

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

Clean Energy Fund Investment Plan: REV Technical Assistance Chapter

Portfolio: Market Development

Submitted by:

The New York State Energy Research and Development Authority

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Clean Energy Fund Investment Plan: REV Technical Assistance Chapter		
Revision Date	Description of Changes	Revision on Page(s)
May 15, 2016	Original Issue	Original Issue
June 23, 2017	Revised to refine the target market and certain metrics to better align with initial market uptake and stakeholder feedback. Text and Tables 2 and 3 have been revised to reflect these changes and a shift in timing of budget and benefits.	Multiple
November 1, 2017	Edited wording of outcomes in Table 3 to clarify it is measuring outcomes since initiative began.	8

8 REV Technical Assistance

New York's Reforming the Energy Vision (REV) seeks to promote more efficient use of energy, deeper penetration of renewable energy resources such as wind and solar, and wider deployment of distributed energy resources (DER), such as micro grids, roof-top solar, other on-site power supplies, and storage. By introducing more competitive market incentives, New York seeks to unlock innovative solutions and business models and attract more private capital to modernize its energy system. To facilitate such innovation, NYSERDA will invest to enable utilities, communities, and other market participants to receive guidance, technical support, and other assistance.

The initial initiative described in this Chapter is REV Connect, a means of: informing third parties of new opportunities for innovation throughout the State, helping utilities define their needs and identify solutions to meet those needs in the changing REV landscape, and offering customized technical assistance to help move solutions from idea to impact. Updates to this initiative include refining the target market segments for REV Connect based on initial stakeholder interviews, updating the expected timeframe for achieving key milestones, and clarifying certain metrics to better align with the REV Connect facilitation process. The changes also include a reduction in the target number of utility business models to be identified and executed with REV Connect support (from 18 to 14 over the 2017-2018 period) to reflect a more accurate view of what the market can support, based on more recent stakeholder feedback.

8.1 REV Connect

8.1.1 Overview

Present Situation	As the utilities move beyond the first round of REV Demonstration (REV Demo) projects, the utilities, DER providers ¹ and the State have identified a number of barriers and impediments to innovation and collaboration among all market participants that, if eliminated, will lead to more efficient development, implementation and replication of project ideas that advance REV including both REV Demo projects and others. Some of these barriers include: <ul style="list-style-type: none">• The mismatch between the large volume of inbound project ideas and limited bandwidth within the utilities for assessing technical readiness• Lack of awareness of the points of contact for each utility• Insufficient or untimely feedback to DER providers on proposal concepts• Lack of easy access to information about the numerous opportunities within each utility and throughout the State• Insufficient process for sharing of learning from current projects as they progress as well as sharing learning from other States and countries and introductions to potential partners
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¹ In this Investment Plan, DER provider encompasses companies that offer smart grid services and advanced distributed energy solutions, including energy efficiency, demand response, energy storage, electric vehicles, and distributed generation.

<p>Intervention Strategy</p>	<p>“REV Connect” is a structure to advance New York State’s Reforming the Energy Vision² goals by facilitating the deployment of new technologies and business models in the New York market. REV Connect will help DER providers connect with New York State electric utilities to advance high quality REV demonstrations, non-wire alternatives, and other innovative projects. For companies with a technology, product, service or business model innovation that creates value for energy customers in partnership with the utility, REV Connect will offer a channel to submit project ideas and to receive expert guidance, feedback, facilitation, and matchmaking with New York utilities and other potential market partners. REV Connect also will publicize opportunities, share good practices and convene market participants to enhance the culture of innovation and collaboration in NY State.</p> <p>For a visual representation of this strategy, please reference the flow chart entitled “Logic Model: REV Connect,” which can be found in Appendix A.</p>
<p>Goals</p>	<p>REV Connect is envisioned as a structure that will evolve as the innovation ecosystem in the state energy system gains traction and grows. REV Connect will be a proactive catalyst of innovation in New York. It will provide a central venue to engage DER providers around new opportunities for applying innovation throughout the State, with emphasis on New York’s electric distribution utilities. REV Connect will help utilities define their needs and identify solutions to meet those needs in the changing REV landscape, as well as provide customized interventions to help move solutions from idea to impact. It will offer DER providers a transparent, efficient path for identifying potential partners and work with all parties in an effort to develop their ideas into actionable projects that solve real problems for customers. REV Connect will also facilitate “match-making” services to connect DER providers with each other and with utilities and identify particular areas of focus for brainstorming workshops to engage broad input from technology, business, and policy interests on how to meet challenges as they arise.</p>
<p>State Energy Plan/Clean Energy Standard Link</p>	<p>By facilitating innovative business models and new partnerships between electric utilities and DER providers, REV Connect has a role to play in helping achieve energy savings goals and greenhouse gas reductions as outlined in the New York State Energy Plan (SEP). Innovative projects ushered in with the help of REV Connect may reduce the need for capital investment in grid infrastructure, and help improve affordability. Innovation will also promote increased customer engagement in energy markets including enabling the development of community-based energy systems and on-site energy systems that both improve environmental performance of utility distribution systems and improve choice and value for New York customers.</p> <ul style="list-style-type: none"> • One of the primary challenges and opportunities cited in the SEP is the need to update the utility business model: “Today’s utility business model is not well aligned for the transition to a more distributed energy future; as more consumers adopt distributed energy solutions, utilities’ revenue requirements are concentrated on fewer customers, at the same time that load is flattening. This situation has resulted in a need to reform the current utility business model to ensure that it can accommodate, adapt to, and prosper through the integration of advanced technologies and greater levels of distributed energy resources.” REV Connect is designed to help utilities evolve by taking advantage of new technologies and market trends to fulfill the new role REV and the State Energy Plan envisions for them.

² Case 14-M-0101. See <http://www.ny.gov/programs/reforming-energy-vision-rev>

	<ul style="list-style-type: none"> • One of the SEP Guiding Principles is Market Transformation. The SEP notes “In order to accelerate market transformation, REV initiatives will focus on identifying, mitigating, and removing common market barriers to clean energy deployment.” REV Connect is designed to remove market barriers for clean energy providers and utilities to help innovative solutions and business models plug into New York’s energy system. • Another SEP Guiding Principle is “Innovation and Technology: REV Connect will align energy innovation with market demand.
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8.1.2 Target Market Characterization

Target Market Segment(s)	Targeted utility actors include Con Edison, Orange and Rockland, National Grid, Avangrid, Central Hudson Gas and Electric, PSEG-Long Island. Targeted DER providers include privately- and publicly-held entities providing grid services and advanced energy solutions.
Market Participants	<ul style="list-style-type: none"> • Investor owned electric utilities looking to partner with DER providers in new ways to meet customer goals and regulatory mandates. • Small, medium and large software solutions providers and original equipment manufacturers with a corporate strategic interest, balance-sheet capability, and human capital to support deployments of broad based distributed energy resources. • Startup companies introducing cutting edge products and services for the electric grid. • Grid-technology and distributed energy resource deployment companies • New York State (NYS) Regulators
Market Readiness	With 13 existing REV Demonstration projects and significant market interest in additional REV Demonstration projects and non-wires alternatives projects, DER providers and utilities are ready to move forward with this initiative (as evidenced by inbound ideas and presence at NYS energy events).
Customer Value	Projected benefits to the various customers include: <ul style="list-style-type: none"> • Higher quality of inbound projects for utilities • Streamlined process for DER providers interested in partnering with utilities other DER providers, and market participants. Improved understanding of needs and market solutions combined with a facilitated process to match the two

8.1.3 Stakeholder/Market Engagement

Stakeholder/Market Engagement	<ul style="list-style-type: none"> • Program focus and research activities have been informed by REV proceedings and participating stakeholder viewpoints. Routine engagement with PSC staff will continue to align program focus with current public policy goals. • Multiple rounds of customer interviews with DER providers and utilities has been concluded and feedback incorporated into this plan. The investor owned utilities have submitted direct feedback on this investment plan and have helped to craft the RFP and evaluate proposals to select the REV Connect partner. • NYSERDA will hold no less than one stakeholder workshop annually to share successes and reveal market “pain points” and pressing research needs. • NYSERDA will also utilize the Clean Energy Advisory Council (CEAC) as a way to engage with stakeholders, as appropriate.³
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³ The Clean Energy Advisory Council was established by the Public Service Commission through an Order in the Clean Energy Fund Proceeding (Case 14-M-0094. et al, Proceeding on Motion of the Commission to Consider a Clean Energy Fund, Order Authorizing the Clean Energy Fund Framework, filed January 21, 2016).

8.1.4 Theory of Change

<p>Technology Opportunities and Barriers Addressed</p>	<ul style="list-style-type: none"> • Degree of technical innovation being tested and/or applied is variable across the utilities. Sharing of knowledge and lessons learned is not institutionalized, and resultant pace of innovation and mechanisms to partner with DER providers can be streamlined. • Funding and research at individual utilities varies widely, and the volume of new ideas and the speed at which these ideas are validated or invalidated is not sufficient to meet the ambitions of REV today. • Validation of technology performance is critical to obtain acceptance by an engineering and standards-based utility culture focused on safety and reliability. • A connection to complementary efforts like AGILE⁴, or other REV-related R&D approaches, would ensure an integrated approach to new technology alongside new business models that would deliver maximum value to the State. • Many DER providers have one part of a broader solution but may have difficulty finding partners and complementary solution providers to deliver the full value required by a customer.
<p>Testable Hypotheses</p>	<ul style="list-style-type: none"> • If new utility business models are to be identified and executed, then DER providers and utilities will need policy signals that are transparent, certain, and long-term. • If electric utilities are able to promote their needs / problems via both a digital and physical channel then adoption of innovation with respect to new utility business models can be accelerated. • If there is leveraging of shared learnings and a common screening mechanism then there will be accelerated adoption of promising grid modernization technologies/practices. • If DER provider solution providers believe the process of connecting to customers is efficient, effective, and transparent then they will invest in a sustained presence in New York.
<p>Activities (Resources)</p>	<p>Identify a partner to operate REV Connect. The program will identify a partner to initially operate REV Connect.</p> <p>Establish platform, structure, and processes for REV Connect. In pursuit of the overall objective, the partner will be expected to establish a platform and structure and processes to deliver the REV Connect functions in an expedited manner (that may be phased) within a two-year funding window. These functions should include:</p> <ul style="list-style-type: none"> • Help develop “areas of interest”; create and maintain information resources; coach DER providers on ideas; host workshops on interest areas; summarize best practices. • Design, implement and maintain a central mechanism for submitting project ideas; develop evaluation criteria; evaluate and screen ideas on a regular basis; deliver feedback to all DER providers on stage of their proposal; share best practices. • Develop innovation plan for after two-year timeframe.

⁴ The proposed New York Power Authority (NYPA) Advanced Grid Innovation Lab for Energy (AGILE) is slated to be a versatile research and development (R&D) center oriented towards applied research in the areas of next-generation advanced energy management systems, electric power systems protection and control, smart grid technologies, and power electronics applications. The lab’s goal is to promote industry and university collaboration, both from the public and private sector, in the area of electric energy. EPRI has teamed with NYPA in a requirements exercise to develop specifications for the AGILE.

<p>Key Milestones</p>	<p><u>Milestone 1 (Q3 2016)</u></p> <ul style="list-style-type: none"> • Execute contract with partner to operate REV Connect. <p><u>Milestone 2 (Q2 2017)</u></p> <ul style="list-style-type: none"> • Create information resources and summarize best practices. <p><u>Milestone 3 (Q3 2017)</u></p> <ul style="list-style-type: none"> • Launch initial REV Connect platform to allow submission of project ideas. <p><u>Milestone 4 (Q2 2017)</u></p> <ul style="list-style-type: none"> • Develop project evaluation criteria and process. <p><u>Milestone 5 (Q4 2017)</u></p> <ul style="list-style-type: none"> • Draft Innovation Plan completed.
<p>Goals Prior to Exit</p>	<p>The potential impact of this initiative includes:</p> <ul style="list-style-type: none"> • Increased quality and impact of REV demonstration projects or other partnerships and collaborations facilitated by REV Connect. • A process and format to report on the pipeline of project suggestions and the evolution to implemented projects. • Value to the utilities, DER providers, and State via ongoing feedback and surveys will define impact and shape future evolution of the model. • Entrance of non-traditional, forward-thinking DER providers into the NY energy system. • Facilitation of partnerships among third parties that may individually offer parts of broader, collective solutions • Integration of DER via new market based earnings opportunities for utilities • Increased system asset utilization via solutions coming through REV Connect platform • Expanded capabilities of DER to provide grid benefits via solutions coming through REV Connect platform • Increased community-scale solutions and energy literacy via solutions coming through REV Connect platform • Easy to use and widely-used tools to connect utility solutions providers with utility points of contact • New ideas developed to address the technical, financial and regulatory issues that will have a bearing on the success of REV demonstration projects and REV overall objectives • Well thought out approach to addressing the challenges involved in advancing innovative, high-quality, REV-aligned proposals in the complex institutional and regulatory environment of the current energy system in New York • Opportunities to convene groups to focus on critical energy product and service issues and then communicate outcomes in a compelling format <p>Goals prior to exit include:</p> <ul style="list-style-type: none"> • REV Connect functionality operates on a self-sustaining financial basis, based on value generated and paid for by utilities, DER providers, communities and others • Greater utility coordination and collaboration around shared problems and opportunities, including REV demonstrations, non-wires alternatives, and other innovative programs • DER providers have a clear and efficient path to work with each other and the utilities to bring new solutions to market

8.1.5 Relationship to Utility/REV

Utility Role/ Coordination Points	<ul style="list-style-type: none"> • The NYS Department of Public Service (DPS) approved REV Demonstration projects involve all utilities with the exception of PSEG-Long Island. • Regular interface with utilities on plans for non-wires alternatives and areas of interest for future Demonstration projects. • In some cases, it is anticipated that the utility will serve as a “round-a-bout” and the counter-party to an engagement with a DER provider will instead be the energy consumer, not the utility. • Program activity has direct correlation with REV success. Program will seek ongoing counsel and guidance from DPS Staff for the purposes of program planning and program execution in order to meet and align with REV-related policy objectives. • Program staff will actively participate on internal, cross-functional NYSEERDA teams that interface with utility programming to ensure optimal leverage of time and resources. • NYSEERDA will also take advantage of the CEAC to coordinate planning and implementation with the New York State utilities.
Utility Interventions in Target Market	<p>Not applicable. With the exception of Con Edison (who is actively conceiving of and issuing RFIs for their next round of REV Demonstration projects), other utilities have been slow to prioritize their areas of interests for Demonstration projects, and identifying the relevant utility point of contact is still a challenge for DER providers.</p>

8.1.6 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	2016	2017	2018	Total
Tools, Training, and Replication	\$2,500,000	-	-	\$2,500,000
Total	\$2,500,000	-	-	\$2,500,000

Table 2: Annual Expenditures Projection

Expenditures	2016	2017	2018	Total
Total	16%	44%	40%	100%

8.1.7 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

Indicators ⁵		Baseline (Before/Current)	2017	2018
Activity/Outputs	Central mechanism for submitting project ideas is designed, implemented and maintained	0	1 (completed)	0
	Evaluation criteria and process are developed and published	0	1 (completed)	0
	“Areas of interest” for future REV demo projects are developed	0	1 (completed)	0
	Information resources including web links, reports, white papers and potentially videos and workshops to help DER providers navigate and engage with REV are created/maintained	0	1 (completed)	0
	Time from project idea submission to execution of business agreement between a utility and DER provider(s)	8 months	6 months	5 months
	Number of best practices sharing “events”, e.g., publishing analysis, webcasts	0	2x/year	4x/year
	Number of presentations/workshops focused on interest areas (LMI, EV etc.) or emerging potential	0	2x/year	4x/year
Outcomes	New utility business models identified and executed in a business agreement between a utility and DER provider(s) since initiative began	12	3 ⁶	11
	New DER provider proposals and solutions via both digital and physical channel	0	60	80

Benefits shown in Table 4 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.

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

⁶ Metric based on the expectation that in 2017, REV Connect will intake project idea submissions for approximately half of the year (i.e., in Q3 and Q4 2017).

Table 4. Direct Impacts

Primary Metrics ⁷		2016	2017	2018	TOTAL
Energy Efficiency	MWh Annual	-	-	-	-
	MWh Lifetime	-	-	-	-
	MMBTU Annual	-	-	-	-
	MMBTU Lifetime	-	-	-	-
	MW	-	-	-	-
Renewable Energy	MWh Annual	-	-	-	-
	MWh Lifetime	-	-	-	-
	MW	-	-	-	-
CO2e Emission Reduction (metric tons) Annual		-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime		-	-	-	-
Customer Bill Savings Annual (\$ million)		-	-	-	-
Customer Bill Savings Lifetime (\$ million)		-	-	-	-
Private Investment (\$ million) ⁸		\$0	\$0.25	\$0.25	\$0.5

8.1.8 Fuel Neutrality

Fuel Neutrality	To date, REV Demonstration projects have been funded by and focused on electric customers. However REV Connect is envisioned to be technology agnostic in response to utility and community needs and could potentially provide solutions for gas customers as well where there is potential for economic benefits or in the context of a total-energy solution.
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8.1.9 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"> Tracking of standard activity metrics including: number of project submissions, completion of business agreements, private sector leverage. Conducting an annual customer survey to gauge effectiveness of the REV Connect process and platform. Conducting reviews of certain projects in the process to define timing, technical impasse, pivot point, critical milestones. Assessing the portfolio of projects annually with regard to goals, metrics, outputs and outcomes. <p><u>Market Evaluation</u></p> <ul style="list-style-type: none"> Market Evaluation is not planned for 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/field verification is not planned for this initiative.
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⁷ Impacts are expressed on a commitment-year basis, and are incremental additions in each year. Benefits are rounded to three significant figures. Totals may not sum due to rounding.

⁸ Private investment is the level of expected investment and financial support from utilities and private sector companies for REV Connect platform or functionality.

Appendix A – Logic Models

