Memorandum

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Re: Clean Energy Communities Baseline Metrics Memorandum

Clean Energy Communities Baseline Metrics

Final Memorandum

Prepared for:

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1 Introduction

As part of its Clean Energy Fund, the New York State Energy Research and Development Authority (NYSERDA) created the Clean Energy Communities program (CEC) for local governments in New York State to encourage investments in energy efficiency and deploy clean energy in state government operations and in communities. Local governments supported by this initiative include counties, cities, towns, and villages. The research team uses the terms 'municipality' and 'community' to refer to the local governments and the area in which they have jurisdictional control.

The objective of this memorandum is to present the baseline performance metrics per the Communities Chapter in the Clean Energy Fund (CEF) Investment Plan. The baseline performance metrics this study researched include:

- the number of communities that have completed one or more actions
- the community representatives' perceived level of difficulty of implementing each action; and
- the number of communities that indicate clean energy is a priority

1.1 Initiative Description

The program provides outreach, guidance, and support, including technical assistance and tools, to overcome common barriers to implementing clean energy projects experienced by local governments. These barriers include a lack of awareness of clean energy opportunities available to municipalities, difficulty prioritizing clean energy projects, a lack of funding, and limited staff capacity and technical knowledge to implement clean energy projects. The program's goals are to:

- Decrease the amount of time, expertise, and funding needed to prioritize and implement clean energy actions in New York State communities.
- Increase adoption of high-impact, clean energy policies and actions in city, town, village, and county governments across New York State.
- Support and replicate innovative clean energy initiatives and demonstration projects.
- Demonstrate the value proposition associated with high-impact clean energy actions.

1.2 Evaluation Objective and Methods

Table 1-1 summarizes the objective and methods; see Chapter 3 for methodological detail.

Table 1-1. Evaluation Objective and Methods

Objective	Purpose	Method
Present baseline metrics per the CEF Investment Plan: Communities Chapter	Estimate the baseline performance metrics	Phone surveys of community representatives

2 Market Assessment Results

This section presents baseline estimates of program performance metrics described in the Communities Chapter in the CEF Investment Plan with respect to the program-defined High Impact Actions.

The program targets 10 High Impact Actions to promote the deployment of clean energy projects (Table 2-1). As described in the Communities Chapter of the CEF Investment Plan,[1] the High Impact Actions include:

Table 2-1. High Impact Actions

High Impact Action	Brief Description
Benchmarking	Municipalities adopt a policy to report the energy use of municipal buildings on an annual basis and, in large communities, municipalities also adopt legislation requiring the annual disclosure of energy use in large private buildings.
Clean Energy Upgrades	Municipalities achieve a 10 percent reduction in the greenhouse gas emissions from municipal buildings through energy efficiency upgrades and renewable energy.
LED Street Lights	Municipalities convert at least half of the municipal "cobra-head" style street lights within the jurisdictions to energy-efficient light-emitting diode (LED) technology.
Clean Fleets	Municipalities increase the deployment of alternative fuel vehicles by installing electric vehicle charging stations and/or by deploying a qualifying alternative electric vehicle in the municipality's fleet. [2]
Solarize	Municipalities undertake a solarize campaign to increase the number of solar rooftops in the jurisdictions through group purchasing, locally-organized community education and outreach, and a limited time offer.
Unified Solar Permit	Municipalities pass an ordinance to adopt the New York State Unified Solar Permit to reduce costs and delays for solar projects in the jurisdictions.
Energy Code Enforcement Training	Municipalities train code compliance officers and other municipal officials in best practices in energy code enforcement through training, collaborative plans reviews, and joint onsite inspections of local construction projects.
Climate Smart Communities Certification	Municipalities earn Climate Smart Community (CSC) Certification at the certified, bronze, silver, and gold levels through compliance with this robust, comprehensive rating system.
Community Choice Aggregation	Municipalities transition to a cleaner, more affordable energy supply by passing an ordinance to allow for the aggregated purchase of electric

[1] https://www.nyserda.ny.gov/-/media/Files/About/Clean-Energy-Fund/CEF-Communities-Chapter.pdf

[2] The description of this High Impact Action includes information from the NYSERDA website: https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Communities/Action-Items

High Impact Action	Brief Description
	and gas supply for residential and commercial customers within the jurisdictions.
Property Assessed Clean Energy (PACE) Financing	Municipalities help property owners undertake clean energy improvements to commercial properties by passing an ordinance to establish a Property Assessed Clean Energy (PACE) financing program.

2.1 Performance Metrics

Table 2-2 contains metrics indicating how many of the 1,600 total New York communities have completed one or more High Impact Actions, two or more High Impact Actions, three or more High Impact Actions, and four or more High Impact Actions. The categories are nonexclusive; each community that completed two or more actions is also included in the number that completed one or more actions. Likewise, the ten communities that completed four or more actions are also represented in each of the other groups since they had completed at least one, two, and three actions.

Based on survey responses, the research team estimates that at baseline, 467 communities had completed at least one High Impact Action and 10 had completed four or more High Impact Actions, the minimum required to be designated a clean energy community.

Table 2-2. Baseline Aggregate Metrics*

Metric	Baseline (Attained by August 2016)
Number of communities that have completed 1 or more High-Impact Actions	467 (29%)
Number of communities that have completed 2 or more High-Impact Actions	248 (16%)
Number of communities that have completed 3 or more High-Impact Actions	128 (8%)
Number of communities that have completed 4 or more High-Impact Actions (minimum for designation)	10 (1%)
Number of communities that indicate clean energy is a priority**	473 (30%)

* The population for this table is all 1600 New York State communities. All reported numbers of communities are estimated from a representative sample whose size provided greater than 90 percent confidence and 10 percent precision.

** Community representatives indicated whether clean energy is a priority in spring 2017. The survey did not attempt to ask representatives for two assessments of priority — one for August 2016 and one for the day the survey answer was provided – as responses for the earlier date would have questionable validity.

The numbers in the table suggest the appropriateness of the program design and designated High Impact Actions. The actions are clearly within reach of the New York communities as evidenced by the 29% of communities that had taken one or more action prior to program launch. They simultaneously represent stretch goals, as evidenced by the fact that 99% of communities had not reached the minimum number of completed actions for CEC designation. Were the baseline numbers to show lower baseline saturation, one might question the feasibility of the program. Were the results to show higher baseline saturation, one might question the necessity of the program. It appears NYSERDA has achieved an appropriate balance in its program design.

The community representatives rated their perceived level of difficulty of implementing each action for which the municipality was both eligible and had not completed. We relied on NYSERDA program data and survey responses to determine whether an action was not yet completed. The community representatives rated the perceived difficulty using a ten-point rating scale, with "1" meaning "not at all difficult" and "10" meaning "very difficult." Table 2-3 presents the average level of difficulty by action.

For three actions, the table presents an overall difficulty level and a difficulty level broken out by certain characteristics. The benchmarking action has different requirements for large communities compared to small and medium communities, therefore the research team separated the perceived difficulty of implementing the action by community size. For clean fleets, communities may either add an alternative fuel vehicle to their municipal fleet or install an electric vehicle charging station, therefore the table presents community representatives' perceived difficulty of achieving each of those activities separately. Finally, the solarize action involves conducting a campaign and installing 10 solar arrays resulting from the campaign. Hence, the team asked the difficulty of each of those separately as well. The overall difficulty for these three actions is the average of their two subcomponents.

Table 2-3. Baseline Average Difficulty to Implement Each Action*

Action	Average perceived level of difficulty to implement
Benchmarking overall	6.2
Benchmarking – Small and medium communities (N =1076)	6.2
Benchmarking – Large communities (N=110)	6.1
Clean Energy Upgrades (N=1075)	6.0
LED Street Lights (N=943)	5.1
Clean Fleets overall	7.5

Clean Fleets – Add vehicle to fleet (N=1448)	8.1
Clean Fleets – Install charging station (N=1377)	6.9
Solarize overall	6.3
Solarize – Conduct a Solarize Campaign (N=1248)	6.1
Solarize – Achieve 10 solar installations (N=1314)	6.4
Unified Solar Permit (N=1003)	5.6
Energy Code Enforcement Training (N=688)	4.2
Climate Smart Communities Certification (N=1194)	5.7
Community Choice Aggregation (N=1231)	6.7
PACE Financing (N=136)	6.8

* Community contacts rated action difficulty in spring 2017. The value in parentheses indicates size of the population represented, which is the number of communities that were eligible for, but had not completed, the action.

The Climate Smart Communities Certification action is somewhat complex, as it involves making a pledge comprising 10 elements and earning points for completing clean energy actions. After achieving a certain number of points, municipalities are recognized at the certified, bronze, silver, or gold level.

The team anticipated that some community representatives might not be familiar with the Climate Smart Communities certification system, so before asking them how difficult they thought it would be to complete the action, the team asked them to rate their familiarity with it. Two-thirds of representatives were "not at all familiar" with the certification (Table 2-4). Of those who were not at all familiar with the certification, 97% rated the difficulty of implementing the action as a "5" or higher.

Table 2-4. Level of Familiarity with Climate Smart Communities Certification*

Familiarity	Number of Communities	Percent
Communities registered or certified as a Climate Smart Community	207	13%
Very familiar	125	8%
Somewhat familiar	292	18%
Not at all familiar	840	53%
Did not know if registered or certified, or reporting not applicable	135	8%
Total communities	**1599****	**100%**

* Community contacts rated their familiarity in spring 2017. The numbers of communities indicate the size of the population represented.

** Due to rounding when the weights were applied, the total does not equal 1600 local governments.

Table 2-5 presents the number and percent of communities that rated the difficulty of implementing a High Impact Action a "4" or less. For example, 1076 small- or medium-sized communities rated the difficulty of completing the benchmarking action and 14% of those perceived its difficulty level to be a "4" or less on the ten-point scale.

Table 2-5. Difficulty Metrics - Communities Reporting Difficulty Level of 4 or Less, by Action, Among Communities Not Yet Completing the Action*

Action	Number of communities not yet completing the action	Number reporting difficulty of 4 or less	Percent reporting difficulty of 4 or less
Benchmarking – Small and medium communities	1076	151	14%
Benchmarking – Large communities	110	2	2%
Clean Energy Upgrades	1075	192	18%
LED Street Lights	943	376	40%
Clean Fleets – Add vehicle to fleet	1448	126	9%
Clean Fleets – Install charging station	1377	285	21%
Solarize – Conduct a Solarize Campaign	1248	312	25%
Solarize – Achieve 10 solar installations	1314	360	27%
Unified Solar Permit	1003	290	29%
Energy Code Enforcement Training	688	382	56%
Climate Smart Communities Certification	1194	170	14%
Community Choice Aggregation	1231	153	12%
PACE Financing	136	4	3%

* Community contacts rated action difficulty in spring 2017. The numbers of communities indicate the size of the population represented, which is the number of communities that were eligible for, but had not completed, the action.

2.2 Status by Action

Table 2-6 presents information on how many communities are eligible for and have completed each of the 10 High Impact Actions at baseline, per the survey responses. For example, all communities are eligible for the benchmarking action and before the program launch in August 2016, 184 communities (12%) had completed the action. While the information in Table 2-6 is not required by the CEF Investment Plan, it may be useful for program staff as they plan program activities.

Table 2-6. Status by Action*

Action	Number ineligible for action	Number eligible for action	Number complete at baseline (August 2016)	Percent of eligible
Benchmarking	0	1600	184	12%
Clean Energy Upgrades	23	1577	55	3%
LED Street Lights	0	1600	109	7%
Clean Fleets	23	1577	132	8%
Solarize	2	1598	88	6%
Unified Solar Permit	52	1548	51	3%
Energy Code Enforcement Training	52	1548	103	7%
Climate Smart Communities Certification	2	1598	56	4%
Community Choice Aggregation	52	1548	50	3%
PACE Financing	1384	216	31	14%

* The numbers of communities indicate the size of the population represented.

2.3 Other Baseline Metrics

Table 2-7 provides a complete list of all program baseline metric values. While the research team estimated the metrics above, there are additional baseline metrics the program will report as zero. Further, NYSERDA established that the number of registered climate smart communities was 175 at baseline and that 423 communities have participated in clean energy programs. The research team will conduct follow-up studies of the municipalities in 2018 and 2019 to estimate all metrics in Table 2-7 comprised by counts of communities.

Table 2-7. All Baseline Metrics

Indicators		Baseline per CEF Investment Plan	Baseline estimated spring 2017
Activity/ Outputs	Number of communities that indicate they are aware of the Clean Energy Communities Program and know how to participate	0	0
	Number of Communities that have joined the Clean Energy Communities Program	0	0
	1 or more High-Impact Action	TBD	467
	2 or more High-Impact Actions	TBD	248
	3 or more High-Impact Actions	TBD	128
	4 or more High-Impact Actions (minimum for designation)	TBD	10
	Number of Designated Clean Energy Communities*	0	0
	Number of registered Climate Smart Communities (indicates interest in going beyond High-Impact Actions)	175	175
	Partner engagement: Number of organizations helping to promote High-Impact Actions without NYSERDA contracts	0	0
	Direct Cumulative Annual Energy Savings (MWh) for participants	0	0
	Direct Cumulative Annual Energy Savings (MMBTU) for participants	0	0
Outcomes	Number of communities that indicate clean energy is a priority	TBD	473
	Number of communities regularly accessing Clean Energy Communities Portal and tracking progress	0	0
	Perceived level of difficulty, on the part of community representatives, in implementing each High-Impact Action? (1-10, with 10 being most difficult)	TBD	(above in Table 2-3)
	Number of communities that have participated in New York State clean energy programs	423	423
	Number of communities that have completed High-Impact Actions but are not designated Clean Energy Communities	0	0*
	Percentage of communities in New York State taking advantage of tools and resources provided	0	0

* As of the baseline, some communities had completed High Impact Actions, but prior to the program start, it was not possible to be designated a clean energy community; thus, the metric value is zero.

3 Methodology

To conduct this study, the research team created a stratified random sample of municipalities from a list of all 1,600 municipalities in New York State. The team contacted the representatives of the sampled municipalities to conduct a phone survey, with the goal of achieving 102 completed surveys.

The survey included questions about the extent to which municipalities have made progress toward implementing each of the 10 High Impact Actions; if complete, whether they implemented the actions before or after the program's launch in August 2016; if incomplete, the perceived difficulty of implementing the action; and finally, their community's stance towards clean energy initiatives in general.

The team completed surveys with 104 municipalities and analyzed the data to estimate the baseline performance metrics and results from the other survey questions. The sections below describe these research methods in more detail.

3.1 Sampling

The team used a list provided by program staff of all 1,600 municipalities in New York State to create a stratified sample of municipalities to contact for a phone survey. Program staff had previously assigned municipalities into one of four priority categories to guide program outreach efforts. To ensure that the study develops good visibility into the uptake of High Impact Actions through 2019, the research team decided to oversample Priority 1 communities. The team accomplished this with stratified random sampling. The team specified a sample of 35 of the 80 Priority 1 communities, providing 90/10 confidence precision for this stratum, and a sample of 67 of the 1520 remaining communities, providing 90/10 confidence precision for this stratum. The team exceeded its data collection goal for Priority 1, obtaining 37 completed surveys.[3]

The team weighted the two strata samples to develop estimates of the numbers of communities in the population reported in this memorandum, as described in Section 3.3, Data Analysis.

The research team confirmed that the final weighted full sample (104 communities) is representative of the population, including its distribution by: municipality type (city, county,

[3] Subsequent to sample design and data collection, one municipality was reassigned from Priority 3 to Priority 1.

town, and village), location (up- and downstate), size (large, medium, and small), prior participation in clean energy programs, and region (ten regions). Appendix A contains the breakdown of community characteristics in New York State and in our final sample of surveyed communities.

3.2 Data Collection

The team randomly selected municipalities in each of the two strata to contact for a computer-aided telephone survey. During Spring 2017, interviewers contacted 333 municipalities in New York State and completed surveys with 104, including 37 Priority 1 and 67 Priority 2-4 municipalities, for an overall response rate of 31% (see Appendix B for survey disposition results).[4] Interviewers called municipal representatives up to five times and, to collect the necessary data, spoke with up to three representatives per municipality who were most knowledgeable about their community's clean energy efforts. Surveys ranged from 15 to 30 minutes.

In some municipalities, the interviewed representatives did not have accurate answers to some of the survey questions and, in those cases, they offered to follow-up with the interviewer later to provide the answer. Interviewers contacted community representatives up to two times to request follow-up answers. In some cases, the representative who knew the answer was not available, or the representative being interviewed was the most informed but did not know the answer.

The team did not ask community representatives about a High Impact Action if they met one of two criteria:

- If program data indicated that NYSERDA was aware the community had completed an action prior to the survey, or
- If program data indicated a community was ineligible for an action due to their jurisdictional authority/responsibilities.[5]

For these reasons, the number of community representatives answering the survey questions varies. Appendix C contains tables indicating how many community representatives answered,

[4] With the reassignment of one municipality from Priority 3 to Priority 1 subsequent to data collection, the distribution of completes after reassignment is 38 Priority 1 and 66 Priority 2-4.

[5] For example, counties are not responsible for permitting processes or energy code enforcement, and therefore cannot adopt the Unified Solar Permit or participate in code compliance training.

"don't know" or did not see the question (indicated as "Missing"), along with the number who provided other response options for each close-ended question in the survey.

3.3 Data Analysis

The team analyzed the data collected from the sample of municipalities using SPSS and Excel, and extrapolated the results from the sample to all the New York State municipalities. The extrapolated results provide estimates for the counts and/or percentages of all municipalities regarding the baseline performance metrics and other questions in the survey.

The team applied post-stratification weights to the data to account for the oversampling of Priority 1 municipalities. Each surveyed Priority 1 municipality in the sample represents 2.11 Priority 1 municipalities in the population and each surveyed Priority 2-4 municipality in the sample represents 23.03 Priority 2-4 municipalities in the population.[6] The results presented in this memorandum display the weighted counts and/or percentages.

3.4 Determining Counts for Performance Metrics

3.4.1 Completion of Actions

To obtain the number of communities that completed one or more actions the team determined the number of actions a community completed. Then the team grouped the communities into categories of having completed at least one action, at least two actions, at least three actions, and at least four actions. (These are nonexclusive categories. For example, all the communities in the group that had completed at least four actions were also members of the groups completing at least one, at least two, and at least three actions.)

3.4.2 Perceived Level of Difficulty

For each action that program or survey data indicated a municipality had not completed, the community representative rated their perceived level of difficulty of implementing the action on a scale of 1 to 10, with 1 meaning "not at all difficult" and 10 meaning "very difficult." When representatives were hesitant to answer based on unfamiliarity with the action, interviewers encouraged them to answer to the best of their ability, given what they knew at the time of the survey.

[6] These weights reflect the reassignment of one municipality from Priority 3 to Priority 1 and were used in analysis.

3.4.3 Communities Indicating Clean Energy Is a Priority

The last item among the required baseline metrics the team investigated is the number of communities that indicated clean energy is a priority. Because self-reported, subjective opinion tends to be less valid than self-reported, objective evidence, the team collected multiple data points on this topic and triangulated them to increase the validity of the metric.

First, the team asked representatives about the following objective indicators:

- whether they have an Energy Action Plan or an energy chapter in their General Plan;
- whether they have a procurement policy that prioritizes the purchase of energy efficient equipment or products; and
- whether they have an energy manager or someone explicitly responsible for pursuing energy efficiency in their facilities and operations.

Then, the team asked representatives to subjectively report whether they agreed or disagreed that clean energy is a priority at their municipality. The team used an algorithm to determine for which communities clean energy is a priority: community representatives had to both agree that clean energy was a priority and demonstrate at least one of the three objective criteria to qualify.