3	\$13.4	\$17.6	\$11.3	\$12.0	\$7.30	\$5.77	\$4.37	\$91.12

Table 11. Annual Projected Initiative Participation

	2018	2019	2020	2021	2022	2023	2024	2025	Total
Participants ¹⁵	15	170	240	230	230	230	190	140	1445

Benefits shown in Table 12 represent the estimated indirect market effects expected to accrue over the longer term as a result of this investment and follow on market activity. The indirect benefits that accrue from this investment will be quantified and reported based on periodic Market Evaluation studies to validate these forecasted values. Market Evaluation may occur within one year (-/+) of the years noted in the table and projected future indirect benefits and/or budgets necessary to achieve them may be updated based on the results of market evaluation. Indirect impact across NYSEERDA initiatives may not be additive due to multiple initiatives operating within market sectors. The values presented below are not discounted, however NYSEERDA has applied a discount of 50% to the overall portfolio values in the Budget Accounting and Benefits chapter.

¹⁴ Impacts are expressed on a commitment-year basis, and are incremental additions in each year. Assumes a 17-year measure life. Benefits are rounded to three significant figures. Totals may not sum due to rounding. Customer Bill Savings are calculated as direct energy bill savings realized by customers participating in NYSEERDA's programs.

¹⁵ Participants are defined as end-users, those who receive information on clean energy projects. This includes FlexTech, the pilots listed and agriculture audits.

Table 12. Estimated Indirect Market Impact

Indirect Impact		2020	2025	2030
Energy Efficiency	MWh Cumulative Annual	2,270	28,700	69,100
	MMBtu Cumulative Annual	9,870	192,000	486,000
Renewable Energy	MWh Cumulative Annual	34	688	1,740
	MW	-	-	-
CO2e Emission Reduction (metric tons) Cumulative Annual		1,750	25,800	63,500

21.2.8 Fuel Neutrality

Fuel Neutrality	<p>NYSERDA intends to offer this program in a fuel neutral manner, offering cost-sharing to encourage more efficient use of all fuel types. Based on past program performance, it is anticipated that most savings will be electric in nature, however, all systems regardless of fuel type will need to be included to provide an accurate picture of energy consumption. This will help develop the market at the scale needed to achieve New York State’s clean energy goals.</p> <p>Offering the program on a fuel neutral basis will allow NYSERDA to achieve a ton of carbon savings at a cost of \$309/metric ton, compared to a cost of \$477/metric ton in an electric only scenario.</p>
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21.2.9 Performance Monitoring and Evaluation Plans

Performance Monitoring & Evaluation Plan	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below.</p> <p><u>Test-Measure-Adjust Strategy</u></p> <ul style="list-style-type: none"> • Collect, analyze and report on progress of the initiative by comparing progress against identified goals on a regular basis (i.e., quarterly, bi-annually). • The strategy design will be tested to gauge the target population’s reaction to the strategy. This information will be used to help inform decisions about how to allocate time and resources within the initiative and to confirm market interest and preparedness for full scale implementation. • Insights as to how the initiative can be optimized will be gathered and applied to future initiative design to ensure greatest market impacts within the identified market sectors. • Aggregate and analyze data from NYSERDA-supported projects to verify realized energy savings and persistence of savings. <p><u>Market Evaluation</u></p> <ul style="list-style-type: none"> • Market evaluation will draw on the logic model and will include baseline measurements of key market indicators. Regular longitudinal measurements (e.g., annual or biennial) will include updates of the baseline metrics as well as additional measurements to assess market change resulting from the initiative. • Key market indicators will include, but not be limited to, the number of qualified and active energy-focused firms; rate at which clean energy technologies are adopted and replicated by participants and non-participants; knowledge of and confidence in the benefits of clean energy approaches and technologies; and impact of any incentive offering changes on measure adoption and participation.
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	<ul style="list-style-type: none"> • As appropriate, the market evaluation will leverage sector-level market studies as well as publicly and commercially available data to inform the tracking of key market indicators. <p><u>Impact Evaluation/Field Verification</u></p> <ul style="list-style-type: none"> • Evaluation M&V will be conducted according to the IPMVP¹⁶ method(s) most appropriate given the measure promoted by this initiative. Data from the impact evaluation can be used to help lend confidence in the market, especially among other end users. • Evaluation M&V of direct savings will focus on areas of greatest impact and will draw upon project-level data collected by the program. • Depending on the extent of replication identified in market evaluation activities, impact evaluation may be conducted on a sample of replication projects to assess outcomes.
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¹⁶ The International Performance Measurement and Verification Protocol. www.ipmvp.org.

21.3 Clean Energy Advanced Market Performance (AMP) Challenge

21.3.1 Overview

<p>Present Situation</p>	<ul style="list-style-type: none"> • Customers invest in clean energy for many reasons, including reducing costs, increasing reliability and resilience, managing volatility and risk, marketing opportunities, and corporate sustainability goals. Various market barriers, however, often limit investment in the clean energy solutions. . • Some large Commercial and Industrial (C&I) customers have indicated that they would be able to make additional clean energy investments if they had guaranteed access to their System Benefits Charge (SBC) contributions, and increased flexibility in use of these funds. • The New York Public Service Commission’s (PSC’s) Clean Energy Fund Order¹⁷ directed Department of Public Service (DPS) staff to work through the Clean Energy Advisory Council (CEAC)¹⁸ to develop and file a proposal that maximizes energy efficiency and distributed energy resource deployment in the commercial and industrial sectors through incentives for voluntary investments in clean energy technology that help accelerate and increase achievement of the Clean Energy Standard (CES) and State Energy Plan goals. • To accomplish this, the CEAC Steering Committee tasked the Voluntary Investment & Other Market Development Working Group with the development of parameters necessary to facilitate voluntary investment pilots which were presented in the .¹⁹ • The Report identified five core pilot criteria: <ul style="list-style-type: none"> ○ Define the target market ○ Identify a barrier to market engagement ○ Additionality to public benefits programs ○ Contribute to the State’s clean energy and carbon reduction goals ○ Can be replicated in the marketplace
<p>Intervention Strategy</p>	<ul style="list-style-type: none"> • NYSERDA will issue a Clean Energy Advanced Market Performance (AMP) Challenge solicitation to provide opportunities for large C&I customers to receive a three-year funding award to partially offset clean energy projects costs.²⁰ The AMP Challenge will provide flexible funding that can be used for energy efficiency and distributed energy resource projects, and interim payments (e.g., a portion of documented expenditures on clean energy projects). This will reduce the amount of upfront capital required to implement potential clean energy projects, while still achieving CEF goals on a \$/ton CO_{2e} reduced basis. • The solicitation will require proposers to develop a 3-year carbon savings goal and an associated funding request to develop clean energy projects. Proposals will be selected based on the ambitiousness of the company’s goal and reasonableness of the funding request.

¹⁷ Case 14-M-0094, Proceeding on Motion of the Commission to Consider a Clean Energy Funder, Order Authorizing the Clean Energy Fund Framework, issued January 21, 2016.

¹⁸ The CEAC was established by the PSC in the CEF Order, and operates through the structure of a Steering Committee and Working Groups convened by the Steering Committee to address specific areas of focus.

¹⁹ The Voluntary Investment Pilot Parameters Report was filed with DPS on December 21, 2016 (Matter 16-01010 – In the Matter of the CEAC’s Voluntary Investment & Other Market Development Working Group). A February 23, 2017 letter from DPS Director of Program Management and Planning to the PSC Secretary proposed that NYSERDA’s CEF serve as the means to establish a process and assessment criteria for potential pilots of voluntary investment actions that induce clean energy investments and outcomes that are above-and-beyond what the public program would otherwise have resulted in.

²⁰ Defined in this initiative as capital and operations & maintenance energy efficiency and distributed energy resource projects.

	<ul style="list-style-type: none"> On an annual basis, NYSERDA will assess the effectiveness of the challenge and will use learnings to update processes. Proven program elements or solutions will be shared internally, with NYS utilities, and the market. For a visual representation of this strategy, please reference the flow chart entitled “Logic Model: Clean Energy Advanced Market Performance (AMP) Challenge,” which can be found in Appendix A.
Goals	<ul style="list-style-type: none"> Reduce the amount of upfront capital required to implement clean energy projects and provide greater assurance of capital availability to large C&I customers. Provide increased flexibility and customization in achieving carbon reductions from the largest C&I customers to support advanced and continued investment by these large energy customers.
State Energy Plan/Clean Energy Standard Link	<ul style="list-style-type: none"> This initiative will contribute to the achievement of New York State’s greenhouse gas (GHG) emissions reduction goals identified in the 2015 New York State Energy Plan — targeting 40% reduction of GHG emissions by 2030, and 80% by 2050. The engagement of large C&I customers has the potential to accelerate achievement of these clean energy and greenhouse gas emissions reduction goals. This initiative also supports achievement of the Clean Energy Standard goal for renewable resource electric generation (50% renewable electric generation by 2030 – “50 by 30”) by reducing the overall electric load, and therefore the amount of renewables necessary to meet the 50 by 30 goal.

21.3.2 Target Market Characterization

Target Market Segment(s)	<ul style="list-style-type: none"> The target market is the largest C&I customers in NYS interested in advancing their investment in clean energy solutions to reduce their carbon emissions.
Market Participants	<ul style="list-style-type: none"> Large C&I facility owners, managers, and operators Energy-focused firms such as consultants, energy service companies, developers, vendors, and financiers
Market Readiness	<ul style="list-style-type: none"> NYS utilities launched a self-direct program for large energy users in January 2017 allowing some large C&I customers to ‘self-direct’ funds directly into facility energy efficiency investments outside existing policies and programs. Various stakeholders have expressed an interest in broadening the self-direct program model to include NYSERDA CEF funds. Potential participants have indicated they have a pipeline of clean energy projects that they would pursue if additional funding was available.
Customer Value	<ul style="list-style-type: none"> Participants will see reduced energy costs due to the implementation of clean energy projects. Participants will be better able to achieve their corporate sustainability goals due to dedicated capital. Vendors and consultants will see increased demand for energy services and products.

21.3.3 Stakeholder/Market Engagement

Stakeholder/Market Engagement	<ul style="list-style-type: none"> This initiative was informed by and is consistent with the CEAC’s Voluntary Investment and Other Market Development Working Group’s Voluntary Investment Proposal Parameters Report,²¹ which included discussion of voluntary investment programs.
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²¹ Voluntary Investment Proposal Parameters Report. December 21, 2016. Matter 16-01010 – In the Matter of the CEAC’s Voluntary Investment & Other Market Development Working Group.

	<ul style="list-style-type: none"> Working group members that contributed to the findings in the report include TRC, the NY investor-owned utilities, Multiple Intervenors, SolarCity, Citizens for Local Power, Independent Power Producers of New York, New York Power Authority, NextEra, New York City Energy Efficiency Corporation, New York Battery & Energy Storage Technology Consortium, and Alliance for Clean Energy New York. In addition to the official working group, NYSERDA also interviewed large C&I customers to gather feedback on design parameters for the AMP Challenge.
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21.3.4 Theory of Change

Market Barriers Addressed	<ul style="list-style-type: none"> Resource constraints of the customer: Large C&I customers have both internal competition for capital and constraints on staff time, which can lead to ad-hoc energy decision-making rather than conscious long-term planning. By allowing stakeholders to propose 3-year carbon reduction goals and funding requests, resource constraints will be eased. Interim payments will reduce the cost of capital for selected participants by buying down a portion of a project’s cost at the outset rather than at the post-implementation stage. This reduces the amount of upfront capital required to fund clean energy projects and allows them to allocate available capital to other internal priorities. Limited ability to implement bundled energy solutions: Currently, large C&I customers would have to participate in multiple NYSERDA programs to pursue funding for energy efficiency and renewable energy projects. By creating one channel for participation NYSERDA will seek to minimize administrative burdens on large C&I customers and facilitate the bundling of clean energy projects. Uncertainty of project benefits: Many large C&I customers do not conduct independent measurement & verification of clean energy projects, and therefore are not confident in the energy savings and financial benefits. In addition, there is a significant disconnect between pitched ROIs for clean energy solutions and what customers believe. The lack of data to support clean energy project benefits can be an impediment to pursuing future clean energy projects. By providing independent, verified performance data to customers, this strategy will seek to improve confidence in clean energy solution benefits.
Testable Hypotheses	<ul style="list-style-type: none"> If large C&I energy users establish carbon reduction goals and are provided with dedicated funding to use over a three-year span, then these customers will implement more clean energy projects and achieve more carbon reductions at a lower cost than other rate-payer supported programs. If large C&I energy users are given the flexibility to use their dedicated funds to pursue clean energy projects that meet their specific needs, then carbon reduction goals set by participants will be achieved. If independent project measurement & verification is required and provided by NYSERDA, participants will have improved confidence in the benefits associated with clean energy projects.
Activities	<ol style="list-style-type: none"> 1) Develop Competitive Solicitation <ul style="list-style-type: none"> Issue a competitive request for proposals to solicit large C&I customers that are willing to establish carbon reduction goals for a three-year period. Successful proposals must provide carbon reduction levels that meet or exceed what CEF programs would achieve. Projects implemented with AMP funding will be ineligible for support from other utility or NYSERDA programs. Hold a webinar to explain the goals and structure of the AMP Challenge and have a question and answer session with potential participants. 2) Select Proposals to Fund <ul style="list-style-type: none"> Evaluate proposals based on criteria including but not limited to:

	<ul style="list-style-type: none"> ○ Proposed carbon reduction goal, requested amount of funding, and cost effectiveness of the proposed \$/ton achievement. ○ Private sector leverage. ○ Additional impact associated with the CEF investment. ○ Assessment of the proposed clean energy action plan and the proposer's ability to achieve the stated carbon reduction goal. ○ Executive commitment and staff resources. ○ Previous clean energy project performance. ○ Commitment to a robust M&V plan, completed with third-party assistance provided by NYSERDA, to assess clean energy project impact and ROI <ul style="list-style-type: none"> • Select at least 2 proposals to receive financial support of up to \$5 million each to fund implementation. <p>3) Implementation</p> <ul style="list-style-type: none"> • NYSERDA will work closely with selected proposers to help with implementation and track progress to ensure that milestones and deliverables are met. NYSERDA will also provide third party M&V contractors to measure the impact of implemented projects. A portion of each funding award will be held until M&V is complete and paid based on performance. <p>4) Assessment</p> <ul style="list-style-type: none"> • During and after implementation, NYSERDA will assess outcomes and determine how learnings could be applied to the utility self-direct offering and/or other NYSERDA offerings.
Key Milestones	<p><u>Milestone 1 (2018)</u></p> <ul style="list-style-type: none"> • Issue competitive solicitation. <p><u>Milestone 2 (2018)</u></p> <ul style="list-style-type: none"> • Contract with selected participants. <p><u>Milestone 3 (2018)</u></p> <ul style="list-style-type: none"> • Finalize participants' Clean Energy Action Plans for 2019 during participants' capital planning cycles. Clean Energy Action Plan updates will be conducted on an annual basis with updates for 2020 and 2021 being made during capital planning cycles in 2019 and 2020, respectively. <p><u>Milestone 4 (2020)</u></p> <ul style="list-style-type: none"> • Conduct M&V for implemented 2019 projects. M&V will be conducted on an ongoing basis through 2022. • Assess program performance and participant satisfaction to test, measure, and adjust on an annual basis. <p><u>Milestone 5 (2022)</u></p> <ul style="list-style-type: none"> • Issue AMP Summary report detailing lessons learned to date and potential for replicability.
Goals Prior to Exit	<ul style="list-style-type: none"> • Awarded participants achieve goals and milestones identified during the selection process, as verified through project M&V.

21.3.5 Relationship to Utility/REV

Utility Role/Coordination Points	<ul style="list-style-type: none"> • NYSERDA will collaborate with utilities and exchange information on projects being implemented by AMP Challenge participants and lessons learned through this initiative.
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Utility Interventions in Target Market	<ul style="list-style-type: none"> In its REV Track One Order²², the PSC directed the utilities to implement self-direct programs for large energy users by January 1, 2017. The utilities have already offered their customers the option to opt-in to this program. These customers will pursue new energy efficiency projects of their choosing over the course of three years using funds that they would otherwise be paying through the utility’s system benefits charge (SBC). These projects must achieve savings at a better cost than the utility’s portfolio average. Self-direct projects are still in early development and have not yet resulted in demonstrated results.
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21.3.6 Budgets & Expenditures

An annual commitment budget for all activities included in this chapter is shown in Table 13. The annual expenditure projection is included in Table 14. Budgets and expenditures do not include Administration, Evaluation, or Cost Recovery Fee; these elements are addressed in the Budget Accounting and Benefits chapter filing. The budget as presented in the Budget Accounting and Benefits Chapter will serve as the basis for any subsequent reallocation request. The additional level of detail presented within the table below is intended for informational purposes only.

Table 13. Annual Market Development Budget Allocation – Commitment Basis

Budget	2018	2019	2020	Total
Direct Incentives and Services	\$10,000,000	\$-	\$-	\$10,000,000
Implementation Support	\$500,000	\$-	\$-	\$500,000
Total	\$10,500,000	\$-	\$-	\$10,500,000

Table 14. Annual Expenditures Projection

Expenditures	2018	2019	2020	2021	2022	Total
Total	0%	14%	20%	30%	36%	100%

21.3.7 Progress and Performance Metrics

Table 15 provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in the initiative. Outputs are a key way of regularly tracking progress, especially in the early stages of an initiative, before broader market changes are measurable. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention. Outcome indicators will have a baseline value and progress will be measured periodically through Market Evaluation.

²² Order Adopting Regulatory Policy Framework and Implementation Plan. February 26, 2015. Matter 14-M-0101 – Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision.

Table 15. Initiative Specific Metrics

Indicators ²³		Baseline (Before/Current)	2020 (Cumulative)
Activity/Outputs	Number of sites impacted	0	2
Outcomes	Lifetime carbon savings from selected participants meet or exceed CEF program benchmark ²⁴	\$27/ton	\$27/ton

In addition to the above outcomes, NYSERDA will also assess the following broad outcomes:

- Customers implement more clean energy projects than prior to receiving AMP funding.
- Carbon reduction goals set by participants are achieved.

Benefits shown in Table 16 and Table 17 are direct, near term benefits associated with this initiative's projects. These benefits will be quantified and reported on a quarterly basis and will be validated through later evaluation.

Table 16. Direct Impacts

Primary Metrics		2018	TOTAL
Energy Efficiency	MWh Annual	25,900	25,900
	MWh Lifetime	389,000	389,000
	MMBTu Annual	152,000	152,000
	MMBTU Lifetime	2,280,000	2,280,000
	MW	-	-
Renewable Energy	MWh Annual	4,690	4,690
	MWh Lifetime	70,400	70,400
	MW	4.00	4.00
CO2e Emission Reduction (metric tons) Annual		24,700	24,700
CO2e Emission Reduction (metric tons) Lifetime		370,000	370,000
Customer Bill Savings Annual (\$ million)		\$3.46	\$3.46
Customer Bill Savings Lifetime (\$ million)		\$51.9	\$51.9
Private Investment (\$ million)		\$54.5	\$54.5

Table 17. Annual Projected Initiative Participation

	2018	Total
Participants ²⁵	2	2

²³ A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

²⁴ NYSERDA's CEF Market Development portfolio funding and minimum carbon savings target serves as the minimum benchmark for this initiative. The Clean Energy AMP Challenge strives to equal, and hopefully exceed, this benchmark. NYSERDA derived the \$27/ton (lifetime) benchmark for the CEF Market Development portfolio based on the funding authorized (Appendix E) and the lifetime CO2 tons expected to be contributed by Market Development (pp 41) within the Commission's Order Authorizing the Clean Energy Fund, Issued and Effective June 21, 2016. \$2,610 million for Market Development program, administration and cost recovery fees, exclusive of Evaluation funds, divided by 96.6 million lifetime tons (restated from 76 million lifetime tons based on application of the most current electricity grid emission factor) gives this benchmark.

²⁵ Participants are defined as proposals contracted and the number of participants illustrated is the most conservative value. Actual participants may be greater based on number of awards made.

It is unclear what types of projects will be implemented under AMP and therefore what market dissemination activities and associated budget may be required in the future. Therefore, at present, indirect impacts are assumed to be not applicable. Depending on the success of the initiative, NYSERDA may revise the initiative to add market dissemination funding and indirect benefits would be added at that time.

21.3.8 Fuel Neutrality

Fuel Neutrality	<ul style="list-style-type: none"> • NYSERDA intends to offer this strategy in a fuel neutral manner. Offering the strategy on a fuel neutral basis will allow NYSERDA to achieve a ton of carbon savings at a cost of \$425, compared to a cost of \$652 in an electric only scenario.
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21.3.9 Performance Monitoring and Evaluation Plans

Performance Monitoring & Evaluation Plan	<p>NYSERDA's approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below.</p> <p><u>Test-Measure-Adjust Strategy</u></p> <ul style="list-style-type: none"> • Assess the responsiveness and ability of the proposers to meet and expand on the minimum criteria for participation. • NYSERDA project managers will have bi-monthly or quarterly meetings with participants and 3rd party M&V consultants to continually monitor performance and improve processes if necessary. <p><u>AMP Strategy M&V</u></p> <ul style="list-style-type: none"> • M&V plans will be developed for each of the selected participants based on the specifics of the implemented projects. M&V work will be funded out of the Implementation Support budget included in this plan. <p><u>Market Evaluation</u></p> <ul style="list-style-type: none"> • Case studies and testimonials from participants will be developed to communicate lessons learned, confidence in achieving savings, potential for replicability, and document the experience of participation when implementing clean energy measures, and assess the customers' level of investment in clean energy projects pre/post participation • Surveys or interviews will be conducted to assess: <ul style="list-style-type: none"> ○ Effectiveness of program design and implementation (e.g., programmatic terms and conditions, clarity of solicitation) ○ Decision making related to the adoption of energy efficiency absent participation in this initiative ○ Assess interest in future clean energy investments ○ Barriers to adoption of clean energy measures and processes <p><u>Impact Evaluation/Field Verification</u></p> <ul style="list-style-type: none"> • Project specific M&V is included within the implementation plans and separate evaluation M&V is not envisioned at this time.
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21.4 Clean Energy Siting & Soft Cost Reduction

21.4.1 Overview

Present Situation	<ul style="list-style-type: none">• On August 1, 2016, the Public Service Commission issued an order adopting a Clean Energy Standard (CES), which mandates that clean energy sources generate 50% of New York’s electricity by 2030. Meeting the 50% goal will require accelerated market growth in numerous sectors, including clean energy generation, energy efficiency and energy storage.• Increasing the financial attractiveness of clean energy projects can drive significant growth in these markets. As capital costs continue to decline for many clean energy technologies, a key area to drive greater cost efficiencies is reducing non-equipment costs. These costs are referred to as soft costs or balance-of-system (BOS) costs. Current clean energy soft cost barriers include inefficient and inconsistent local regulations, one-time costs (e.g. land siting and interconnection and environmental studies), and ongoing costs (e.g. customer acquisition and management). A prime example of the growing impact of non-equipment costs is solar development. Soft costs are becoming a larger fraction of the total cost of solar systems and now make up more than half the total cost of residential and commercial systems.²⁶• NY-Sun, in addition to providing financial incentives to reduce the capital costs of investment in solar electric equipment, has led several initiatives to reduce soft costs, including the PV Trainers Network (PVTN). The PVTN was launched in 2014 primarily as a training and workforce development program, but has evolved to provide educational materials and remote technical assistance, helping to address non-financial barriers. NYSERDA’s Clean Energy Communities program has also provided some technical assistance via the PVTN, but this assistance focused narrowly on implementing solarize campaigns and adopting the unified solar permit.• At the present time, there are more than 6,000 MW of Large Scale Renewables (LSR) in either the New York Independent System Operator (NYISO) Interconnection Queue or in the Article 10 process. These projects represent approximately 56% of the needed incremental generation to achieve the Clean Energy Standard goal. While NYSERDA has not engaged in targeted soft cost reduction activities related to LSR to date, the significant increase in LSR necessary to achieve the Clean Energy Standard goals will require a focused effort to reduce all system cost components.• Despite considerable progress through existing soft cost reduction efforts, barriers to clean energy deployment remain. Many local governments are encountering large-scale clean energy development for the first time, and are not equipped to efficiently and appropriately manage it. Many local governments struggle with issues such as payment-in-lieu-of-tax (PILOT) agreements, environmental impact studies and zoning.²⁷ Additionally, new clean energy models and regulatory paradigms, such as the Value of Distributed Energy Resources (VDER), can create additional questions and uncertainty that local governments need to understand and navigate.
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²⁶ Gallagher, Ben. “U.S. Solar PV Price Brief H1 2016: System Pricing, Breakdowns and Forecasts.” *Green Tech Media Research*. June 2016.

²⁷ U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. “Soft Costs.” Accessed at <https://energy.gov/eere/sunshot/soft-costs>.

	<ul style="list-style-type: none"> Reducing soft costs associated with local governments, as well as other soft costs such as customer acquisition costs or community acceptance issues, will make clean energy deployment faster, easier and more affordable, contributing to the goal of creating self-sustaining markets.
Intervention Strategy	<p>Addressing soft cost barriers is critical to reducing the overall price of clean energy, maintaining market growth, and meeting the State’s ambitious clean energy deployment goals. NYSERDA will launch a Clean Energy Siting & Soft Cost Reduction initiative to coordinate a portfolio of activities that aggressively target the most urgent soft cost barriers to clean energy market growth. The Clean Energy Siting & Soft Cost Reduction initiative will coordinate soft cost reduction activities through a framework that will improve collaboration and communication among stakeholders, and will systematically address market barriers inhibiting greater clean energy adoption in NYS. This framework will:</p> <ul style="list-style-type: none"> Synchronize and lead projects across NYSERDA and other state agencies, integrating and coordinating expertise and resources to best advance the State’s clean energy goals. Create a central forum for representatives from industry, authorities having jurisdiction (AHJs),²⁸ and utility companies to address soft cost barriers and collaboratively identify solutions. Research and develop soft cost solutions to support the many stakeholders involved in clean energy deployment. Provide comprehensive direct technical assistance for AHJ officials across New York State in a demand-driven fashion, based on requests from AHJ officials and jurisdictions facing significant clean energy development challenges. Provide financial assistance to encourage soft cost solution innovation, and recognize communities that have taken steps to significantly reduce soft costs.²⁹ <p>Initial projects for the Clean Energy Siting & Soft Cost Reduction initiative will focus on distributed solar and LSR projects. NYSERDA will continually evaluate opportunities to utilize the Clean Energy Siting & Soft Cost Reduction framework to pursue soft cost reduction strategies for other clean energy technologies (e.g. energy storage or combined heat and power), leveraging tools and related engagements with communities and AHJs.³⁰</p>
Goals	<ul style="list-style-type: none"> Optimize the project permitting, interconnection and approval process within each clean energy technology project development cycle. Increase the number of clean energy projects successfully completing the project permitting, interconnection and approval process. Contribute to reducing distributed solar soft costs in New York State 20% on average in each category by 2020 (relative to a 2016 baseline study³¹).
State Energy Plan/Clean Energy Standard Link	<ul style="list-style-type: none"> The Clean Energy Siting & Soft Cost Reduction initiative will play a critical role in achieving the 2015 State Energy Plan (SEP) and Clean Energy Standard by reducing the cost of clean energy deployment. The initiative will expand clean

²⁸ AHJs are defined as local and state entities and officials that have a decision-making role in clean energy project development.

²⁹ NYSERDA will coordinate internally as appropriate with programs such as the Energy Efficiency Soft Cost Challenge and Clean Energy Communities to ensure activities are complimentary and not duplicative.

³⁰ It is envisioned that this Investment Plan will be amended in the future as additional soft cost reduction opportunities utilizing this framework are identified for other clean energy technologies.

³¹ Manson, Cynthia. “Solar Balance-Of-System Costs Baseline Cost Study.” Prepared for NYSERDA by Industrial Economics, Incorporated (IEc). May 2017.

	<p>energy in the state’s electricity mix by reducing the cost of deployment and increasing the percentage of projects in the interconnection queue that are completed.</p> <ul style="list-style-type: none"> • The initiative will also contribute to the SEP’s economic development goals by creating and retaining jobs in New York, lowering energy costs, reducing greenhouse gases, and lessening the need for new fossil fuel power plants. The SEP notes, “To accelerate market transformation, REV initiatives will focus on identifying, mitigating, and removing common market barriers to clean energy deployment.” The Clean Energy Siting & Soft Cost Reduction initiative is designed to fulfill that specific purpose.
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21.4.2 Target Market Characterization

Target Market Segment(s)	The Clean Energy Siting & Soft Cost Reduction initiative targets clean energy technologies at the residential, commercial and utility scale, including the Community Distributed Generation market.
Market Participants	<p>Market participants include:</p> <ul style="list-style-type: none"> • NYS AHJs (e.g. mayors, sustainability officers, code officials, fire officials, planning and zoning board members, inspectors and other municipal officials) • NYS agencies • NYS utilities and the New York Independent System Operator • Clean energy companies, developers and trade associations • National labs / U.S. Department of Energy (DOE) • Universities • Non-profit organizations (e.g. environmental, economic development) • Schools, fire districts and other public organizations • Tribes
Market Readiness	<ul style="list-style-type: none"> • New York State recently enacted several policies to drive growth in clean energy electricity generation. These policies are attracting national and international attention, making New York an attractive market for clean energy development. • Developers and community members have identified clean energy project siting, permitting, interconnection and community acceptance as significant contributors to project cost and the risk of project failure. To effectively capitalize on the convergence of a favorable policy environment and declining hardware costs, New York must reduce soft cost barriers inhibiting clean energy development. Soft cost reductions are necessary to drive clean energy development to the scale needed to meet the State’s clean energy goals. • Because of the numerous market actors and varied requirements and regulations across the State, NYSERDA is well positioned to help drive economies of scale and standardize the clean energy development process across multiple jurisdictions and stakeholders, including AHJs, solar developers, state agencies, universities and utility companies. • The solar market provides an example of the need to reduce soft cost barriers. In the United States, solar energy established itself for the first time in 2016 as the largest source of newly installed electrical capacity.³² Last year U.S. developers added 14.6 GW of new solar capacity, nearly doubling the amount added to the grid in 2015.³³ Despite significant solar capacity growth nationally and in New

³² Solar Energy Industries Association. “U.S. Solar Market Grows 95% in 2016, Smashes Records.” Feb. 14, 2017. Accessed <http://www.seia.org/news/us-solar-market-grows-95-2016-smashes-records>.

³³ Ibid.

	<p>York, the state’s solar market continues to face soft cost barriers that hinder greater growth and are becoming increasingly important to address. While NY-Sun has developed several initiatives to support New York’s solar market, significantly reducing soft costs will require a new platform to lead stakeholder collaboration, develop soft cost solutions, and deliver technical assistance across a broader suite of technologies and project sizes.</p>
Customer Value	<p>The Clean Energy Siting & Soft Cost Reduction initiative will support the continued growth of New York’s clean energy industry, making the state’s energy system more efficient and resilient, achieving ratepayer savings, increasing consumer choice and protecting the environment. The Clean Energy Siting & Soft Cost Reduction initiative specifically will provide customer value in the following ways:</p> <ul style="list-style-type: none"> • Customers who purchase or lease clean energy systems will benefit from soft cost reductions through lower system prices. Customers will also realize savings on their monthly utility bills. • As soft costs fall, clean energy generation will become more competitive with conventional energy sources, which will attract investment in clean energy development, spurring continued industry and job growth in New York. • A combination of tools, resources, education and technical assistance will provide a strong foundation for AHJs to independently manage future clean energy development in their communities. • Increasing clean energy generation reduces harmful air pollution and greenhouse gasses. • Engaging communities in the development process can increase satisfaction with hosting utility-scale wind and solar projects, which will increase acceptance of LSR development and improve perceptions across the state.

21.4.3 Stakeholder/Market Engagement

Stakeholder/Market Engagement	<ul style="list-style-type: none"> • NYSERDA staff communicates regularly with clean energy project developers and AHJs on requests for information and technical assistance, as well as assistance with delayed projects. These interactions revealed a significant need among local governments for greater knowledge and technical capacity on clean energy development issues. For example, AHJs communicated their desire to develop distributed solar energy projects but lacked the necessary expertise and experience on issues such as solar permitting, planning, zoning and property taxes. This initiative was designed to meet these needs in communities across the state. • AHJs communicated an asymmetry of information between developers and communities regarding the planning, zoning, taxation, health and environmental impacts of LSR project development. Local officials and community leaders with a decision-making role in planning and zoning frequently lack the resources to assess the costs and benefits of LSR development, and have voiced a desire for an excess of conservatism in working with project developers. This approach commonly leads to project delays, the erosion of public support and project failure. • Future Engagement: <ul style="list-style-type: none"> ○ NYSERDA will periodically query market stakeholders to assess program effectiveness, identify new program opportunities, and refine program strategies. ○ NYSERDA will organize in-person workshops and online webinars to announce new market solution products, and to share the results of research, pilot projects and case studies.
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	<ul style="list-style-type: none"> ○ NYSERDA will share the findings and experience of the Clean Energy Siting & Soft Cost Reduction initiative to inform soft cost reduction initiatives and interventions in other market segments.
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21.4.4 Theory of Change

Market Barriers Addressed	<ul style="list-style-type: none"> • AHJs lack resources to manage clean energy development. They often lack staff capacity and technical knowledge, inhibiting their efforts to efficiently and appropriately manage clean energy development. Providing information, resources and technical assistance will help AHJs incorporate new clean energy technologies into local protocols (e.g. planning, zoning, land use, permitting, inspection and access). • Local concerns about clean energy development impede deployment. While some communities embrace clean energy development, some local governments and residents express concern about the pace and extent of it. Concerns stem in part from a lack of objective information about the impacts of clean energy development and ways to mitigate those impacts. • Soft costs among clean energy developers and other stakeholders remain high. These include one-time costs such as land siting, interconnection engineering and associated processes, and environmental studies, as well as ongoing costs such as customer acquisition and management, operation and maintenance, decommissioning, financing, supply chain costs, installation labor, profit and transaction costs. Identifying solutions to reduce these soft costs will make clean energy projects more affordable and attainable.
Testable Hypotheses	<ul style="list-style-type: none"> • If NYSERDA conducts outreach and provides education for AHJ officials, then their capacity to efficiently manage clean energy development will improve. • If NYSERDA provides direct, one-on-one technical assistance to AHJs, then local regulations will become more conducive to clean energy development. • If NYSERDA provides one-on-one technical assistance to AHJs, then permitting and approval times will decrease and project approval rates will increase. • If NYSERDA provides technical analysis and support related to the NYISO interconnection queue, it will increase the likelihood that the NYISO will meet its goal of completing a class year³⁴ interconnection study process and commence a new class year process every year. • If NYSERDA makes available funding opportunities that recognize AHJ efforts to reduce clean energy soft costs, then AHJs will be incentivized to take further steps to reduce these soft costs. • If NYSERDA provides funding for soft cost research and special projects, then award recipients will identify innovative soft cost reduction opportunities and strategies.³⁵
Activities	<p>Create and refine soft cost solutions</p> <ul style="list-style-type: none"> • NYSERDA will create and refine soft cost solutions, including manuals, factsheets, case studies and technical reports that provide information on best practices to overcome soft cost barriers. Products may address soft costs of a single clean energy technology or may cover multiple clean energy technologies that experience a common soft cost barrier.

³⁴ NYISO class year studies evaluate the cumulative impact of a group of projects that have completed similar milestones.

³⁵ This effort will be coordinated with the Energy Efficiency Soft Cost Challenge to avoid overlap and to share lessons learned across efficiency and distributed generation.

- Specific products may include informational resources on Article 10, guidance on setbacks for wind and solar, studies on property value impacts of wind and solar development, and financial guidance tools for communities.
- NYSERDA will also conduct technical assessments and outreach around interconnection inefficiencies for LSR projects to reduce interconnection costs and timelines. Analysis of the LSR interconnection process from the perspective of the NYISO, the Transmission Owner and the project developer will be evaluated to identify areas for improvement from a technical and policy standpoint. The results of the analysis will be presented and discussed through NYISO committees.

Develop a comprehensive outreach and education campaign for AHJ officials across New York State.

- NYSERDA will conduct an outreach and education campaign. The campaign will utilize online resources, webinars, workshops, and events to disseminate soft cost solutions and products. It will leverage NYSERDA's network of existing AHJ contacts as well as membership organizations (e.g., the New York Association of Towns and the New York Conference of Mayors). The campaign will draw upon the statewide outreach and education efforts of NYSERDA's Clean Energy Communities program.
- Workshops will occur at the county level to maximize efficiency, expand access and facilitate collaboration among AHJs. The outreach and education campaign will serve to disseminate soft cost solutions and raise awareness of the availability of technical assistance.
- As part of this campaign, NYSERDA will convene and facilitate regional meetings for community stakeholders in probable LSR areas to advance objective information on the costs and benefits of LSR development, encourage proactive planning and zoning for clean energy, expand relationships with community or regional leaders to better facilitate information-sharing, and increase awareness of the challenges and successes of LSR development in specific regions of New York State.

Provide targeted, one-on-one technical assistance

- NYSERDA will provide technical assistance to local governments on clean energy development issues. NYSERDA will train all technical assistance providers and review all materials to ensure consistent content and services leveraging a pool of contractors who can provide on-the-ground assistance. NYSERDA will also solicit feedback from AHJ officials to ensure providers are meeting their needs.
- Technical assistance offerings will include remote and in-person troubleshooting and consultations, including assisting AHJ officials with implementing soft cost solutions. Efforts will include describing the fundamentals of the project development process, interpreting manuals, factsheets and technical reports, and making connections to other communities with existing LSR projects. NYSERDA will prepare community-specific materials relevant to LSR development for use during one-on-one technical assistance sessions.
- NYSERDA will provide assistance to communities considering property tax agreements to facilitate a smooth process with increased satisfaction from both communities and developers. This effort will involve connecting communities that have successfully negotiated tax agreements with communities beginning the process, so they may share experiences and resources. NYSERDA will also offer training to Industrial Development Agencies (IDA) across New York State to educate them on LSR project economics.

	<p>Funding Opportunities</p> <ul style="list-style-type: none"> • NYSERDA will coordinate with the Clean Energy Communities (CEC) program to recognize communities that actively reduce clean energy soft costs. As background, the CEC program sets out 10 high-impact actions for AHJs to complete. The CEC program has a dozen coordinators across the state to help AHJs complete the high-impact actions. However, some coordinators lack the necessary technical expertise to properly advise AHJs on the high-impact actions.³⁶ • To supplement the CEC program for clean energy technologies, NYSERDA will issue a competitive solicitation to offer grants to communities that reduce clean energy technology soft costs (regarding permitting, zoning, planning, taxation, etc.). Grant funding will support additional specified actions to further reduce soft costs, such as comprehensive plans that incorporate clean energy development. NYSERDA will highlight successful AHJs in media outlets and through partner organizations. This recognition will help spur AHJs to improve their capabilities to independently and efficiently manage clean energy development. • NYSERDA will also issue a competitive solicitation for Soft Cost Innovation, which will support innovative practices that significantly reduce soft costs and accelerate clean energy adoption. Proposals may include market research, product development, software implementation or demonstration projects.³⁷ Proposal selection criteria will include project size, cost-effectiveness, replicability and the incorporation of efficiency measures, as well as portfolio-level considerations such as geographic balance, diversity of approaches and the overall number of distinct awardees. <p>Establish a Soft Cost Working Group</p> <ul style="list-style-type: none"> • NYSERDA will convene and lead a soft cost working group to facilitate communication and collaboration on soft costs among market stakeholders. The working group will advise on efforts to develop and deploy soft cost solutions, tools and resources.³⁸ It will research and provide recommendations on specific soft cost barriers, working in collaboration with NYSERDA contractors to develop solutions. The soft cost working group will make its products publicly available to encourage adoption by relevant market stakeholders. • Working group membership will be open to all interested parties and could include AHJs, state agencies, clean energy developers, utility companies, universities, national laboratories, trade associations, non-governmental organizations and consumer advocates, and others. NYSERDA staff will participate in other state-level energy working groups to coordinate efforts. • The working group will initially focus on distributed solar barriers. NYSERDA will leverage this experience and related findings to address soft cost issues for other distributed energy resources, inviting stakeholders from other clean energy technologies when appropriate.
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³⁶ The CEC program does not specifically address soft costs, nor does it address the needs of the commercial or utility-scale clean energy markets. AHJs currently have the greatest needs for technical assistance in these market segments because of the introduction of community solar and large-scale renewable projects.

³⁷ Examples of possible proposals could include a developer survey regarding installation practices, a GIS tool to assist AHJ siting, utility interconnection software, or photo-sharing practices for local inspectors. Results from the solicitation will be coordinated and synthesized with the Energy Efficiency Soft Cost Challenge to maximize soft cost reduction efforts.

³⁸ Soft cost solutions, tools and resources may include consumer education and protection documents; a model PILOT agreement and calculator; decommissioning guidance; customer acquisition studies; research on customer management and billing; GIS siting resources for AHJ officials; and factsheets on issues relevant to current market issues.

<p>Key Milestones</p>	<p><u>Milestone 1 (2018)</u></p> <ul style="list-style-type: none"> • Establish a soft cost working group. <p><u>Milestone 2 (2018)</u></p> <ul style="list-style-type: none"> • Issue a solicitation to select a pool of contractors and organizations to develop, disseminate, and implement soft cost solutions. <p><u>Milestone 3 (2018)</u></p> <ul style="list-style-type: none"> • Contract with a pool of contractors and organizations. <p><u>Milestone 4 (2018)</u></p> <ul style="list-style-type: none"> • Complete trainings for technical assistance providers. <p><u>Milestone 5 (2018)</u></p> <ul style="list-style-type: none"> • Launch a statewide outreach and education campaign to publicize soft cost solutions and technical assistance services, including convening regional meetings for LSR stakeholders. <p><u>Milestone 6 (2018)</u></p> <ul style="list-style-type: none"> • Issue the incentive grant solicitation for AHJs taking significant steps to reduce solar soft costs. <p><u>Milestone 7 (2018)</u></p> <ul style="list-style-type: none"> • Issue the Soft Cost Innovation solicitation. <p><u>Milestone 8 (2018)</u></p> <ul style="list-style-type: none"> • Contract with Soft Cost Innovation award recipients. <p><u>Milestone 9 (2019)</u></p> <ul style="list-style-type: none"> • Compile and publish a document of all case studies to highlight best soft cost reduction strategies and clean energy-friendly communities.
<p>Goals Prior to Exit</p>	<ul style="list-style-type: none"> • Communication and collaboration among market stakeholders has demonstrably improved. • Innovative soft cost research and pilot projects have found new ways for market stakeholders to reduce soft costs, and the soft cost solutions developed have been deployed into the market. • AHJ officials' awareness of and capability to efficiently manage clean energy development in key markets has improved. • Project delays and failures related to local issues are significantly reduced for LSR projects. • The development process is accelerated for communities that are supportive of LSR development. • A self-sustaining network of communities is established for information-sharing and support of LSR siting without NYSERDA involvement. • Host community satisfaction with LSR projects increases • Per-watt distributed solar soft costs in New York State have been meaningfully reduced, with a goal of a 20% reduction by 2020 (relative to a 2016 baseline study).

21.4.5 Relationship to Utility/REV

<p>Utility Role/Coordination Points</p>	<ul style="list-style-type: none"> • The Joint Utilities will serve as key partners in soft cost reduction activities, especially on interconnection issues, customer data mining, customer management and billing, and identifying constrained areas of the grid to inform clean energy deployment. NYSERDA will build off its extensive collaboration with the Joint Utilities via the Interconnection Policy Working Group and the Interconnection Technical Working Group. • Utilities may also serve as pilot and demonstration project partners to vet and scale soft cost solutions. The State Interconnection Ombudsmen will continue to facilitate active and ongoing collaboration between the Joint Utilities and clean energy developers. • The activities described here will play an integral role in assisting the State’s ongoing efforts to address DER interconnection issues. As such, it will contribute to other activities both internal and external to NYSERDA. The activities will: <ul style="list-style-type: none"> ○ Coordinate closely with the NYS interconnection working groups. ○ Integrate with the work of the NYS Interconnection Ombudspersons. ○ Consider and support related policy imperatives (e.g. REV Connect, REV pilots, and NY Prize) to ensure optimal leverage of time and resources.
<p>Utility Interventions in Target Market</p>	<ul style="list-style-type: none"> • The Joint Utilities are currently implementing the Interconnection Management Plan and Cost Allocation Mechanism, which the Commission approved on January 25, 2017. The purpose of the Interconnection Management Plan is to clear inactive projects from the utilities’ interconnection queues and allow more advanced projects to progress to construction. The purpose of the Cost Allocation Mechanism is to split grid upgrade costs among all solar developers benefiting from them. These working groups and the soft cost solutions they developed provide a model for future Clean Energy Siting & Soft Cost Reduction collaborations. • The Joint Utilities are coordinating with solar developers and customer management companies to allocate net metering credits and manage ratepayer participation in CDG projects. Opportunities may exist to reduce soft costs by streamlining these operations.

21.4.6 Budgets & Expenditures

An annual commitment budget for all activities included in this chapter is shown in Table 18. The annual expenditure projection is included in Table 19. Budgets and expenditures do not include Administration, Evaluation, or Cost Recovery Fee; these elements are addressed in the Budget Accounting and Benefits chapter filing. The budget as presented in the Budget Accounting and Benefits Chapter will serve as the basis for any subsequent reallocation request. The additional level of detail presented within the table below is intended for informational purposes only.

Considering the new Value of Distributed Energy Resources (VDER) order and evolving solar market needs, NYSERDA plans to complete a comprehensive assessment of its budgetary commitments and remaining funds under the NY-Sun program. This will include an assessment of the MW Block program as well as the need for the remaining Program Implementation budget. Once the assessment is finalized, NYSERDA will recommend funding reallocations for the NY-Sun program. Some funding from NY-Sun may be available for Clean Energy Siting & Soft Cost Reduction activities to offset the current budget in Table 18. NYSERDA will then file an amendment

to this investment plan chapter specifying the budget revisions for such activities. Clean Energy Fund resources provided under this investment plan will allow NYSERDA to immediately address the market barriers described herein.

Table 18. Annual Market Development Budget Allocation - Commitment Basis

Commitment Budget	2018	2019	2020	Total
Direct Incentives and Services	\$500,000	\$500,000	\$500,000	\$1,500,000
Tools, Training, and Replication (Distributed Generation)	\$1,765,000	\$1,765,000	\$1,765,000	\$5,295,000
Tools, Training, and Replication (LSR)	\$700,000	\$700,000	\$600,000	\$2,000,000
Total	\$2,965,000	\$2,965,000	\$2,865,000	\$8,795,000

Table 19. Annual Expenditures Projection

Expenditures	2018	2019	2020	Total
Total	34%	34%	32%	100%

21.4.7 Progress and Performance Metrics

Table 20 provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in the initiative. Outputs are a key way of regularly tracking progress, especially in the early stages of an initiative, before broader market changes are measurable. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention. Outcome indicators will have a baseline value and progress will be measured periodically through Market Evaluation.

Table 20. Initiative Specific Metrics

Indicators ³⁹		Baseline (Before/Current)	2020 (Cumulative)
Activity/ Outputs	Number of NYSERDA-led meetings on soft costs with market stakeholders	0	12
	Number of soft cost solutions created	3	8
	Number of outreach and education campaigns	1	3
	Number of soft cost reduction incentive grants awarded	0	50
	Number of regional LSR community meetings	0	6
	Number of Distributed Solar Soft Cost Innovation awards made	0	5
Near-Term Outcomes	Percentage of working group members reporting improved communication and collaboration among market stakeholders, based on a pre- and post- intervention survey	N/A	50%
	Number of AHJs receiving up to 100 hours of direct technical assistance on distributed solar projects	0	50
	Number of AHJs receiving direct technical assistance on LSR wind and solar projects	0	10
	Number of AHJs completing additional Clean Energy Community-specified steps to reduce soft costs	0	50
	Number of research projects and pilot projects completed	0	5
Mid- and Long-term Outcomes	Reduce distributed solar soft costs in New York State 20% by 2020	2016 Baseline Soft Costs: ⁴⁰ Residential: Con Ed: \$2.46/W Long Island: \$2.00/W Rest of State (ROS): \$2.18/W Commercial Roof-Mount: Con Ed: \$0.97/W Long Island: \$0.42/W ROS: \$1.66/W Commercial Ground-Mount: ROS Fixed: \$1.01/W ROS Tracking: \$1.03/W	20% reduction in average distributed solar soft costs relative to baseline data
	Percentage of developers that experience a reduction in project delays and failures due to local issues as compared to prior development experiences in NYS	N/A	80%
	Percentage of AHJs expressing satisfaction with hosting an LSR energy project, based on a pre- and post- intervention survey	N/A	80%

³⁹ A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

⁴⁰ Manson, Cynthia. "Solar Balance-Of-System Costs Baseline Cost Study." Prepared for NYSERDA by Industrial Economics, Incorporated (IEC). May 2017.

Impact Evaluation will be completed for the NY-Sun portfolio, and will include solar projects developed under the Clean Energy Siting & Soft Cost Reduction initiative. This initiative will support NY-Sun and its efforts to complete current and future solar projects in the MW Block Incentive Program. This investment plan does not claim direct benefits in addition to those already accounted for by NY-Sun. Accordingly, benefits impacts are not included herein.

The investment in LSR soft cost reduction will not have any direct, near-term benefits in energy efficiency, clean energy generation or CO2 emission reductions. Reducing project costs related to LSR development will support the achievement of the Clean Energy Standard goals and therefore the benefits from reducing LSR soft costs will be included in the evaluation of benefits resulting from the Clean Energy Standard.

Table 21 provides the projected participation associated with this initiative’s projects.

Table 21. Annual Projected Initiative Participation

Participants ⁴¹	2018	2019	2020	Total
Authorities Having Jurisdiction (AHJs)	40	40	20	100
Working Group Participants	20	20	20	60
Total	60	60	40	160

21.4.8 Fuel Neutrality

Fuel Neutrality	<ul style="list-style-type: none"> This program will not be offered on a fuel-neutral basis.
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21.4.9 Performance Monitoring and Evaluation Plans

Performance Monitoring & Evaluation Plan	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below.</p> <p><u>Test-Measure-Adjust Strategy</u></p> <ul style="list-style-type: none"> NYSERDA will monitor standard output metrics of all activities described above, including the creation and activities of the Soft Cost Working Group, the procurement and provision of technical assistance services, and the administration of funding opportunities. Funds may be redirected (as needed) to ensure continued progress against program goals. <p><u>Market Evaluation</u></p> <ul style="list-style-type: none"> Market Evaluation draws on the theory of change of the related logic model and will include baseline and longitudinal measurement of key indicators of success. Baseline measurements of key performance indicators are in place based on the 2016 study of solar soft costs in New York State. The study will be updated in 2019 to track progress. Regular updates to key performance indicators and measurement of market change, including the number of soft cost solutions developed and deployed, and
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⁴¹ Participants include AHJ technical assistance recipients, AHJ grant recipients, Innovation grant recipients, and working group members (including solar developer, utility, non-profit and national expert representatives).

	<p>the number of AHJs recipients of technical assistance services, will occur once the SMA is launched.</p> <ul style="list-style-type: none"> • Sources of data will include NYSERDA tracking data, public and commercially available data, balance of system research conducted by the national labs and other organizations (e.g., GTM Research), and primary data collection through surveys of key market stakeholders, including AHJs, solar developers and the Joint Utilities. • A formal Market Evaluation is not planned for LSR as part of this initiative, beyond aspects addressed in the Test-Measure-Adjust Strategy. <p><u>Impact Evaluation/Field Verification</u></p> <ul style="list-style-type: none"> • Impact Evaluation will be completed for the NY-Sun portfolio as a whole. NYSERDA will develop an approach to identify these projects in the NY-Sun portfolio and to represent them in the evaluation. • Impact evaluation/field verification is not planned for LSR wind technology.
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21.5 Pay for Performance

21.5.1 Overview

<p>Present Situation</p>	<ul style="list-style-type: none"> • Utilities and NYSERDA currently secure energy savings from small and medium sized commercial and residential customers primarily through measure-level rebate offerings with program payments generally set as a cost share, and with estimated savings based on deemed⁴² results. Many energy efficiency businesses across the country have structured their customer offerings and built business models around such utility programs. • This approach has several limitations: (i) performance risk is on the utility, and by extension the ratepayers, (ii) contractors are not rewarded or responsible for project performance, and (iii) the current model constrains marketplace innovation in search of the most cost-effective and most market responsive solution. • While Pay for Performance (P4P) structures or shared savings contracts have been successfully employed with larger customers, their potential to drive scale with smaller customers has been untapped.
<p>Intervention Strategy</p>	<ul style="list-style-type: none"> • P4P is designed to respond to two observations: <ul style="list-style-type: none"> ○ An energy service contract that guarantees lower cost of energy with little or no money down, with the risk of under-performance borne by the service provider, is a highly compelling value proposition to customers. ○ A performance-based structure, where the risk of underperformance is borne by the service provider, is the most public interest aligned contract structure for rate-payer funded approaches. • At the core of a P4P model is the contractual alignment of the performance-based requirements between the program administrator and the service provider, as well as the corresponding services and requirements between the service provider and the customer, serving to transfer risk and to align payments with performance. • The P4P pilot is anticipated to consist of three phases, with each initiated approximately one year apart. Each phase is anticipated to consist of one or more solicitations for aggregators with selected aggregators having approximately two years to enroll customers and receiving performance payments for up to five years, resulting in a pilot timeline of seven to ten years. It will prove out the concept and establish practical approaches to key features, including: <ul style="list-style-type: none"> ○ Timing and level of payments that are aligned as much as possible with delivery of savings ○ Mechanics that incentivize deeper energy savings and prevent excess attention to low-hanging fruit, such as lighting ○ Stability and certainty to allow service providers to invest in their business models and in their project pipelines ○ Flexibility to allow service providers to create and adapt approaches and offerings in response to learning and to market evolution ○ Streamlined and efficient verification and evaluation approaches that ensure that savings are credible • The P4P Pilot will be: <ul style="list-style-type: none"> ○ Directed upstream at aggregators and large contractors

⁴² Deemed savings are a set of predetermined savings values for efficiency measures that are developed from commonly accepted data sources and analytical methods and maintained by states or regional bodies.

	<ul style="list-style-type: none"> ○ Initially focused on small and medium commercial and single-family residential sectors ○ Designed and implemented with utilities ○ Designed to allow solutions providers to innovate, reduce costs, and increase customer value ● An objective of the pilot is to provide the market with a flexible program approach, as well as increasing market understanding of risk and confidence in P4P, which will allow costs to decline to a point that is more cost effective than comparable existing programs prior to utility adoption. ● The P4P strategy will utilize the CalTRACK methodology to measure energy savings. CalTRACK was originally developed in California through a stakeholder process with funding and leadership from the California Energy Commission, California PUC, and PG&E. The methods define how to calculate site-based, weather-normalized, metered energy savings by comparing an existing conditions baseline to post-retrofit data from utility meters. CalTRACK supports P4P programs by tracking metered savings using calculations that are transparent and replicable. When all parties use the same standardized set of methods for calculating energy savings, a robust energy efficiency market is possible. ● By calculating savings from meter data, the P4P strategy will experience more accurate savings estimates and measurements, and higher realization rates than existing programs. Past evaluations have established realization rates of 35-65% for residential programs and 58-80% for small commercial programs.⁴³ ● For a visual representation of this strategy, reference the flow chart entitled “Logic Model: Pay for Performance,” which can be found in Appendix A.
Goals	<p>Test P4P’s ability to:</p> <ul style="list-style-type: none"> ● Achieve customer uptake through simpler, less risky offerings ● Deliver reliable savings to the customer and system ● Measure the savings reliably and credibly ● Grow the base of energy efficiency service providers and financiers ● Begin to determine whether such an approach can work at cost-effective compensation levels for steady state post-pilot programs ● Begin to determine key parameters and contract terms for steady state post-pilot programs
State Energy Plan/Clean Energy Standard Link	<ul style="list-style-type: none"> ● The 2015 State Energy Plan identifies buildings as a major source of energy use and greenhouse gas (GHG) emissions in the State. This strategy will reduce energy consumption and GHG emissions associated with buildings, contributing to State Energy Plan goals to reduce GHG emissions by 40% and to implement a 600 trillion BTU increase in statewide energy efficiency. ● This initiative also supports achievement of the Clean Energy Standard goal for renewable resource electric generation (50% renewable electric generation by 2030 – “50 by 30”) by reducing the overall electric load, and therefore the amount of renewables necessary to meet the 50 by 30 goal. ● The initiative supports the “New Efficiency: New York” target and strategy announced in April 2018.

⁴³ NYSERDA evaluation studies and “Small Business Direct Install Program Evaluation Review Final Report” prepared for the E² Working Group dated January 30, 2015.

21.5.2 Target Market Characterization

Target Market Segment(s)	<ul style="list-style-type: none"> Initially, residential and small-to-medium commercial customers with average annual peak demand under 300kW. The pilot will target customers with utility account history capable of supporting baseline calculations. Target market segments may be expanded in later pilot phases. The first-year pilot is expected to target commercial customers in Staten Island and Westchester and residential customers in central New York and Clifton Park. The commercial pilot will leverage the Con Ed AMI build out in Staten Island and Westchester, and the residential pilot will leverage the National Grid AMI demo in Clifton Park. These target markets have been historically expensive to reach; however, the size of the market is significant - warranting exploring strategies such as P4P which could reduce customer acquisition costs. (The average \$/ton to reach small commercial customers in Con Ed's territory has been approximately \$55/ton; the average \$/ton to reach residential customers in upstate New York through NYSEERDA and utility programs has been approximately \$80/ton. These values do not factor in historically low realization rates.)
Market Participants	<p>Market participants include:</p> <ul style="list-style-type: none"> Aggregators Contractors and service providers Utilities End use customers, namely building owners, leaseholders (utility customers who can authorize the installation of energy efficiency packages), and homeowners Financiers and insurers
Market Readiness	<ul style="list-style-type: none"> The Energy Efficiency Procurement and Markets working group of the Clean Energy Advisory Council recommended conducting P4P pilots that make use of meter-based data for assessing energy savings in its 2017 report. PG&E in California launched its residential P4P program in 2018. Energy Trust of Oregon is currently developing a P4P program that will launch in 2019. New York, California and Oregon plan to use the same methodology to measure savings and administer their P4P programs. These efforts in other states are spurring industry discussion and interest at a national level from market actors and potential aggregators in P4P as a viable solution for addressing traditional program barriers, increasing energy efficiency adoption, and achieving clean energy goals. Potential aggregators and contractors have actively participated in stakeholder sessions and indicated that they are interested in and able to participate in a P4P pilot in New York. Targeting efforts have identified approximately ten residential and ten commercial potential aggregators for Phase 1. Multiple stakeholders are currently participating in the CalTRACK 2.0 Methods working group⁴⁴ to develop updates to the existing CalTRACK methods⁴⁵, as well

⁴⁴ Working group members include individuals representing Build It Green, California Energy Commission, California Public Utilities Commission, Department of Energy, DNV GL, E4TheFuture, Energy Savvy, Energy Trust of Oregon, ERS, Home Energy Analytics, Lawrence Berkeley National Laboratory, MCE Clean Energy, National Renewable Energy Laboratory, National Resource Defense Council, NMR Group Inc, Noresco, Northeast Energy Efficiency Partnerships, Open EE, Opinion Dynamics, PG&E, Rocky Mountain Institute, Sacramento Municipal Utility District, SBW Consulting, Sempra Utilities, Southern California Edison, Tierra Resource Consultants, TRC Solutions, and University of California Berkeley.

⁴⁵ CalTRACK 1.0 calculates site-based, weather-normalized, metered energy savings from an existing conditions baseline applied to single family residential retrofits using data from utility meters. CalTRACK 2.0 framework will include updates to existing CalTRACK methods as well as the development of methods and policy guidance for hourly savings, portfolio load shape, and non-residential sectors.

	<p>as the development of methods and policy guidance for hourly savings, portfolio load shape, and non-residential sectors. These updates are meant to further align the CalTRACK framework with the needs and requirements of future P4P programs, energy efficiency procurement and investment, and ensure all participants are measuring savings in the same way.</p> <ul style="list-style-type: none"> • In 2016-2017, NYSERDA conducted a feasibility study to test the CalTRACK methodology. Weather normalized electric and natural gas gross energy savings were calculated for a 2007-2011 Home Performance with Energy Star data set.⁴⁶ It was found that calculated savings from this study were similar to previous NYSERDA impact evaluation results despite methodological differences.
Customer Value	<ul style="list-style-type: none"> • Customers value lower energy bills and investments that deliver on promised results. If aggregators only get paid when their customers save energy on the bill, they are motivated to deliver high performing projects. This aligns aggregator motivations with customer expectations and needs. • Customers also value low risk mechanisms to save energy such as those offered by low, or no up-front, cost service arrangements. • Aggregators value a results-driven approach that offers service package flexibility and a predictable and investable cash flow. They also value simplicity in program design including streamlined measurement and verification. They greatly value a services-based approach, including those that create longer term relationships with their customers. • Utilities value credible, measured energy efficiency results.

21.5.3 Stakeholder/Market Engagement

Stakeholder/Market Engagement	<ul style="list-style-type: none"> • NYSERDA held well-attended stakeholder meetings in September 2017 and February 2018 (over three dozen organizations participated) to solicit feedback on design elements of the P4P pilot, as well as presented the P4P pilot at a session attended by approximately 50 people at the Home Performance Coalition conference in February 2018. • NYSERDA has also engaged in dozens of individual interviews with market actors including service providers, finance entities, and contractors. • NYSERDA will continue to seek feedback from market participants on design at the various stages of development. Additionally, NYSERDA will be working with the Green Bank to convene market participants to gather additional input on Green Bank financing to support P4P models.
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21.5.4 Theory of Change

Market Barriers Addressed	<ul style="list-style-type: none"> • Low customer uptake of energy efficiency in the market. Low penetration of energy efficiency in the market will be addressed by allowing aggregators to create offerings with customer uptake in mind and by providing flexibility for aggregators to adjust offerings based on customer uptake and needs, potentially including no-money down type service models. • High customer acquisition costs. High customer acquisition costs will be addressed by leveraging utility data to assess customer suitability for aggregators to target their offerings.
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⁴⁶ Results are planned to be made available on Open NY.

	<ul style="list-style-type: none"> • Site-level energy savings are highly variable and have a lower confidence than portfolio level savings. If projects are aggregated, and savings calculations are performed at the portfolio level, confidence generally increases as more projects are added to the portfolio. This portfolio approach should increase the confidence levels required to stimulate third-party investments. • Lack of standard methodology for measuring normalized energy savings in a consistent and credible way. The market currently uses many different models and methods for calculating energy savings. Therefore, there is a lack of data for potential project aggregators and investors to leverage when judging how they would be compensated for completing energy efficiency work. This barrier will be addressed by use of the CalTRACK methodology in the pilot and participation on the CalTRACK methods working group. • Lack of market for procuring energy efficiency. Currently energy efficiency cannot be sold to a utility in a way that renewable energy can be sold through renewable energy credits. This will be addressed by procuring energy efficiency from aggregators through the phases of the pilot, creating a market-based value, allowing energy efficiency savings to be monetized as a distributed energy resource.
<p>Testable Hypotheses</p>	<ul style="list-style-type: none"> • If energy efficiency savings are procured from aggregators who can create offerings designed for customer uptake, then aggregators will innovate on current business models. • If a program administrator establishes a multi-year price signal for energy efficiency, and makes performance payments for portfolios of projects as savings are measured over time, then: <ul style="list-style-type: none"> ○ Aggregators will develop customer offerings that result in persistent efficiency savings ○ Increased private investment in energy efficiency will occur • If a program administrator, with utility co-administrators, employs standardized measurement of energy savings in a P4P model along with AMI, then data will be available to increase confidence in energy efficiency as a load-shaping and distributed energy resource, potentially leading to new market opportunities. • If NYSERDA and utility co-administrators develop a standardized P4P framework, then: <ul style="list-style-type: none"> ○ Additional utility administrators will adopt the P4P model ○ Successful aggregators will expand to new territories • If P4P is implemented at scale, then increased customer uptake and reduced costs for program administration, evaluation, and customer acquisition will be realized.
<p>Activities</p>	<p>Pilot</p> <ul style="list-style-type: none"> • NYSERDA will work with utilities to pilot the P4P approach to prove out the concept and establish practical approaches to key requirements including: <ul style="list-style-type: none"> ○ Timing and level of payments that are aligned as much as possible with delivery of savings ○ Mechanics that prevent excess attention to low-hanging fruit, such as lighting ○ Stability and certainty to allow service providers to invest in their business systems and project pipelines ○ Flexibility to allow service providers to adapt approaches and offerings in response to learning and market evolution ○ Streamlined and efficient evaluation approaches that ensure that savings are credible • NYSERDA and its utility co-administrators will issue solicitations over the 2019-2021 timeframe to select qualified aggregators.

	<ul style="list-style-type: none"> Selected aggregators will then work with partners and contractors for a sufficient delivery period (i.e. up to two years) to enlist customers to adopt measure packages and services that create customer value. Aggregators will be compensated over a period of time (up to five years) for portfolio performance of normalized metered energy savings, through a public-interest-aligned contract structure where performance risk is borne by the aggregator. The different pilot phases will be designed with utility co-administrators and informed by market feedback. Subsequent phases may include non-metered fuels, such as oil, and may provide additional incentives for temporal or locational demand reduction, as well as potentially focusing on new sectors such as low-to-moderate income or multifamily residential. NYSERDA will also collaborate with the New York Green Bank to issue an energy efficiency financing Request for Proposals that will support P4P. <p>Adopt a methodology for measuring, tracking, and storing the data</p> <ul style="list-style-type: none"> NYSERDA will issue a solicitation to procure an effective M&V software solution, which will be utilized to calculate energy savings and associated payments for administration of the pilot. The pilot will adopt the CalTRACK methodology for calculating energy savings. <p>Engage and educate market</p> <ul style="list-style-type: none"> NYSERDA and utility co-administrators will educate relevant market actors, including aggregators, customers, contractors, and financiers on the P4P approach and pilot results through stakeholder meetings, public events, conferences, and webinars. Advanced M&V work will be completed to compare pre- and post-intervention models to determine success in achieving results and provide confidence in energy savings. NYSERDA will disseminate aggregated and anonymized pilot performance data to the market by making it available on Open NY.
Key Milestones	<p>A total of three phases are anticipated over the 2018-2021 time period, with similar milestones for each phase. Future phases of the pilot may involve new utility co-administrators, expanded geographies, additional customer segments, and will test additional P4P use cases.</p> <p><u>Milestone 1 (2018)</u></p> <ul style="list-style-type: none"> Release key pilot design parameters for stakeholder feedback and complete P4P pilot design. <p><u>Milestone 2 (2018)</u></p> <ul style="list-style-type: none"> Make available historical program performance data utilizing CalTRACK results. <p><u>Milestone 3 (2018)</u></p> <ul style="list-style-type: none"> Release RFP and execute contract to procure advanced measurement and verification software solution. <p><u>Milestone 4 (2018)</u></p> <ul style="list-style-type: none"> Release Phase 1 procurement document(s) with utility co-administrators to solicit aggregator bids. <p><u>Milestone 5 (2019)</u></p> <ul style="list-style-type: none"> Execute Phase 1 aggregator contracts and begin Phase 1 work.

	<p><u>Milestone 6 (2019)</u></p> <ul style="list-style-type: none"> Adjust design elements based on market feedback and prepare for Phase 2 solicitations. <p><u>Milestone 7 (2020)</u></p> <ul style="list-style-type: none"> Initial assessment of Phase 1 customer uptake, aggregator performance, program parameters, and M&V solution after first year of Phase 1 implementation. <p><u>Milestone 8 (2021)</u></p> <ul style="list-style-type: none"> Assess level of compensation and timing of payments. Reassess customer uptake, aggregator performance, program parameters, and M&V solution. Design Phase 3 of the pilot to respond to these lessons learned.
Goals Prior to Exit	<ul style="list-style-type: none"> Customers obtain deeper energy savings and low or no upfront cost arrangements. Risks and business plan viability related to the P4P approach are better understood by the market, resulting in declining bid prices and overall costs to operate P4P falling below similar program averages. Utilities adopt a P4P approach to energy efficiency after the initial pilot. Customer, investor, aggregator, contractor, and utility confidence in expected savings improves due to available data. Sufficient use case testing of different scenarios involving P4P energy efficiency, positioning the strategy for scale and longer term, steady state, utility adoption under REV.

21.5.5 Relationship to Utility/REV

Utility Role/Coordination Points	<ul style="list-style-type: none"> For the initial phase, NYSERDA is working with Con-Edison (small commercial) and National Grid (residential) on the design and implementation of the pilot. Memorandums of Understanding are currently under development. NYSERDA is also in active discussions with other utilities about similar partnerships on the later phases of the pilot. Forms of P4P or auction-type efforts have been in the market previously such as the commercial offerings of ConEdison Energy Efficiency Auction Program and ConEdison Brooklyn Queens Demand Management Demand Response Program. Results and lessons learned will be considered in the design and implementation of P4P.
Utility Interventions in Target Market	Existing, traditional utility equipment rebate programs offer custom and prescriptive incentives to the targeted sectors. P4P participants will not be eligible for these traditional utility rebate programs.

21.5.6 Budgets & Expenditures

An annual commitment budget for all activities included in this chapter is shown in Table 22. The annual expenditure projection is included in Table 23. Budgets and expenditures do not include Administration, Evaluation, or Cost Recovery Fee; these elements are addressed in the Budget Accounting and Benefits chapter filing. The budget as presented in the Budget Accounting and Benefits Chapter will serve as the basis for any subsequent reallocation request. The additional level of detail presented within the table below is intended for informational purposes only.

Table 22: Annual Market Development Budget Allocation – Commitment Basis

Commitment Budget	2018	2019	2020	2021	2022	Total
Direct Incentives and Services	\$-	\$7,187,900	\$14,688,000	\$26,385,000	\$-	\$48,260,900
Tools, Training, and Replication	\$3,250,000	\$-	\$-	\$-	\$-	\$3,250,000
Implementation Support	\$750,000	\$1,248,679	\$740,880	\$875,850	\$630,400	\$4,245,809
Total	\$4,000,000	\$8,436,579	\$15,428,880	\$27,260,850	\$630,400	\$55,756,709

Table 73: Annual Expenditures Projection

Expenditures	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
Total	2%	5%	8%	15%	19%	18%	17%	13%	5%	100%

21.5.7 Progress and Performance Metrics

Table 24 provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in the initiative. Outputs are a key way of regularly tracking progress, especially in the early stages of an initiative, before broader market changes are measurable. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention. Outcome indicators will have a baseline value and progress will be measured periodically through Market Evaluation.

Table 24. Initiative Specific Metrics

Indicators⁴⁷		Baseline (Before/Current)	2022 (Cumulative)
Activity/Outputs	Number of participating aggregators	0	8
	Total number of projects implemented (by sector)	0	Residential: 7,000 Commercial: 5,575
	Number of Utility Administrators with an executed MOU participating in P4P pilot	0	3
	Number of data sets published on OpenNY	0	4
Outcomes	Number of additional market actors involved in P4P pilot (non-aggregator involvement such as financial	0	8

⁴⁷ A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

	institutions, subcontractors, etc.)		
	Number of utilities committed to offering P4P programs post-pilot	0	3

In addition to the above outcomes, NYSERDA will also assess the following broad outcomes:

- Average bid price per phase (by sector)
- % reduction in expended \$/ton CO2 emissions per phase (by sector)

Benefits shown in Table 26 and Table 26 are direct, near term benefits associated with this initiative's projects. These benefits will be quantified and reported on a quarterly basis and will be validated through later evaluation. Indirect benefits are not included below.

Table 25. Direct Impacts

Primary Metrics		2019	2020	2021	TOTAL
Energy Efficiency	MWh Annual	14,083	32,843	77,920	124,846
	MWh Lifetime	171,890	399,200	946,500	1,517,590
	MMBTu Annual	20,280	44,920	106,000	171,200
	MMBTU Lifetime	355,700	776,000	1,769,000	2,900,700
	MW	-	-	-	-
Renewable Energy	MWh Annual	-	-	-	-
	MWh Lifetime	-	-	-	-
	MW	-	-	-	-
CO2e Emission Reduction (metric tons) Annual		8,640	19,960	47,270	75,950
CO2e Emission Reduction (metric tons) Lifetime		111,800	256,500	604,000	973,000
Customer Bill Savings Annual (\$ million)		\$2.19	\$5.05	\$11.82	\$19.06
Customer Bill Savings Lifetime (\$ million)		\$28.49	\$65.10	\$152.20	\$245.79
Private Investment (\$ million)		\$15.41	\$32.60	\$70.00	\$118.01

Table 26. Annual Projected Initiative Participation

Additional Performance Tracking Metrics	2019	2020	2021	Total
Participants	1,675	3,500	7,400	12,575

Benefits shown in Table 27 represent the estimated indirect market effects expected to accrue over the longer term as a result of this investment and follow on market activity. The indirect benefits that accrue from this investment will be quantified and reported based on periodic Market Evaluation studies to validate these forecasted values. Market Evaluation may occur within one year (-/+) of the years noted in the table and projected future indirect benefits and/or budgets necessary to achieve them may be updated based on the results of market evaluation. Indirect impact across NYSEERDA initiatives may not be additive due to multiple initiatives operating within market sectors. The values presented below are not discounted, however NYSEERDA has applied a discount of 50% to the overall portfolio values in the Budget Accounting and Benefits chapter.

Table 27. Estimated Indirect Market Impact

Indirect Impact		2020	2025	2030
Energy Efficiency	MWh Cumulative Annual	2,267	5,394	5,394
	MMBtu Cumulative Annual	3,164	7,940	7,940
Renewable Energy	MWh Cumulative Annual	-	-	-
	MW	-	-	-
CO2e Emission Reduction (metric tons) Cumulative Annual		1,383	3,313	3,313

21.5.8 Fuel Neutrality

Fuel Neutrality	<ul style="list-style-type: none"> Offering this initiative on a fuel neutral basis will allow NYSEERDA to achieve savings at a total cost of Commercial = \$518/annual ton and Residential = \$2,118/annual ton, compared to a total cost of Commercial = \$519/annual ton and Residential = \$3,666/annual ton for electric only based on direct cumulative annual carbon reductions. Customers will be better served if aggregator offerings can address both electric and natural gas energy efficiency needs. Achievement of NYS carbon goals will require reductions in electricity, natural gas, and fuel oil consumption for mass market customers.
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21.5.9 Performance Monitoring and Evaluation Plans

Performance Monitoring & Evaluation Plan	<p>NYSEERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below.</p> <p><u>Test-Measure-Adjust Strategy</u></p> <ul style="list-style-type: none"> NYSEERDA and utility co-administrators will assess the following metrics on a quarterly basis. The information will be utilized to adjust the program in real time as appropriate, as well as to inform future phases of the pilot to maximize initiative effectiveness. <ul style="list-style-type: none"> Number of interested and participating aggregators in Phase 1 of the pilot and bid prices. Number of buildings included in each aggregator’s portfolio compared to projections (e.g. NYSEERDA estimates, Aggregator bids).
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- Number of implemented projects compared to projections (e.g. NYSERDA estimates, Aggregator bids).
- Average sales cycle length for aggregator offerings and appropriateness of the two-year implementation period.
- NYSERDA and utility co-administrators will also assess the overall pilot for lessons learned regarding the effectiveness of the pilot design to inform future pilot phases and any future steady-state programs under REV. Indicators of effectiveness that will be assessed include:
 - Customer uptake
 - Third party capital deployed
 - Consistent and credible measurement of savings
 - Pilot rules
 - Overall cost-effectiveness

Pay for Performance Strategy M&V

- M&V of the energy savings resulting from the energy efficiency projects implemented under the P4P pilot will be completed by an advanced M&V software solution employing the CalTRACK methodology.
- Additional M&V functionality may be built into the software solution during the P4P initiative to implement updates to the CalTRACK methodology, improve the accuracy of NMEC savings estimates, or accommodate new evaluation use cases. M&V work will be funded out of the Implementation Support budget included in this plan.

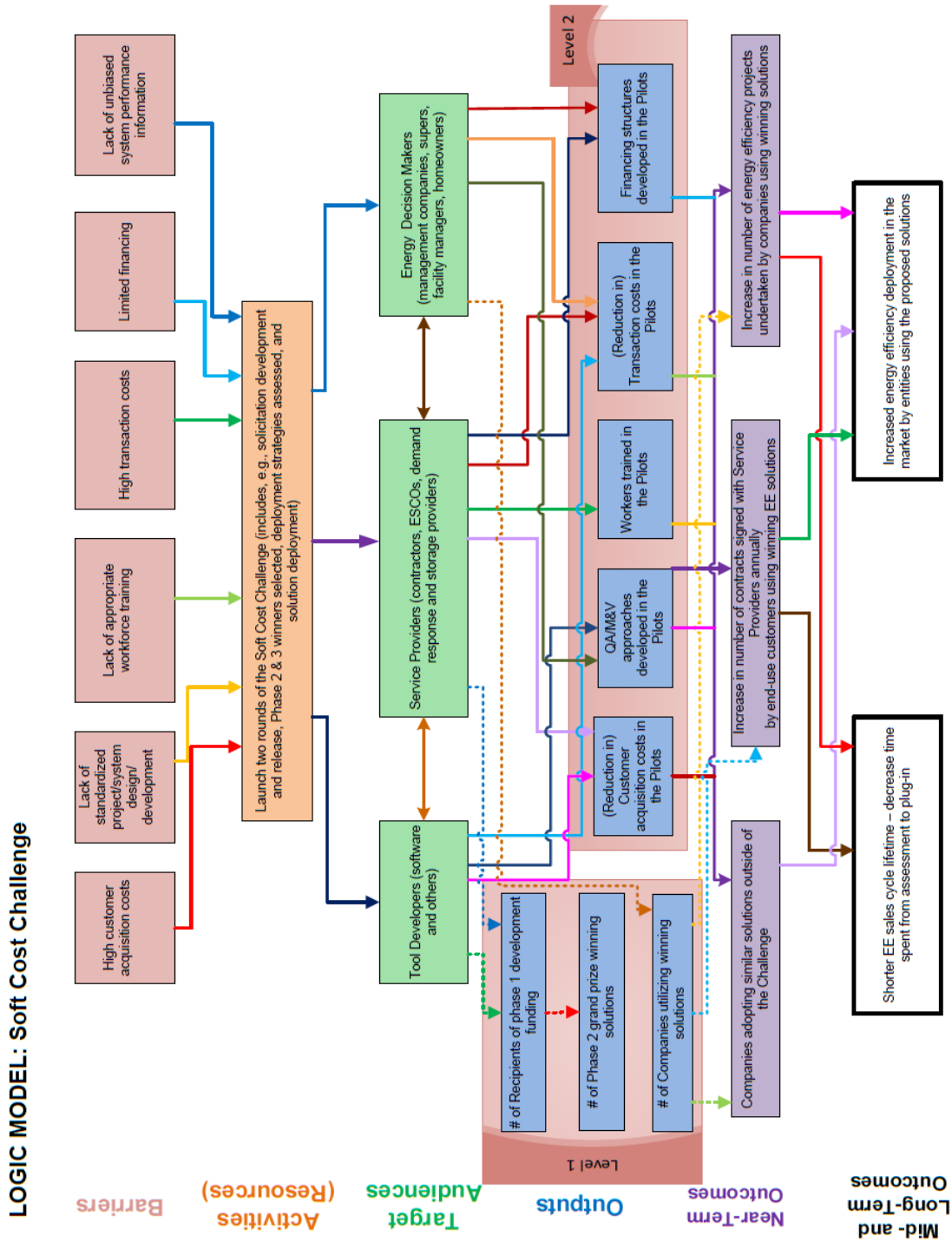
Market Evaluation

- Market Evaluation will draw on the logic model and will include baseline and longitudinal measurement of key indicators of market success.
- Baseline measurements of key performance indicators will occur within one year of strategy approval, including customer participation, market participation (aggregators, contractors, etc.), utility participation, and number of datasets published. Current levels of participation, satisfaction, and expenditures in existing residential and small to medium commercial programs (utility and NYSERDA programs), as well as selected proposals will be used to assist in establishing P4P baselines.
- Regular (e.g., quarterly) updates to key performance indicators and measurement of market change, including number of participating projects, administrative costs for both project and program implementors, and customer satisfaction with aggregators and the P4P initiative.
- Surveys or interviews will be conducted to assess additional research questions as necessary. Topics addressed in these research questions may include:
 - Effectiveness of pilot design and implementation (e.g., programmatic terms and conditions, clarity of solicitation)
 - Customer reactions to pilot participation
 - Barriers to adoption of energy efficiency offerings
 - Participation of third party capital
 - Successful business model innovations
 - Sufficiency of data made available to support the pilot
- Sources of data will include aggregator project data, public and commercially available data, and primary data collection through surveys of key market actors.

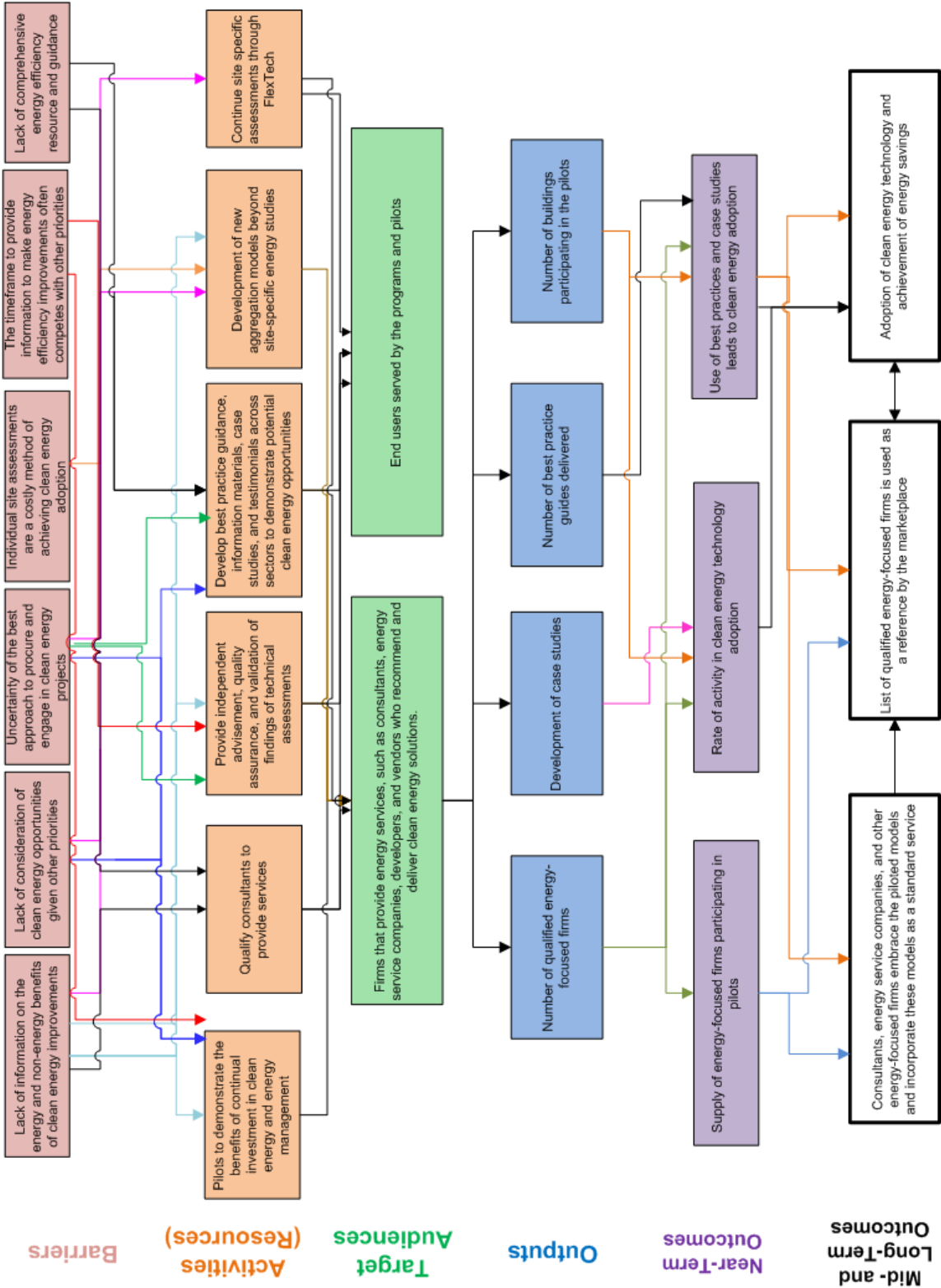
Impact Evaluation/Field Verification

	<ul style="list-style-type: none"> • As noted above, energy savings resulting from aggregator projects will be measured using an advanced M&V software solution. These savings estimates will in turn be used to calculate CO₂ savings. Independent impact evaluation/field verification will rely on measurement and verification conducted by the advanced M&V software solution and will verify the results of this analysis as needed. • Targeted field verification may be conducted as appropriate to verify that the measures reported to NYSERDA/utility co-administrators have been installed. In the case of measures for which there is an applicable efficiency standard, inspectors will verify that the measures meet or exceed code requirements. • Field verification will be conducted as appropriate for projects with savings results that significantly under- or overperform (e.g. +/-50%) compared to aggregator estimated savings and/or other projects in the aggregator's portfolio. • The site-based, weather normalized metered energy savings will be used in evaluation of the P4P pilot. Impact evaluation may be conducted to control for other effects, such as exogenous factors like economic growth or technology adoption or endogenous factors like socioeconomic status. as deemed appropriate. • Replication of P4P business models in New York State, beyond pilot participants, and the resultant energy benefits will also be subject to independent impact evaluation review. The methodology will be determined, as appropriate, based on the level of adoption and technologies involved. • Evaluation M&V may be conducted for a sample of participating spaces/buildings, according to the International Performance Measurement & Verification Protocol (IPMVP) method(s) most appropriate given the improvements made. • Evaluation M&V will rely heavily on the P4P Advanced M&V Platform with input from utility co-administrators. • Data from Field Verification/Impact Evaluation can be used to help lend confidence in the market, especially among other end users.
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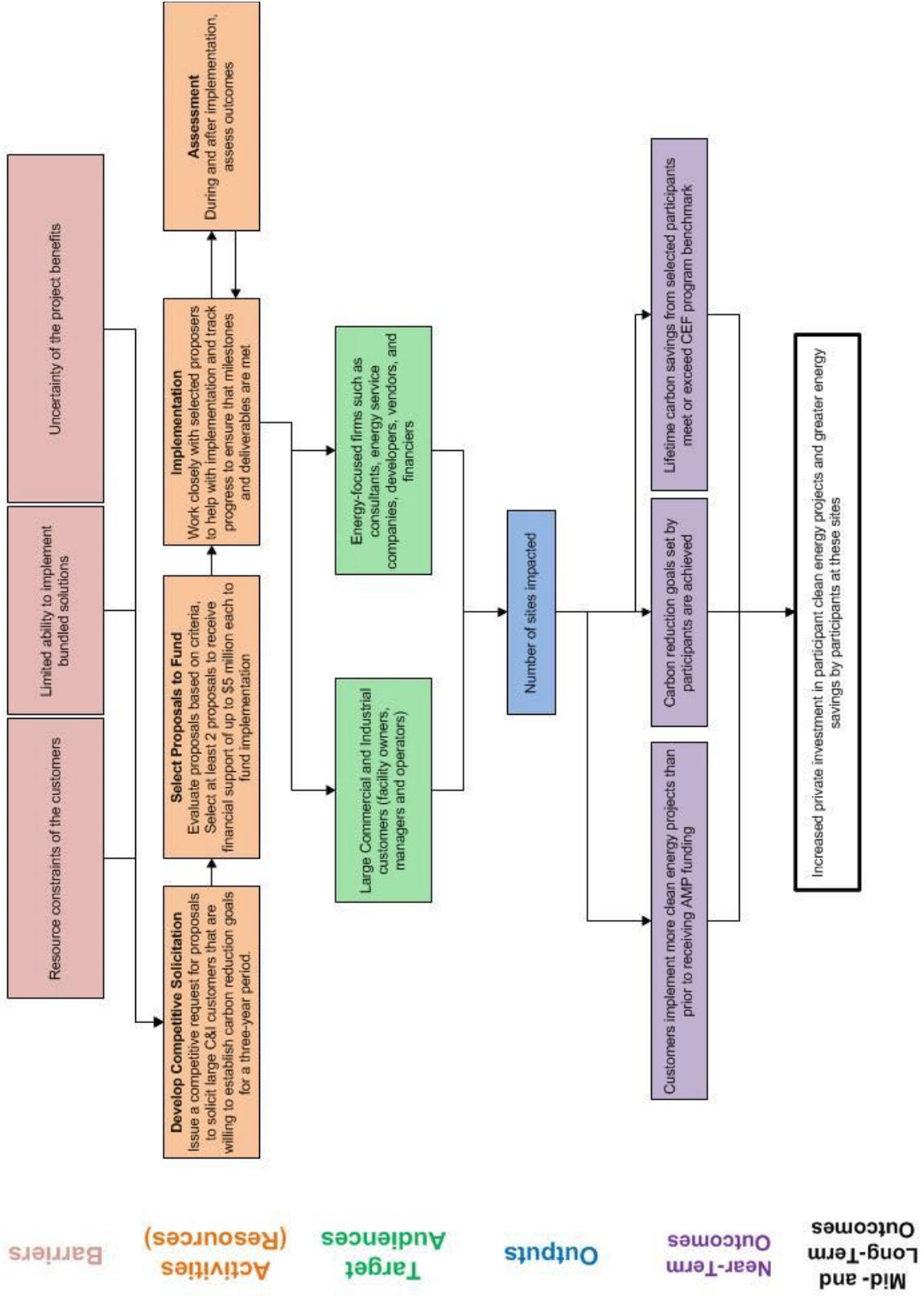
Appendix A – Logic Models



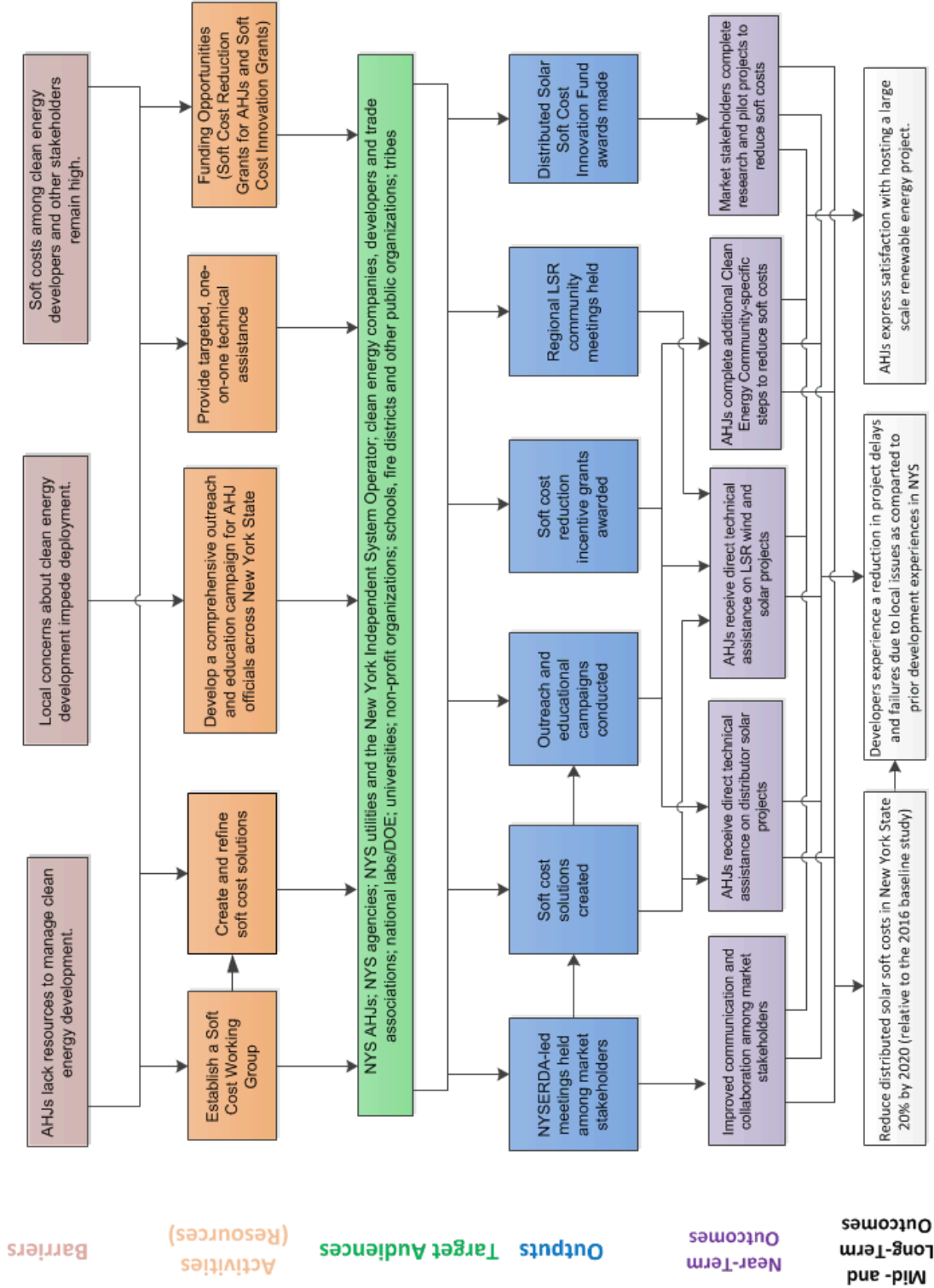
LOGIC MODEL: Technical Services



LOGIC MODEL: Clean Energy AMP Challenge



LOGIC MODEL: Clean Energy Siting & Soft Cost Reduction



LOGIC MODEL: Pay for Performance Pilot

