

R&D Demonstration Survey Round 3: Projects Completed from 2011-2013

Appendices

Prepared for:

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APPENDIX A. Advance E-Mails and Survey Instruments

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ADVANCE E-MAIL AND TELEPHONE SURVEY INSTRUMENTS

Dear NYSERDA R&D Demonstration Project Participant:

The New York State Energy Research and Development Authority (NYSERDA) has retained Industrial Economics, Inc. (IEc) and APPRISE to conduct an evaluation of projects NYSERDA has funded for the purpose of demonstrating specific technologies or processes. This important study will enable NYSERDA to better assess program accomplishments and improve programs that serve New York.

We wish to collect data about the NYSERDA's R&D Demonstration projects completed in 2011, 2012, and 2013. Our records indicate your project received NYSERDA funding from NYSERDA's R&D Program and was completed in that timeframe. We are interested to learn about the results of NYSERDA's assistance on your ability to demonstrate the effectiveness of this project as well as potential applications beyond this particular site.

We would like to schedule an interview with you. The interview will take up to one hour to complete, and someone from APPRISE will call you to schedule a time that is most convenient for you. Policy analysts from IEc and APPRISE will conduct the interview.

IEc and APPRISE are independent researchers. The information you provide will be kept confidential to the extent permitted by law. We will report all responses in aggregate and will not attribute any comments to you.

Someone will be calling you within the next week to conduct this interview. Your participation is important to our evaluation effort. We know your time is valuable, and we sincerely appreciate your efforts to help us. If you have questions about the survey, please call Jennifer Phelps at NYSERDA at (518) 862-1090, extension 3569, or Peter Courtright of IEc at (617) 354-0074. If you would like more information about IEc or APPRISE, please visit their websites: <http://www.indecon.com/> and <http://www.appriseinc.org/>.

Thank you for your assistance.

Sincerely,

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NYSERDA
Demonstration Project Survey

INTEGRATORS

Interview Date: [mm/dd/yyyy]

Interviewer name:

Interviewer phone:

CNTRCT_ID:

Project Description:

Best Contact:

NYSERDA Project Manager

PI First Name and PI Last Name

Title:

Phone:

Email:

Project Role:

Company Name:

Program Area: [Buildings, Transportation, Energy Resources, etc.]

Project Type: [PRODUCT, PROCESS OR POWER PRODUCTION]

NYSERDA \$ (Encumbered \$ for this project.)

Earliest contract signed date

Latest contract closed date

Location

THE POLICY ANALYST CONDUCTING THE INTERVIEW WILL WORK THROUGH THE INSTRUMENT USING THE SPECIFIC DATASET INPUT AND PROJECT DESCRIPTION TO REFINE QUESTION WORDING AS NECESSARY TO PROVIDE CLEAR LANGUAGE AND TO OBTAIN THE INFORMATION DESIRED FROM EACH QUESTION. GIVEN THE INFORMATION IN THE DATASET, THE SURVEY INSTRUMENT FOR EACH INTERVIEW WILL BE MARKED FOR THE APPROPRIATE HANDLING OF QUESTIONS AND SKIP PATTERNS REGARDING THE IMPACTS FROM THE DEMONSTRATION PROJECT (QUESTIONS 17 THROUGH 32).

Identify the Appropriate Contact

Hello, my name is [interviewer name], and I am calling from [company name] on behalf of the New York State Energy Research and Development Authority, also known as NYSERDA. NYSERDA is conducting a study to assess the impact of its funding on New York State companies and on the State's economy. This study will also assess the impact of its funding and technological support on [use "product", "process", or "generation" depending on participant] demonstration projects conducted in New York State.

NYSERDA has contracted with Industrial Economics, Incorporated and APPRISE to perform this study. IEC and APPRISE are independent research and consulting firms. I would like to ask some questions about your involvement in a completed NYSERDA demonstration project – the [SUMMARIZE FROM CONTRACT DESCRIPTION]. The information you provide will be kept confidential to the extent permitted by law. We will report all responses in aggregate and will not attribute any comments to you. The information you provide will be used to improve NYSERDA's research and development programs. NYSERDA is contacting all participants who completed demonstration projects within the last five years.

SCREENING

Our records show that NYSERDA provided \$_____ in funding to [COMPANY NAME] for the demonstration project [CONTRACT DESCRIPTION].

SCR-1. This survey will take about one hour to complete. We would like to talk to the person who is most knowledgeable about the project. If not you, could you please direct me to, or provide me with the name of the person who is the most qualified to discuss this project?

- a. Caller [PROCEED TO SECTION 1: NYSERDA DEMONSTRATION PROJECT OVERVIEW]
- b. Most qualified contact [CONTACT THIS PERSON, REPEAT INITIAL INTRODUCTION AND THE INTRODUCTION TO THE SCREENING SECTION, AND CONTINUE WITH THE FOLLOWING QUESTION]

SCR-2 Mr./Ms. [name] referred me to you to answer specific about this project [DESCRIBE PROJECT BRIEFLY as this is another person]. This survey will take about one hour to complete. Can we discuss the project now, or can we schedule a time when I can call you back?

- a. Can discuss now [PROCEED TO SECTION 1: NYSERDA DEMONSTRATION PROJECT OVERVIEW]
- b. Call back on _____ at time:
- c. [IF THIS PERSON IS NOT THE MOST QUALIFIED PERSON, LOOP BACK TO SCR-1]

SCR-3 Which of the following best describes your role in the [PROJECT]? [READ ALL CHOICES TO RESPONDENT AND SELECT THE MOST APPROPRIATE CHOICE.]

- a. I provided the [PRODUCT/PROCESS/TECHNOLOGY/TYPE OF GENERATION... tailor to the project based on project type] for this project. [USE VENDOR SURVEY INSTRUMENT and ASK QUESTION SCR-1b regarding qualified site owner or integrator]
- b. I am the site owner. [USE SITE OWNER SURVEY INSTRUMENT]
- c. I developed the project and brought together the vendor, site owner, and other market actors. [USE INTEGRATOR SURVEY INSTRUMENT]

SCR-4 Do you have any reports or presentations that describe the results of the [PROJECT]?

- a. Yes [ASK THE RESPONDENT TO SEND THE REPORTS IN ADVANCE OF THE CALL]
- b. No

- c. Don't Know [ASK THE RESPONDENT TO CHECK AND SEND WHAT THEY HAVE IN ADVANCE OF THE CALL]

SECTION 1: NYSERDA DEMONSTRATION PROJECT OVERVIEW

[NOTE: PRIOR TO BEGINNING THE DISCUSSION, ASK THE RESPONDENT WHETHER OR NOT IT IS OKAY TO RECORD THE CALL.]

1. Our records show that NYSERDA provided funding to [COMPANY NAME] for a project involving [CONTRACT DESCRIPTION]. Is this an accurate description of the project?
- a) (1) Yes
 - b) (2) No

[IF Q1 = YES, SKIP TO Q3. IF Q1 = NO, ASK Q2.]

2. How would you describe the project?

[RECORD OPEN-ENDED RESPONSE]:

3. Is this the first time this ["product", "process", "technology" or "type of generation"tailor to project based on PROJECT TYPE] was used at your site?
- a) (1) Yes
 - b) (2) No
 - c) (3) Don't know

[IF Q3 = NO, PROCEED TO Q4. OTHERWISE, SKIP TO Q6]

4. How many times had this ["product", "process", "technology" or "type of generation"tailor to project] been used at your site prior to the [reference NYSERDA demo project]?
- a) [RECORD THE NUMBER OF TIMES]:
 - b) Don't know
5. How did [reference NYSERDA demo project] differ from previous uses of this ["product", "process", "technology" or "type of generation"tailor to project]?

[ASK UNPROMPTED FIRST. RECORD OPEN-ENDED RESPONSE]:

- a) _____
- b) _____
- c) _____

[RECORD VERBATIM COMMENTS FIRST; DO NOT READ LIST. THEN, LOOK AT THE LIST AND VERIFY THE RELEVANT SELECTION(S) WITH RESPONDENT.]

- d) No difference
- e) Smaller in scale than previous projects of this type
- f) Larger in scale than previous projects of this type
- g) Different inputs
- h) Different application of the technology
- i) Different type of facility

[POLICY ANALYST CALCULATION #1: DO NOT READ TO SURVEY RESPONDENT.]

STEP ONE: IF Q3 = "YES" OR "DON'T KNOW", RECORD 0 ON THE LINE BELOW. SKIP STEP TWO.
STEP TWO: IF Q3 = "NO", LOOK AT ANSWER TO Q5. IF Q5 = D ONLY OR E ONLY, RECORD -1. ELSE RECORD 0.

CALCULATION #1: _____]

6. Now I would like to discuss the [SUMMARIZE CONTRACT DESCRIPTION] Project. How would you describe the objectives of this project? [RECORD OPEN-ENDED RESPONSE]:

7a. Were you involved with planning or executing this project?

- a. Yes [ASK Q7B]
- b. No [SKIP TO Q9]

7b. Can you identify specific challenges you faced when planning this project?

[ASK UNPROMPTED FIRST. RECORD OPEN-ENDED RESPONSE]:

- a. _____
- b. _____
- c. _____

[PROMPT - BE CAREFUL NOT TO BIAS OR INFLUENCE RESPONSE, SUGGEST CODE FOR ANSWERS PROVIDED ABOVE IF APPROPRIATE]

- d. Lack of funding
- e. Cost prohibitive
- f. Lack of qualified personnel or expertise
- g. Lack of interest among potential end users
- h. Could not find an appropriate site
- i. Timing was not right
- j. Regulatory barriers
- k. Technological issues
- l. Other - specify: _____

7c. Can you identify specific challenges you faced when executing this project?

[ASK UNPROMPTED FIRST. RECORD OPEN-ENDED RESPONSE]:

- a. _____
- b. _____
- c. _____

[PROMPT - BE CAREFUL NOT TO BIAS OR INFLUENCE RESPONSE, SUGGEST CODE FOR ANSWERS PROVIDED ABOVE IF APPROPRIATE]

- a. Lack of funding
- b. Cost prohibitive
- c. Lack of qualified personnel or expertise
- d. Lack of interest among potential end users
- e. Could not find an appropriate site
- f. Timing was not right
- g. Regulatory barriers
- h. Technological issues

i. Other - specify: _____

8a. Can you identify any benefits that you received from planning this project?

[RECORD OPEN-ENDED RESPONSE]:

8b. Can you identify any benefits that you received from executing this project?

[RECORD OPEN-ENDED RESPONSE]:

9. Overall, do you feel this project accomplished all, most, some, or none of its objectives?

- a. All
- b. Most
- c. Some
- d. None
- e. Don't know / refused [DO NOT READ THIS OPTION]

[IF RESPONDENT SELECTS "ALL" OR "DON'T KNOW," SKIP TO Q11. OTHERWISE, ASK Q10.]

10. Please explain why this project did not accomplish all of its objectives: _____

SECTION 2: COST EFFECTIVENESS

Now I would like to ask about the cost-effectiveness of the project.

11. NYSERDA furnished a grant for [NYSERDA \$]. In addition to that amount, how much did you invest in this project in terms of staff time and project expenses?

A. [Staff time in hours] \$ _____, [Monetary amount]

B. Are the numbers you just reported annual or total costs?

(1) Annual (2) Total [IDEALLY, COLLECT DATA ON \$ AND STAFF TIME. HOWEVER, IT IS OKAY IF THE RESPONDENT CAN ONLY PROVIDE ONE OR THE OTHER (OR NEITHER).]

12. Is the system still in use?

- a. Yes
- b. No [IF NO, ASK:] When was it decommissioned? _____ [Month] _____ [Year]

13. At the time the project began, were you considering alternatives to the ["product", "process", "technology" or "type of generation"] that you used in the NYSERDA project?

- a. Yes, explain: _____
- b. No
- c. Don't know

[IF Q13 = YES, PROCEED TO Q14. OTHERWISE, SKIP TO Q15.]

14. Looking back, do you think the ["product", "process", "technology" or "type of generation"] that you used in the NYSERDA project was the best alternative?

- a. Yes, explain: _____
- b. No, explain: _____

c. Don't know

15. Do you feel the [PROJECT DESCRIPTION] project was a good investment?

a. Yes, explain: _____

b. No, explain: _____

c. Don't know

16. In general terms, how would you describe your return on this project? [READ LIST TO RESPONDENT]

a. Positive

b. Negative

c. Breakeven or neutral

17. Have you advertised or communicated the results of this project to any potential buyers, suppliers, or business partners?

a. Yes, explain: _____

b. No, explain: _____

c. Don't know

SECTION 3: DEMONSTRATION PROJECT IMPACTS

Now I would like to talk with you more about the project's benefits.

[NOTE: WHEN ASKING FOR BENEFITS DATA, TRY TO GET NUMERICAL UNITS AS OPPOSED TO PERCENTAGES. IF RESPONDENT REPORTS A PERCENTAGE OR PERCENTAGE CHANGE, ASK IF HE/SHE CAN NUMERICALLY QUANTIFY THE CHANGE, OR IF HE/SHE CAN PROVIDE THE BASELINE THAT THE PERCENTAGE CHANGE IS BASED ON.]

IF PROGRAM DATA INCLUDES RESOURCE TYPE, ASK Q18-Q22. OTHERWISE, ASK Q18D, THEN SKIP TO Q23.]

18A. NYSERDA program records indicate that this project resulted in [RESOURCE TYPE 1] benefits involving [RESOURCE TYPE 2]. [NOTE: IF A PROJECT HAS MORE THAN ONE ENTRY FOR "RESOURCE TYPE 1," ASK THE QUESTION SEPARATELY FOR EACH ENTRY.]

Is that correct?

Yes [SKIP TO Q19]

No [ASK Q18B]

Don't know [ASK Q18B]

18B. Did you previously report these benefits to NYSERDA?

Yes [ASK 18C]

No [SKIP TO 18D]

Don't know [SKIP TO 18D]

18C. Do you know why there is a difference between NYSEERDA's records and the information that you currently have?

[RECORD OPEN-ENDED RESPONSE]:

18D. Which of the following describe the specific types of quantifiable benefits this project produced? For each benefit that your project produced, please state if it was a direct benefit, indirect benefit, or uncertain benefit.

A. Power Production:

1) Is Power Production a benefit this project produced?

(1) Yes [ASK A2-A4] (2) No [SKIP to B1]

2) [IF YES] Please give a numeric value for power produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

B. Demand Reduction:

1) Is Demand Reduction a benefit this project produced?

(1) Yes [ASK B2-B4] (2) No [SKIP to C1]

2) [IF YES] Please give a numeric value for savings produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

C. Energy Efficiency:

1) Is Energy Efficiency a benefit this project produced?

(1) Yes [ASK C2-C4] (2) No [SKIP to D1]

2) [IF YES] Please give a numeric value for savings produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

D. Other:

1) Are there other benefits this project produced? If so, please specify.

(1) Yes Specify: [RECORD OPEN-ENDED RESPONSE] (2) No [SKIP to 19]

2) [IF YES] Please give a numeric value for savings produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

[ASK Q19 – Q23 IF Q18A = 1/YES AND NET UNITS ARE NOT MISSING. OTHERWISE, SKIP TO Q23.]

19. NYSERDA's records indicate that this project *produced* [IF BENEFIT IS POWER PRODUCTION] *saved* [IF BENEFIT IS NOT POWER PRODUCTION]. **IF MORE THAN ONE BENEFIT IS REPORTED, ASK THE QUESTION AND RECORD RESPONSES SEPARATELY FOR EACH REPORTED BENEFIT.**

_____ [Net Units] _____ [Unit Type] _____ [Metric Year]

Are these numbers correct?

(1) Yes [SKIP TO Q24]

(2) No [ASK Q20]

20. Did you previously report these numbers to NYSERDA?

(1) Yes [ASK Q21]

(2) No [SKIP TO Q22]

(3) Don't know [SKIP TO Q22]

21. Do you know why there is a difference between NYSERDA's records and the information that you currently have? [ASK OPEN-ENDED FIRST, READ PROMPTS IF NEEDED.]

Performance of the equipment changed over time

We decommissioned the project

Benefits were realized prior to the first reporting year

Additional benefits accrued over time

Other, please specify: _____

22. Please estimate the actual benefits.

_____ Specify unit: _____ [kWh, kW, MMBtu, pounds of pollutant, etc.]. Year(s): _____

[ASK Q23 IF THE PROGRAM DATA DOES NOT INCLUDE NET UNITS. IF MORE THAN ONE BENEFIT, ASK THE QUESTION AND RECORD RESPONSES SEPARATELY FOR EACH BENEFIT. ASK ABOUT ALL DIRECT AND INDIRECT BENEFITS; DO NOT ASK ABOUT UNCERTAIN BENEFITS.]

23. Please provide an estimate of the [REDUCTION IN / PRODUCTION OF] in [ENERGY, kW, EMISSIONS, ETC. – TAILOR TO SPECIFICS]. IF MORE THAN ONE BENEFIT IS REPORTED, ASK THE QUESTION AND RECORD RESPONSES SEPARATELY FOR EACH REPORTED BENEFIT.]

_____ Specify unit: _____ [kWh, kW, MMBtu, pounds of pollutant, etc.] Year(s): _____

[ASK Q24 IF RESPONDENT DID NOT ANSWER Q22 OR Q23. IF RESPONDENT ANSWERED Q22 OR Q23, SKIP TO Q25.]

24. Besides [METRIC YEAR(S) REPORTED IN THE DATABASE], has the project produced any other [UNIT TYPE] benefits?

- (1) Yes, explain: _____ [Net Units] _____ [Unit Type] _____ [Metric Year]
- (2) No
- (3) Don't know

24-AA. Besides [UNIT TYPE], has the project produced any other types of benefits?

- (1) Yes [IF YES, LOOP BACK TO Q18D]
- (2) No
- (3) Don't know

[IF PROGRAM DATA INCLUDES NET DOLLARS, ASK Q25-28. OTHERWISE, SKIP TO Q29.]

25. NYSERDA's records indicate that this project [GENERATED/SAVED]:

[Net Dollars] [Metric Year(s)]

Are these numbers correct?

- (1) Yes [SKIP TO Q33]
- (2) No [ASK Q26]

26. Did you previously report these numbers to NYSERDA?

- (1) Yes [ASK Q27]
- (2) No [SKIP TO Q28]
- (3) Don't know [SKIP TO Q28]

27. Do you know why there is a difference between NYSERDA's records and the information that you currently have?

[RECORD OPEN-ENDED RESPONSE]:

28. Please estimate the actual net dollars in [REVENUE/COST SAVINGS] from this project:

\$_____, year(s): _____

[ASK Q29 IF THE PROGRAM DATA DOES NOT INCLUDE NET DOLLARS. OTHERWISE, SKIP TO Q31]

29. Did this project generate any revenue?

- (1) Yes [ASK Q30]
- (2) No [SKIP TO Q31]
- (3) Don't know [SKIP TO Q30]

30. Please provide an estimate of the revenue generated from this project.

\$_____, year(s): _____

31. Did this project generate any cost savings?

- (1) Yes [ASK Q32]
- (2) No [SKIP TO Q36]
- (3) Don't know [SKIP TO Q36]

32. Please provide an estimate of the cost savings generated from this project.

\$_____, year(s): _____

33. How much of the aforementioned savings were energy cost savings resulting from a change in the fuel type used? [IF 0, SKIP TO 36]

\$_____, year(s): _____

34. What was the original fuel source that the project displaced?

[RECORD OPEN-ENDED RESPONSE]

[ASK Q35 IF RESPONDENT DID NOT ANSWER Q28, Q30, OR Q32. IF RESPONDENT ANSWERED Q28, Q30, OR Q32, SKIP TO Q36.]

35. Besides [METRIC YEAR(S) REPORTED IN THE DATABASE], has the project generated any other [REVENUE/COST SAVINGS]?

- (1) Yes, amount: \$_____
- (2) No
- (3) Don't know

36. Who were the primary end users for this project?

[RECORD OPEN-ENDED RESPONSE]

37. Did you receive any feedback from end-users from this project site?
- a. (1) Yes
 - b. (2) No
 - c. (3) Don't know

[IF YES, PROCEED TO Q38. IF NO OR DON'T KNOW, SKIP TO Q39]

38. Was the feedback useful for understanding whether or how the technology worked?
- a. (1) Yes
 - b. (2) No
 - c. (3) Don't know

SECTION 4: NYSERDA INFLUENCE ON THE DEMONSTRATION PROJECT

I would now like to discuss your interactions with NYSERDA concerning the [SUMMARY OF DEMONSTRATION PROJECT] Project.

39. When did you learn about NYSERDA's R&D program? [READ THE LIST OF RESPONSE OPTIONS, **EXCEPT** "DON'T KNOW." CHECK ALL THAT APPLY.]

- a. (1) Before you began planning this project
- b. (2) During the planning process but before the plans were finalized
- c. (3) After the plans were finalized
- d. (4) After project implementation started
- e. (5) Don't know

40. Did NYSERDA provide technical assistance for this project?

- a. (1) Yes, explain: _____ Type of assistance: _____ Identify source: _____
- b. (2) No
- c. (3) Don't know

41. Did sources other than NYSERDA provide technical assistance for this project?

- a. (1) Yes, explain: _____ Type of assistance: _____ Identify source: _____
- b. (2) No
- c. (3) Don't know

42. Did sources other than NYSERDA provide funding for this project?

- a. (1) Yes, explain _____ \$_____ Identify source: _____
- b. (2) No
- c. (3) Don't know

43. On a scale of 0 to 5, where 0 = "not at all important" and 5 = "very important," how important or unimportant was NYSERDA's **financial** assistance in the decision to do this project?

(Not at all important)

(Very important)

0 1 2 3 4 5

[ASK Q44 ONLY IF Q40 = "YES". IF Q40 = "NO" OR "DON'T KNOW", RECORD 0.]

44. On a scale of 0 to 5, where 0 = "not at all important" and 5 = "very important," how important or unimportant was NYSERDA's **technical** assistance in the decision to do this project?

(Not at all important)

(Very important)

0 1 2 3 4 5

[POLICY ANALYST PERFORM CALCULATION #2: RECORD THE HIGHER SCORE OF Q43 OR Q44. DO NOT READ TO THE RESPONDENT: _____]

45. What is the likelihood that this project would have been completed in New York without NYSERDA's **financial** assistance? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.

(Not at all likely)

(Very likely)

0 1 2 3 4 5

[ASK Q46 ONLY IF Q40 = "YES". IF Q40 = "NO" OR "DON'T KNOW", RECORD 0.]

46. What is the likelihood that this project would have been completed in New York without NYSERDA's **technical** assistance? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.

(Not at all likely)

(Very likely)

0 1 2 3 4 5

[POLICY ANALYST PERFORM CALCULATION #3A: RECORD THE LOWER SCORE OF Q45 OR Q46: ____

CALCULATION #3B: TAKE THE INVERSE OF 3A. FOR EXAMPLE, 0 BECOMES 5, 1 BECOMES 4, ETC.

DO NOT READ TO THE RESPONDENT: _____]

47. Overall, without NYSERDA's involvement would the **magnitude** of the impacts for this project have been of the same size, smaller, or larger?

- a. Same
- b. Smaller
- c. Larger
- d. Project would not have happened without NYSERDA
- e. Don't know [DO NOT READ]

51. In what way was the replication different from the original NYSERDA demonstration project?

[RECORD OPEN-ENDED RESPONSES.]

[CONTINUE WITH Q52 IF Q49 = YES; SKIP TO Q67 IF Q49 = NO OR DON'T KNOW.]

52. How many times has your firm or another firm replicated this demonstration in New York? [DO NOT ENTER "DON'T KNOW". QUESTION RESPONDENT TO GET AN ESTIMATE.]

[IF Q52 = 0, SKIP TO Q67]

53. Did each of the replications receive NYSERDA funding?

- a. Yes
- b. No [IF NO, ASK:]

Please specify which replications did not receive NYSERDA funding.

[RECORD OPEN-ENDED RESPONSE].

54. From the time that the NYSERDA demonstration project was operational, how long did it take to complete the 1st replication in New York? From the NYSERDA demonstration project to the completion of the 2nd replication in New York? To the completion of the 3rd replication? [GET NUMBER OF YEARS AND/OR MONTHS]

- a. First replication
- b. Next replication
- c. Next replication

55. What are the primary reasons the demonstration project was able to be replicated? [READ LIST OF RESPONSE OPTIONS, EXCEPT "OTHER"]

- a. (1) Technical expertise gained
- b. (2) Financing available
- c. (3) Location available
- d. (4) Requested by building owner
- e. (5) Operating conditions were right
- f. (6) Demonstrable savings were achieved
- g. (7) Other [LIST]

[IF 5 OR FEWER REPLICATIONS SKIP TO Q57.]

56. On average over all similar replications completed in New York State, how did the ___ [Unit Type] of the replications compare to the original demonstration? [IF MORE THAN ONE TYPE OF BENEFIT, ASK FOR EACH DIRECT BENEFIT TYPE.]

- a. (1) Lower
- b. (2) Same
- c. (3) Higher
- d. (4) Not Comparable, specify
- e. (5) Don't know

[IF Q56 = 4]

56b. Why are the impacts not comparable to the original demonstration project?

[RECORD OPEN-ENDED RESPONSE] [IF MORE THAN 5 REPLICATIONS, ASK Q57 AND Q58 FOR THE MOST RECENT 5 ONLY. IF 5 OR FEWER REPLICATIONS, ASK FOR ALL.]

57. How did the ____ [Net Units and Unit Type] of the replications compare to the original demonstration?

	Replication				
	1	2	3	4	5
Lower than Original Demo	<input type="checkbox"/>				
The same size	<input type="checkbox"/>				
Higher than Original Demo	<input type="checkbox"/>				
Not Comparable, specify	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

58. How did the ____ [net dollars SAVED/GENERATED] of the replications compare to the original demonstration?

	Replication				
	1	2	3	4	5
Lower than Original Demo	<input type="checkbox"/>				
The same size	<input type="checkbox"/>				
Higher than Original Demo	<input type="checkbox"/>				
Not Comparable, specify	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

59. Did NYSERDA provide funding assistance, technical assistance, both of these or other assistance for the replications?

	Replication				
	1	2	3	4	5
Yes, Funding	<input type="checkbox"/>				
Yes, Technology Assistance	<input type="checkbox"/>				
Yes, Both Funding & Technology Assistance	<input type="checkbox"/>				
Yes, Other: _____	<input type="checkbox"/>				
No	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

60. Did any sources other than NYSERDA provide funding for the replications?
- a. (1) Yes, amount \$
 - b. (2) No
 - c. (3) Don't know

[IF "YES", PROCEED TO Q61. OTHERWISE, SKIP TO Q62]

61. What were the other funding sources?
- a. (1) Investment Capital (internally financed, investment financed through venture capital or stocks, loan) Estimated % of total funding
 - b. (2) Federal Government Grant or Subsidized Financing Estimated % of total funding
 - c. (3) NYS agency Grant or Subsidized Financing Estimated % of total funding
Specify NYS agency
 - d. (4) Other private grant or philanthropic contribution Estimated % of total funding
 - e. (5) Utility program Estimated % of total funding
 - f. (6) Other, specify Estimated % of total funding
 - g. (7) Don't know Estimated % of total funding

62. [On a scale of 0 to 5, where 0 = "strongly disagree" and 5 = "strongly agree," to what extent do you agree or disagree with the following statement: "Overall, the NYSERDA-funded demonstration project was critical for developing the replication project(s)."]

(Strongly disagree)

(Strongly agree)

0 1 2 3 4 5

[IF Q62 =>3, ASK Q63. OTHERWISE, SKIP TO Q64.]

63. Please briefly describe how NYSERDA's assistance with the demonstration project influenced the ability to do the replication projects.

64. What is the likelihood that these replication projects would have been developed in New York without the NYSERDA-funded demonstration project? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.

(Not at all likely)

(Very likely)

0 1 2 3 4 5

65. Without the NYSERDA-funded demonstration project, would the **magnitude** of the impacts for these replication projects have been of the same size, smaller or larger?

- a. Same
- b. Smaller
- c. Larger
- d. Replication project(s) would not have happened without NYSERDA
- e. Don't know [DO NOT READ]

66. Without the NYSERDA-funded demonstration project, would the replication projects have occurred sooner, at about the same time, or later?

- a. Earlier: ___ years earlier [ASK RESPONDENT TO ESTIMATE YEARS]
- b. About the same time
- c. Later: ___ years later [ASK RESPONDENT TO ESTIMATE YEARS]

- d. Project(s) would not have occurred without NYSERDA
- e. Don't know [DO NOT READ]

67. We are interested in learning more about the benefits of each replication project. What is the contact information (contact name, telephone number, email) for each replication project?

RECORD RESPONSE

[POLICY ANALYST CALCULATION #6A: IF Q65 = A OR C, RECORD -1. IF Q65 = B, D, OR E RECORD 0.

POLICY ANALYST CALCULATION #6B: IF Q66 = A, RECORD -1. IF Q66 = B OR E, RECORD 0. IF Q66 = C OR D, RECORD +1.

POLICY ANALYST CALCULATION #6C: TAKE THE INVERSE OF Q64. E.G., 0 BECOMES 5, 1 BECOMES 4, ETC.

POLICY ANALYST CALCULATION #6D: TAKE THE AVERAGE OF #6C AND Q58.

POLICY ANALYST CALCULATION #7: ADD THE RESULTS OF CALCULATION #6A, CALCULATION #6B, CALCULATION #6D, AND CALCULATION #1: _____

DO NOT READ TO RESPONDENT]

-[SKIP SECTION 6 IF Q49 =YES and Q52>0]

SECTION 6: NON-REPLICATIONS

68. What do you think are the reasons why the NYSERDA project was not replicated in New York?

69. Do you expect the NYSERDA project will be replicated in New York at some point in the future?

- a. (1) Yes [REASONS]
- b. (2) No [REASONS]

SECTION 7: PROCESS EVALUATION

70. How did you become aware of NYSERDA and the potential for NYSERDA assistance?

[DO NOT READ, MARK ALL STATED IN REPLY]

- a. (1) Prior participation in a NYSERDA R&D program
- b. (2) Another NYSERDA program
- c. (3) Advertising
- d. (4) Word-of-mouth (PROBE FOR FOLLOWING):
 - a) Business colleague/client
 - b) Friend/relative
- e. (5) Contacted by a NYSERDA program representative
- f. (6) Visit to another NYSERDA demonstration project
- g. (7) Other

On a scale of 1 (one) to 5 (five) with '1' being Very Dissatisfied, '2' being Somewhat Dissatisfied, '3' being Neither Satisfied nor Dissatisfied, '4' being Somewhat Satisfied and '5' being Very Satisfied, please indicate your level of satisfaction with the following NYSERDA R&D Demonstration elements. Please further explain or elaborate on any Dissatisfaction ratings (indicated by a '1' or a '2' noted in the table below).

71. Ease of R&D Demonstration application process.	1 2 3 4 5 N/A Don't know
72. Appropriateness of NYSERDA R&D Demonstration incentive amounts.	1 2 3 4 5 N/A Don't know
73. Timeliness of your receipt of the R&D Demonstration incentive.	1 2 3 4 5 N/A Don't know
74. Adequacy of the communication from NYSERDA R&D staff.	1 2 3 4 5 N/A Don't know
75. Comprehensiveness of the NYSERDA R&D staff's knowledge about NYSERDA offering and options.	1 2 3 4 5 N/A Don't know
76. Sufficiency of the resolution of any issues by NYSERDA R&D staff.	1 2 3 4 5 N/A Don't know
77. Overall satisfaction of the R&D program.	1 2 3 4 5 N/A Don't know

78. Would you recommend the R&D Demonstration program to a colleague?

- a. Yes, explain: _____
b. No, explain: _____

79. Besides increasing financial incentives, how could NYSERDA improve its R&D program to encourage more demonstration projects such as this? [LIST]

80. Besides increasing financial incentives, how could NYSERDA improve its R&D program to encourage more replications of its demonstration projects? [LIST]

SECTION 8: INTEGRATOR FIRMOGRAPHICS

I want to complete our interview with a few final questions about your firm.

81. What is the firm's principal business activity?

82. How many employees does the firm have overall? [APPROXIMATE NUMBER IS ADEQUATE.]

83. How many employees does the firm have in New York? [APPROXIMATE NUMBER IS ADEQUATE.]

[IF THE PROGRAM DATA INCLUDES JOBS CREATED/RETAINED, ASK Q84. OTHERWISE, SKIP TO Q87.]

84. Our records indicate that [COMPANY NAME] [CREATED/RETAINED] [NUMBER] jobs due to the NYSERDA demonstration project. Is this correct?

- a. Yes [SKIP TO Q90]
- b. No [ASK Q85]
- c. Don't Know [DO NOT READ. IF RESPONDENT DOES NOT KNOW, SKIP TO Q88.]

85. Did you report these numbers to NYSERDA?

- a. Yes [ASK Q86]
- b. No [SKIP TO Q87]
- c. Don't Know [SKIP TO Q87.]

86. Do you know why there is a difference between NYSERDA's records and the information you currently have? [ASK OPEN-ENDED FIRST, READ PROMPTS IF NEEDED]

- a. The company [ADDED/LOST] jobs after reporting the numbers to NYSERDA due to factors related to the demonstration project.
- b. The company [ADDED/LOST] jobs after reporting the numbers to NYSERDA due to factors unrelated to the demonstration project.
- c. Other, please specify: _____

87. Has the NYSERDA-funded demonstration project affected the firm's number of employees in New York?

- a. Yes
- b. No [SKIP Q88 and Q89]

88. How has the NYSERDA-funded demonstration project affected the firm's number of employees in New York?

- a. Created/retained jobs
- b. Lost jobs

89. How many jobs were [created/retained FOR Q88=A] [eliminated FOR Q88=B]?

- a. _____
- b. Don't know (DO NOT READ.)

90. Can NYSERDA call you back at a later time to obtain more information about the NYSERDA R&D Program?

- a. Yes
- b. No

ON BEHALF ON NYSERDA, THANK YOU FOR YOUR TIME IN HELPING US CONDUCT THIS RESEARCH.
HAVE A GREAT DAY.

NYSERDA
Demonstration Project Survey

SITE OWNERS

Interview Date: [mm/dd/yyyy]

Interviewer name:

Interviewer phone:

CNTRCT_ID:

Project Description:

Best Contact:

NYSERDA Project Manager

PI First Name and PI Last Name

Title:

Phone:

Email:

Project Role:

Company Name:

Program Area: [Buildings, Transportation, Energy Resources, etc.]

Project Type: [PRODUCT, PROCESS OR POWER PRODUCTION]

NYSERDA \$ (Encumbered \$ for this project.)

Earliest contract signed date

Latest contract closed date

Location

THE POLICY ANALYST CONDUCTING THE INTERVIEW WILL WORK THROUGH THE INSTRUMENT USING THE SPECIFIC DATASET INPUT AND PROJECT DESCRIPTION TO REFINE QUESTION WORDING AS NECESSARY TO PROVIDE CLEAR LANGUAGE AND TO OBTAIN THE INFORMATION DESIRED FROM EACH QUESTION. GIVEN THE INFORMATION IN THE DATASET, THE SURVEY INSTRUMENT FOR EACH INTERVIEW WILL BE MARKED FOR THE APPROPRIATE HANDLING OF QUESTIONS AND SKIP PATTERNS REGARDING THE IMPACTS FROM THE DEMONSTRATION PROJECT (QUESTIONS 17 THROUGH 32).

Identify the Appropriate Contact

Hello, my name is [interviewer name], and I am calling from [company name] on behalf of the New York State Energy Research and Development Authority, also known as NYSERDA. NYSERDA is conducting a study to assess the impact of its funding on New York State companies and on the State's economy. This study will also assess the impact of its funding and technological support on [use "product", "process", or "generation" depending on participant] demonstration projects conducted in New York State.

NYSERDA has contracted with Industrial Economics, Incorporated and APPRISE to perform this study. IEC and APPRISE are independent research and consulting firms. I would like to ask some questions about your involvement in a completed NYSERDA demonstration project – the [SUMMARIZE FROM CONTRACT DESCRIPTION]. The information you provide will be kept confidential to the extent permitted by law. We will report all responses in aggregate and will not attribute any comments to you. The information you provide will be used to improve NYSERDA's research and development programs. NYSERDA is contacting all participants who completed demonstration projects within the last five years.

SCREENING

Our records show that NYSERDA provided \$_____ in funding to [COMPANY NAME] for the demonstration project [CONTRACT DESCRIPTION].

SCR-1. This survey will take about one hour to complete. We would like to talk to the person who is most knowledgeable about the project. If not you, could you please direct me to, or provide me with the name of the person who is the most qualified to discuss this project?

- a. Caller [PROCEED TO SECTION 1: NYSERDA DEMONSTRATION PROJECT OVERVIEW]
- b. Most qualified contact [CONTACT THIS PERSON, REPEAT INITIAL INTRODUCTION AND THE INTRODUCTION TO THE SCREENING SECTION, AND CONTINUE WITH THE FOLLOWING QUESTION]

SCR-2 Mr./Ms. [name] referred me to you to answer specific about this project [DESCRIBE PROJECT BRIEFLY as this is another person]. This survey will take about one hour to complete. Can we discuss the project now, or can we schedule a time when I can call you back?

- m. Can discuss now [PROCEED TO SECTION 1: NYSERDA DEMONSTRATION PROJECT OVERVIEW]
- n. Call back on _____ at time: _____
- o. [IF THIS PERSON IS NOT THE MOST QUALIFIED PERSON, LOOP BACK TO SCR-1]

SCR-3 Which of the following best describes your role in the [PROJECT]? [READ ALL CHOICES TO RESPONDENT AND SELECT THE MOST APPROPRIATE CHOICE.]

- d. I provided the [PRODUCT/PROCESS/TECHNOLOGY/TYPE OF GENERATION... tailor to the project based on project type] for this project. [USE VENDOR SURVEY INSTRUMENT and ASK QUESTION SCR-1b regarding qualified site owner or integrator]
- e. I am the site owner. [USE SITE OWNER SURVEY INSTRUMENT]
- f. I developed the project and brought together the vendor, site owner, and other market actors. [USE INTEGRATOR SURVEY INSTRUMENT]

SCR-4 Do you have any reports or presentations that describe the results of the [PROJECT]?

- d. Yes [ASK THE RESPONDENT TO SEND THE REPORTS IN ADVANCE OF THE CALL]
- e. No

- f. Don't Know [ASK THE RESPONDENT TO CHECK AND SEND WHAT THEY HAVE IN ADVANCE OF THE CALL]

SECTION 1: NYSEDA DEMONSTRATION PROJECT OVERVIEW

[NOTE: PRIOR TO BEGINNING THE DISCUSSION, ASK THE RESPONDENT WHETHER OR NOT IT IS OKAY TO RECORD THE CALL.]

1. Our records show that NYSEDA provided funding to [COMPANY NAME] for a project involving [CONTRACT DESCRIPTION]. Is this an accurate description of the project?
- a) (1) Yes
b) (2) No

[IF Q1 = YES, SKIP TO Q3. IF Q1 = NO, ASK Q2.]

2. How would you describe the project?

[RECORD OPEN-ENDED RESPONSE]:

3. Is this the first time this ["product", "process", "technology" or "type of generation"tailor to project based on PROJECT TYPE] was used at your site?
- a) (1) Yes
b) (2) No
c) (3) Don't know

[IF Q3 = NO, PROCEED TO Q4. OTHERWISE, SKIP TO Q6]

4. How many times had this ["product", "process", "technology" or "type of generation"tailor to project] been used at your site prior to the [reference NYSEDA demo project]?
- a) [RECORD THE NUMBER OF TIMES]:
b) Don't know
5. How did [reference NYSEDA demo project] differ from previous uses of this ["product", "process", "technology" or "type of generation"tailor to project]?

[ASK UNPROMPTED FIRST. RECORD OPEN-ENDED RESPONSE]:

- a) ____
b) ____
c) ____

[RECORD VERBATIM COMMENTS FIRST; DO NOT READ LIST. THEN, LOOK AT THE LIST AND VERIFY THE RELEVANT SELECTION(S) WITH RESPONDENT.]

- d) No difference
e) Smaller in scale than previous projects of this type
f) Larger in scale than previous projects of this type
g) Different inputs
h) Different application of the technology
i) Different type of facility

[POLICY ANALYST CALCULATION #1: DO NOT READ TO SURVEY RESPONDENT.]

STEP ONE: IF Q3 = "YES" OR "DON'T KNOW", RECORD 0 ON THE LINE BELOW. SKIP STEP TWO.
STEP TWO: IF Q3 = "NO", LOOK AT ANSWER TO Q5. IF Q5 = D ONLY OR E ONLY, RECORD -1. ELSE RECORD 0.

CALCULATION #1: _____]

6. Now I would like to discuss the [SUMMARIZE CONTRACT DESCRIPTION] Project. How would you describe the objectives of this project? [RECORD OPEN-ENDED RESPONSE]:

7a. Were you involved with planning or executing this project?

- a. Yes [ASK Q7B]
- b. No [SKIP TO Q9]

7b-1. Can you identify specific challenges you faced when planning this project?

[ASK UNPROMPTED FIRST. RECORD OPEN-ENDED RESPONSE]:

- a. _____
- b. _____
- c. _____

[PROMPT - BE CAREFUL NOT TO BIAS OR INFLUENCE RESPONSE, SUGGEST CODE FOR ANSWERS PROVIDED ABOVE IF APPROPRIATE]

- p. Lack of funding
- q. Cost prohibitive
- r. Lack of qualified personnel or expertise
- s. Lack of interest among potential end users
- t. Could not find an appropriate site
- u. Timing was not right
- v. Regulatory barriers
- w. Technological issues
- x. Other - specify: _____

7b-2. Can you identify specific challenges you faced when executing this project?

[ASK UNPROMPTED FIRST. RECORD OPEN-ENDED RESPONSE]:

- a. _____
- b. _____
- c. _____

[PROMPT - BE CAREFUL NOT TO BIAS OR INFLUENCE RESPONSE, SUGGEST CODE FOR ANSWERS PROVIDED ABOVE IF APPROPRIATE]

- j. Lack of funding
- k. Cost prohibitive
- l. Lack of qualified personnel or expertise
- m. Lack of interest among potential end users
- n. Could not find an appropriate site
- o. Timing was not right
- p. Regulatory barriers
- q. Technological issues

r. Other - specify: _____

8a. Can you identify any benefits that you received from planning this project?

[RECORD OPEN-ENDED RESPONSE]:

8b. Can you identify any benefits that you received from executing this project?

[RECORD OPEN-ENDED RESPONSE]:

9. Overall, do you feel this project accomplished all, most, some, or none of its objectives?

f. All

g. Most

h. Some

i. None

j. Don't know / refused [DO NOT READ THIS OPTION]

[IF RESPONDENT SELECTS "ALL" OR "DON'T KNOW," SKIP TO Q11. OTHERWISE, ASK Q10.]

10. Please explain why this project did not accomplish all of its objectives: _____

SECTION 2: COST EFFECTIVENESS

Now I would like to ask about the cost-effectiveness of the project.

11. NYSERDA furnished a grant for [NYSERDA \$]. In addition to that amount, how much did you invest in this project in terms of staff time and project expenses?

A. [Staff time in hours] \$ _____, [Monetary amount]

B. Are the numbers you just reported annual or total costs?

(1) Annual (2) Total [IDEALLY, COLLECT DATA ON \$ AND STAFF TIME. HOWEVER, IT IS OKAY IF THE RESPONDENT CAN ONLY PROVIDE ONE OR THE OTHER (OR NEITHER).]

12. Is the system still in use?

a. Yes

b. No [IF NO, ASK:] When was it decommissioned? _____ [Month] _____ [Year]

13. At the time the project began, were you considering alternatives to the ["product", "process", "technology" or "type of generation"] that you used in the NYSERDA project?

a. Yes, explain: _____

b. No

c. Don't know

[IF Q13 = YES, PROCEED TO Q14. OTHERWISE, SKIP TO Q15.]

14. Looking back, do you think the ["product", "process", "technology" or "type of generation"] that you used in the NYSERDA project was the best alternative?

a. Yes, explain: _____

b. No, explain: _____

c. Don't know

15. Do you feel the [PROJECT DESCRIPTION] project was a good investment?

a. Yes, explain: _____

b. No, explain: _____

c. Don't know

16. In general terms, how would you describe your return on this project? [READ LIST TO RESPONDENT]

a. Positive

b. Negative

c. Breakeven or neutral

17. Have you advertised or communicated the results of this project to any potential buyers, suppliers, or business partners?

a. Yes, explain: _____

b. No, explain: _____

c. Don't know

SECTION 3: DEMONSTRATION PROJECT IMPACTS

Now I would like to talk with you more about the project's benefits.

[NOTE: WHEN ASKING FOR BENEFITS DATA, TRY TO GET NUMERICAL UNITS AS OPPOSED TO PERCENTAGES. IF RESPONDENT REPORTS A PERCENTAGE OR PERCENTAGE CHANGE, ASK IF HE/SHE CAN NUMERICALLY QUANTIFY THE CHANGE, OR IF HE/SHE CAN PROVIDE THE BASELINE THAT THE PERCENTAGE CHANGE IS BASED ON.]

IF PROGRAM DATA INCLUDES RESOURCE TYPE, ASK Q18-Q22. OTHERWISE, ASK Q18D, THEN SKIP TO Q23.]

18A. NYSERDA program records indicate that this project resulted in [RESOURCE TYPE 1] benefits involving [RESOURCE TYPE 2]. [NOTE: IF A PROJECT HAS MORE THAN ONE ENTRY FOR "RESOURCE TYPE 1," ASK THE QUESTION SEPARATELY FOR EACH ENTRY.]

Is that correct?

Yes [SKIP TO Q19]

No [ASK Q18B]

Don't know [ASK Q18B]

18B. Did you previously report these benefits to NYSERDA?

Yes [ASK 18C]

No [SKIP TO 18D]

Don't know [SKIP TO 18D]

18C. Do you know why there is a difference between NYSEDA's records and the information that you currently have?

[RECORD OPEN-ENDED RESPONSE]:

18D. Which of the following describe the specific types of quantifiable benefits this project produced? For each benefit that your project produced, please state if it was a direct benefit, indirect benefit, or uncertain benefit.

E. Power Production:

1) Is Power Production a benefit this project produced?

(1) Yes [ASK A2-A4] (2) No [SKIP to A4]

2) [IF YES] Please give a numeric value for power produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

F. Demand Reduction:

1) Is Demand Reduction a benefit this project produced?

(1) Yes [ASK B2-B4] (2) No [SKIP to B4]

2) [IF YES] Please give a numeric value for savings produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

G. Energy Efficiency:

1) Is Energy Efficiency a benefit this project produced?

(1) Yes [ASK C2-C4] (2) No [SKIP to C4]

2) [IF YES] Please give a numeric value for savings produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

H. Other:

1) Are there other benefits this project produced? If so, please specify.

(1) Yes Specify: [RECORD OPEN-ENDED RESPONSE]

2) [IF YES] Please give a numeric value for savings produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

[ASK Q19 – Q23 IF Q18A = 1/YES AND NET UNITS ARE NOT MISSING. OTHERWISE, SKIP TO Q23.]

19. NYSERDA's records indicate that this project *produced* [IF BENEFIT IS POWER PRODUCTION] *saved* [IF BENEFIT IS NOT POWER PRODUCTION]. **IF MORE THAN ONE BENEFIT IS REPORTED, ASK THE QUESTION AND RECORD RESPONSES SEPARATELY FOR EACH REPORTED BENEFIT.**

_____ [Net Units] _____ [Unit Type] _____ [Metric Year]

Are these numbers correct?

(1) Yes [SKIP TO Q24]

(2) No [ASK Q20]

20. Did you previously report these numbers to NYSERDA?

(1) Yes [ASK Q21]

(2) No [SKIP TO Q22]

(3) Don't know [SKIP TO Q22]

21. Do you know why there is a difference between NYSERDA's records and the information that you currently have? [ASK OPEN-ENDED FIRST, READ PROMPTS IF NEEDED.]

Performance of the equipment changed over time

We decommissioned the project

Benefits were realized prior to the first reporting year

Additional benefits accrued over time

Other, please specify: _____

22. Please estimate the actual benefits.

_____ Specify unit: _____ [kWh, kW, MMBtu, pounds of pollutant, etc.]. Year(s): _____

[ASK Q23 IF THE PROGRAM DATA DOES NOT INCLUDE NET UNITS. IF MORE THAN ONE BENEFIT, ASK THE QUESTION AND RECORD RESPONSES SEPARATELY FOR EACH BENEFIT. ASK ABOUT ALL DIRECT AND INDIRECT BENEFITS; DO NOT ASK ABOUT UNCERTAIN BENEFITS.]

23. Please provide an estimate of the [REDUCTION IN / PRODUCTION OF] in [ENERGY, kW, EMISSIONS, ETC. – TAILOR TO SPECIFICS]. IF MORE THAN ONE BENEFIT IS REPORTED, ASK THE QUESTION AND RECORD RESPONSES SEPARATELY FOR EACH REPORTED BENEFIT.]

_____ Specify unit: _____ [kWh, kW, MMBtu, pounds of pollutant, etc.] Year(s): _____

[ASK Q24 IF RESPONDENT DID NOT ANSWER Q22 OR Q23. IF RESPONDENT ANSWERED Q22 OR Q23, SKIP TO Q25.]

24. Besides [METRIC YEAR(S) REPORTED IN THE DATABASE], has the project produced any other [UNIT TYPE] benefits?

- (1) Yes, explain: _____ [Net Units] _____ [Unit Type] _____ [Metric Year]
- (2) No
- (3) Don't know

24-AA. Besides [UNIT TYPE], has the project produced any other types of benefits?

- (1) Yes [IF YES, LOOP BACK TO Q18D]
- (2) No
- (3) Don't know

[IF PROGRAM DATA INCLUDES NET DOLLARS, ASK Q25-28. OTHERWISE, SKIP TO Q29.]

25. NYSERDA's records indicate that this project [GENERATED/SAVED]:

[Net Dollars] [Metric Year(s)]

Are these numbers correct?

- (1) Yes [SKIP TO Q33]
- (2) No [ASK Q26]

26. Did you previously report these numbers to NYSERDA?

- (1) Yes [ASK Q27]
- (2) No [SKIP TO Q28]
- (3) Don't know [SKIP TO Q28]

27. Do you know why there is a difference between NYSERDA's records and the information that you currently have?

[RECORD OPEN-ENDED RESPONSE]:

28. Please estimate the actual net dollars in [REVENUE/COST SAVINGS] from this project:

\$_____, year(s): _____

[ASK Q29 IF THE PROGRAM DATA DOES NOT INCLUDE NET DOLLARS. OTHERWISE, SKIP TO Q31]

29. Did this project generate any revenue?

- (1) Yes [ASK Q30]
- (2) No [SKIP TO Q31]
- (3) Don't know [SKIP TO Q30]

30. Please provide an estimate of the revenue generated from this project.

\$_____, year(s): _____

31. Did this project generate any cost savings?

- (1) Yes [ASK Q32]
- (2) No [SKIP TO Q36]
- (3) Don't know [SKIP TO Q36]

32. Please provide an estimate of the cost savings generated from this project.

\$_____, year(s): _____

33. How much of the aforementioned savings were energy cost savings resulting from a change in the fuel type used? [IF 0, SKIP TO 35]

\$_____, year(s): _____

34. What was the original fuel source that the project displaced?

[RECORD OPEN-ENDED RESPONSE]

[ASK Q35 IF RESPONDENT DID NOT ANSWER Q28, Q30, OR Q32. IF RESPONDENT ANSWERED Q28, Q30, OR Q32, SKIP TO Q36.]

35. Besides [METRIC YEAR(S) REPORTED IN THE DATABASE], has the project generated any other [REVENUE/COST SAVINGS]?

- (1) Yes, amount: \$_____
- (2) No
- (3) Don't know

36. Who were the primary end users for this project?

[RECORD OPEN-ENDED RESPONSE]

37. Did you receive any feedback from end-users from this project site?
- a. (1) Yes
 - b. (2) No
 - c. (3) Don't know

[IF YES, PROCEED TO Q38. IF NO OR DON'T KNOW, SKIP TO Q39]

38. Was the feedback useful for understanding whether or how the technology worked?
- a. (1) Yes
 - b. (2) No
 - c. (3) Don't know

SECTION 4: NYSERDA INFLUENCE ON THE DEMONSTRATION PROJECT

I would now like to discuss your interactions with NYSERDA concerning the [SUMMARY OF DEMONSTRATION PROJECT] Project.

39. When did you learn about NYSERDA's R&D program? [READ THE LIST OF RESPONSE OPTIONS, **EXCEPT** "DON'T KNOW." CHECK ALL THAT APPLY.]

- a. (1) Before you began planning this project
- b. (2) During the planning process but before the plans were finalized
- c. (3) After the plans were finalized
- d. (4) After project implementation started
- e. (5) From the integrator or vendor
- f. (6) I have not heard about NYSERDA's R&D Program
- g. (7) Don't know

40. Did NYSERDA provide technical assistance for this project?

- a. (1) Yes, explain: _____ Type of assistance: _____ Identify source: _____
- b. (2) No
- c. (3) Don't know

41. Did sources other than NYSERDA provide technical assistance for this project?

- a. (1) Yes, explain: _____ Type of assistance: _____ Identify source: _____
- b. (2) No
- c. (3) Don't know

42. Did sources other than NYSERDA provide funding for this project?

- a. (1) Yes, explain _____ \$_____ Identify source: _____
- b. (2) No

c. (3) Don't know

43. On a scale of 0 to 5, where 0 = "not at all important" and 5 = "very important," how important or unimportant was NYSERDA's **financial** assistance in the decision to do this project?

(Not at all important) (Very important)
0 1 2 3 4 5

[ASK Q44 ONLY IF Q40 = "YES". IF Q40 = "NO" OR "DON'T KNOW", RECORD 0.]

44. On a scale of 0 to 5, where 0 = "not at all important" and 5 = "very important," how important or unimportant was NYSERDA's **technical** assistance in the decision to do this project?

(Not at all important) (Very important)
0 1 2 3 4 5

[POLICY ANALYST PERFORM CALCULATION #2: RECORD THE HIGHER SCORE OF Q43 OR Q44. DO NOT READ TO THE RESPONDENT: _____]

45. What is the likelihood that this project would have been completed in New York without NYSERDA's **financial** assistance? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.

(Not at all likely) (Very likely)
0 1 2 3 4 5

[ASK Q46 ONLY IF Q40 = "YES". IF Q40 = "NO" OR "DON'T KNOW", RECORD 0.]

46. What is the likelihood that this project would have been completed in New York without NYSERDA's **technical** assistance? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.

(Not at all likely) (Very likely)
0 1 2 3 4 5

[POLICY ANALYST PERFORM CALCULATION #3A: RECORD THE LOWER SCORE OF Q45 OR Q46: ____

CALCULATION #3B: TAKE THE INVERSE OF 3A. FOR EXAMPLE, 0 BECOMES 5, 1 BECOMES 4, ETC.

DO NOT READ TO THE RESPONDENT: _____]

47. Overall, without NYSERDA's involvement would the **magnitude** of the impacts for this project have been of the same size, smaller, or larger?

- a. Same
- b. Smaller
- c. Larger
- d. Project would not have happened without NYSERDA
- e. Don't know [DO NOT READ]

[IF Q50 = YES, ASK Q51. OTHERWISE, SKIP TO Q52.]

51. In what way was the replication different from the original NYSERDA demonstration project?

[RECORD OPEN-ENDED RESPONSES.]

[CONTINUE WITH Q52 IF Q49 = YES; SKIP TO Q67 IF Q49 = NO OR DON'T KNOW.]

52. How many times has the demonstration project been replicated in New York? [DO NOT ENTER "DON'T KNOW". QUESTION RESPONDENT TO GET AN ESTIMATE.]

[IF Q52 = 0, SKIP TO Q67]

53. Did each of the replications receive NYSERDA funding?

- a. Yes
- b. No [IF NO, ASK:]

Please specify which replications did not receive NYSERDA funding.

[RECORD OPEN-ENDED RESPONSE].

54. From the time that the NYSERDA demonstration project was operational, how long did it take to complete the 1st replication in New York? From the NYSERDA demonstration project to the completion of the 2nd replication in New York? To the completion of the 3rd replication? [GET NUMBER OF YEARS AND/OR MONTHS]

- a. First replication
- b. Next replication
- c. Next replication

55. What are the primary reasons the demonstration project was able to be replicated? [READ LIST OF RESPONSE OPTIONS, EXCEPT "OTHER"]

- a. (1) Technical expertise gained
- b. (2) Financing available
- c. (3) Location available
- d. (4) Requested by building owner
- e. (5) Operating conditions were right
- f. (6) Demonstrable savings were achieved
- g. (7) Other [LIST]

[IF 5 OR FEWER REPLICATIONS SKIP TO Q57.]

56. On average over all similar replications completed in New York State, how did the ___ [Unit Type] of the replications compare to the original demonstration? [IF MORE THAN ONE TYPE OF BENEFIT, ASK FOR EACH DIRECT BENEFIT TYPE.]

- a. (1) Lower
- b. (2) Same
- c. (3) Higher
- d. (4) Not Comparable, specify
- e. (5) Don't know

[IF Q56 = 4]

56b. Why are the impacts not comparable to the original demonstration project?

[RECORD OPEN-ENDED RESPONSE] [IF MORE THAN 5 REPLICATIONS, ASK Q57 AND Q58 FOR THE MOST RECENT 5 ONLY. IF 5 OR FEWER REPLICATIONS, ASK FOR ALL.]

57. How did the ____ [Net Units and Unit Type] of the replications compare to the original demonstration?

	Replication				
	1	2	3	4	5
Lower than Original Demo	<input type="checkbox"/>				
The same size	<input type="checkbox"/>				
Higher than Original Demo	<input type="checkbox"/>				
Not Comparable, specify	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

58. How did the ____ [net dollars SAVED/GENERATED] of the replications compare to the original demonstration?

	Replication				
	1	2	3	4	5
Lower than Original Demo	<input type="checkbox"/>				
The same size	<input type="checkbox"/>				
Higher than Original Demo	<input type="checkbox"/>				
Not Comparable, specify	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

59. Did NYSERDA provide funding assistance, technical assistance, both of these or other assistance for the replications?

	Replication				
	1	2	3	4	5
Yes, Funding	<input type="checkbox"/>				
Yes, Technology Assistance	<input type="checkbox"/>				
Yes, Both Funding & Technology Assistance	<input type="checkbox"/>				
Yes, Other: _____	<input type="checkbox"/>				

No	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

60. Did any sources other than NYSERDA provide funding for the replications?

- a. (1) Yes, amount \$
- b. (2) No
- c. (3) Don't know

[IF "YES", PROCEED TO Q61. OTHERWISE, SKIP TO Q62]

61. What were the other funding sources?

- a. (1) Investment Capital (internally financed, investment financed through venture capital or stocks, loan) Estimated % of total funding
- b. (2) Federal Government Grant or Subsidized Financing Estimated % of total funding
- c. (3) NYS agency Grant or Subsidized Financing Estimated % of total funding
Specify NYS agency
- d. (4) Other private grant or philanthropic contribution Estimated % of total funding
- e. (5) Utility program Estimated % of total funding
- f. (6) Other, specify Estimated % of total funding
- g. (7) Don't know Estimated % of total funding

62. [On a scale of 0 to 5, where 0 = "strongly disagree" and 5 = "strongly agree," to what extent do you agree or disagree with the following statement: "Overall, the NYSERDA-funded demonstration project was critical for developing the replication project(s)."]

(Strongly disagree)

(Strongly agree)

0 1 2 3 4 5

[IF Q62 =>3, ASK Q63. OTHERWISE, SKIP TO Q64.]

63. Please briefly describe how NYSERDA's assistance with the demonstration project influenced the ability to do the replication projects.

64. What is the likelihood that these replication projects would have been developed in New York without the NYSERDA-funded demonstration project? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.

(Not at all likely)

(Very likely)

0 1 2 3 4 5

65. Without the NYSERDA-funded demonstration project, would the **magnitude** of the impacts for these replication projects have been of the same size, smaller or larger?

- a. Same
- b. Smaller
- c. Larger
- d. Replication project(s) would not have happened without NYSERDA
- e. Don't know [DO NOT READ]

66. Without the NYSERDA-funded demonstration project, would the replication projects have occurred sooner, at about the same time, or later?
- a. Earlier: ___ years earlier [ASK RESPONDENT TO ESTIMATE YEARS]
 - b. About the same time
 - c. Later: ___ years later [ASK RESPONDENT TO ESTIMATE YEARS]
 - d. Project(s) would not have occurred without NYSERDA
 - e. Don't know [DO NOT READ]

67. We are interested in learning more about the benefits of each replication project. What is the contact information (contact name, telephone number, email) for each replication project?
RECORD RESPONSE:

[POLICY ANALYST CALCULATION #6A: IF Q65 = A OR C, RECORD -1. IF Q65 = B, D, OR E RECORD 0.

POLICY ANALYST CALCULATION #6B: IF Q66 = A, RECORD -1. IF Q66 = B OR E, RECORD 0. IF Q66 = C OR D, RECORD +1.

POLICY ANALYST CALCULATION #6C: TAKE THE INVERSE OF Q64. E.G., 0 BECOMES 5, 1 BECOMES 4, ETC.

POLICY ANALYST CALCULATION #6D: TAKE THE AVERAGE OF #6C AND Q58.

POLICY ANALYST CALCULATION #7: ADD THE RESULTS OF CALCULATION #6A, CALCULATION #6B, CALCULATION #6D, AND CALCULATION #1: _____

DO NOT READ TO RESPONDENT]

-[SKIP SECTION 6 IF Q49 =YES and Q52>0]

SECTION 6: NON-REPLICATIONS

68. What do you think are the reasons why the NYSERDA project was not replicated in New York?
69. Do you expect the NYSERDA project will be replicated in New York at some point in the future?
- a. (1) Yes [REASONS]
 - b. (2) No [REASONS]

SECTION 7: PROCESS EVALUATION

70. How did you become aware of NYSERDA and the potential for NYSERDA assistance?

[DO NOT READ, MARK ALL STATED IN REPLY]

- a. (1) Prior participation in a NYSERDA R&D program
- b. (2) Another NYSERDA program
- c. (3) Advertising
- d. (4) Word-of-mouth (PROBE FOR FOLLOWING):
 - a) Business colleague/client b) Friend/relative
- e. (5) Contacted by a NYSERDA program representative
- f. (6) Visit to another NYSERDA demonstration project
- g. (7) I was not aware of the potential for NYSERDA assistance

h. (8) Other

Please rate your agreement or disagreement with the following statements. Please use a 1 to 5 scale where 5 indicates strongly agree, 4 indicates agree, 3 indicates neither agree nor disagree, 2 indicates disagree, and 1 is strongly disagree.

71. Ease of R&D Demonstration application process.	1	2	3	4	5	N/A	Don't Know
72. Appropriateness of NYSERDA R&D Demonstration incentive amounts.	1	2	3	4	5	N/A	Don't Know
73. Timeliness of your receipt of the R&D Demonstration incentive.	1	2	3	4	5	N/A	Don't Know
74. Adequacy of the communication from NYSERDA R&D staff.	1	2	3	4	5	N/A	Don't Know
75. Comprehensiveness of the NYSERDA R&D staff's knowledge about NYSERDA offering and options.	1	2	3	4	5	N/A	Don't Know
76. Sufficiency of the resolution of any issues by NYSERDA R&D staff.	1	2	3	4	5	N/A	Don't Know
77. Overall satisfaction of the R&D program.	1	2	3	4	5	N/A	Don't Know

78. Please further explain or elaborate on any Dissatisfaction ratings (indicated by a '1' or a '2' noted in the table above).

79. Would you recommend the R&D Demonstration survey to a colleague?

- a. Yes, explain: _____
 b. No, explain: _____

80. Besides increasing financial incentives, how could NYSERDA improve its R&D program to encourage more demonstration projects such as this? [LIST]

81. Besides increasing financial incentives, how could NYSERDA improve its R&D program to encourage more replications of its demonstration projects? [LIST]

SECTION 8: SITE OWNER FIRMOGRAPHICS

I want to complete our interview with a few final questions about your firm.

82. What is the firm's principal business activity?

83. How many employees does the firm have overall? [APPROXIMATE NUMBER IS ADEQUATE.]

84. How many employees does the firm have in New York? [APPROXIMATE NUMBER IS ADEQUATE.]

[NOTE: ONLY ASK Q85-90 IF THE SITE OWNER WAS ACTIVELY INVOLVED IN PLANNING AND EXECUTING THE DEMONSTRATION PROJECT (Q7A). IF THE SITE OWNER WAS NOT DIRECTLY INVOLVED IN PROJECT PLANNING OR EXECUTION, SKIP TO Q91.]

[IF THE PROGRAM DATA INCLUDES JOBS CREATED/RETAINED, ASK Q85. OTHERWISE, SKIP TO Q88.]

85. Our records indicate that [COMPANY NAME] [CREATED/RETAINED] [NUMBER] jobs due to the NYSERDA demonstration project. Is this correct?

- a. Yes [SKIP TO Q91]
- b. No [ASK Q86]
- c. Don't Know [DO NOT READ. IF RESPONDENT DOES NOT KNOW, SKIP TO Q89.]

86. Did you report these numbers to NYSERDA?

- a. Yes [ASK Q87]
- b. No [SKIP TO Q88]
- c. Don't Know [SKIP TO Q88.]

87. Do you know why there is a difference between NYSERDA's records and the information you currently have? [ASK OPEN-ENDED FIRST, READ PROMPTS IF NEEDED]

- a. The company [ADDED/LOST] jobs after reporting the numbers to NYSERDA due to factors related to the demonstration project.
- b. The company [ADDED/LOST] jobs after reporting the numbers to NYSERDA due to factors unrelated to the demonstration project.
- c. Other, please specify: _____

88. Has the NYSERDA-funded demonstration project affected the firm's number of employees in New York?

- a. Yes
- b. No [SKIP Q89 and Q90]

89. How has the NYSERDA-funded demonstration project affected the firm's number of employees in New York?

- a. Created/retained jobs
- b. Lost jobs

90. How many jobs were [created/retained FOR Q89=A] [eliminated FOR Q89=B]?

- a. _____
- b. Don't know (DO NOT READ.)

91. Can NYSERDA call you back at a later time to obtain more information about the NYSERDA R&D Program?

- a. Yes
- b. No

ON BEHALF OF NYSERDA, THANK YOU FOR YOUR TIME IN HELPING US CONDUCT THIS RESEARCH.
HAVE A GREAT DAY.

NYSERDA
Demonstration Project Survey

VENDORS

Interview Date: [mm/dd/yyyy]

Interviewer name:

Interviewer phone:

CNTRCT_ID:

Project Description:

Best Contact:

NYSERDA Project Manager

PI First Name and PI Last Name

Title:

Phone:

Email:

Project Role:

Company Name:

Program Area: [Buildings, Transportation, Energy Resources, etc.]

Project Type: [PRODUCT, PROCESS OR POWER PRODUCTION]

NYSERDA \$ (Encumbered \$ for this project.)

Earliest contract signed date

Latest contract closed date

Location

THE POLICY ANALYST CONDUCTING THE INTERVIEW WILL WORK THROUGH THE INSTRUMENT USING THE SPECIFIC DATASET INPUT AND PROJECT DESCRIPTION TO REFINE QUESTION WORDING AS NECESSARY TO PROVIDE CLEAR LANGUAGE AND TO OBTAIN THE INFORMATION DESIRED FROM EACH QUESTION. GIVEN THE INFORMATION IN THE DATASET, THE SURVEY INSTRUMENT FOR EACH INTERVIEW WILL BE MARKED FOR THE APPROPRIATE HANDLING OF QUESTIONS AND SKIP PATTERNS REGARDING THE IMPACTS FROM THE DEMONSTRATION PROJECT (QUESTIONS 17 THROUGH 32).

Identify the Appropriate Contact

Hello, my name is [interviewer name], and I am calling from [company name] on behalf of the New York State Energy Research and Development Authority, also known as NYSERDA. NYSERDA is conducting a study to assess the impact of its funding on New York State companies and on the State's economy. This study will also assess the impact of its funding and technological support on [use "product", "process", or "generation" depending on participant] demonstration projects conducted in New York State.

NYSERDA has contracted with Industrial Economics, Incorporated and APPRISE to perform this study. IEc and APPRISE are independent research and consulting firms. I would like to ask some questions about your involvement in a completed NYSERDA demonstration project – the [SUMMARIZE FROM CONTRACT DESCRIPTION]. The information you provide will be kept confidential to the extent permitted by law. We will report all responses in aggregate and will not attribute any comments to you. The information you provide will be used to improve NYSERDA's research and development programs. NYSERDA is contacting all participants who completed demonstration projects within the last five years.

SCREENING

Our records show that NYSERDA provided \$_____ in funding to [COMPANY NAME] for the demonstration project [CONTRACT DESCRIPTION], and that your company provided the [PRODUCT / PROCESS / TECHNOLOGY / GENERATOR] for the project.

SCR-1. This survey will take about one hour to complete. We would like to talk to the person who is most knowledgeable about the project. If not you, could you please direct me to, or provide me with the name of the person who is the most qualified to discuss this project?

- a. Caller [PROCEED TO SECTION 1: NYSERDA DEMONSTRATION PROJECT OVERVIEW]
- b. Most qualified contact [CONTACT THIS PERSON, REPEAT INITIAL INTRODUCTION AND THE INTRODUCTION TO THE SCREENING SECTION, AND CONTINUE WITH THE FOLLOWING QUESTION]

SCR-2 Mr./Ms. [name] referred me to you to answer specific about this project [DESCRIBE PROJECT BRIEFLY as this is another person]. This survey will take about one hour to complete. Can we discuss the project now, or can we schedule a time when I can call you back?

- y. Can discuss now [PROCEED TO SECTION 1: NYSERDA DEMONSTRATION PROJECT OVERVIEW]
- z. Call back on _____ at time:
- aa. [IF THIS PERSON IS NOT THE MOST QUALIFIED PERSON, LOOP BACK TO SCR-1]

SCR-3 Which of the following best describes your role in the [PROJECT]? **[READ ALL CHOICES TO RESPONDENT AND SELECT THE MOST APPROPRIATE CHOICE.]**

- g. I provided the [PRODUCT/PROCESS/TECHNOLOGY/TYPE OF GENERATION... tailor to the project based on project type] for this project. [USE VENDOR SURVEY INSTRUMENT and ASK QUESTION SCR-1b regarding qualified site owner or integrator]
- h. I am the site owner. [USE SITE OWNER SURVEY INSTRUMENT]
- i. I developed the project and brought together the vendor, site owner, and other market actors. [USE INTEGRATOR SURVEY INSTRUMENT]

SCR-4 Do you have any reports or presentations that describe the results of the [PROJECT]?

- a. Yes [ASK THE RESPONDENT TO SEND THE REPORTS IN ADVANCE OF THE CALL]
- b. No

- c. Don't Know [ASK THE RESPONDENT TO CHECK AND SEND WHAT THEY HAVE IN ADVANCE OF THE CALL]

SECTION 1: NYSERDA DEMONSTRATION PROJECT OVERVIEW

[NOTE: PRIOR TO BEGINNING THE DISCUSSION, ASK THE RESPONDENT WHETHER OR NOT IT IS OKAY TO RECORD THE CALL.]

1. Our records show that NYSERDA provided funding to [COMPANY NAME] for a project involving [CONTRACT DESCRIPTION]. Is this an accurate description of the project?
- a) (1) Yes
- b) (2) No

[IF Q1 = YES, SKIP TO Q3. IF Q1 = NO, ASK Q2.]

2. How would you describe the project?

[RECORD OPEN-ENDED RESPONSE]:

3. Is this the first time this ["product", "process", "technology" or "type of generation"tailor to project based on PROJECT TYPE] was used at your site?
- a) (1) Yes
- b) (2) No
- c) (3) Don't know

[IF Q3 = NO, PROCEED TO Q4. OTHERWISE, SKIP TO Q6]

4. How many times had this ["product", "process", "technology" or "type of generation"tailor to project] been used at your site prior to the [reference NYSERDA demo project]?
- a) [RECORD THE NUMBER OF TIMES]:
- b) Don't know

5. How did [reference NYSERDA demo project] differ from previous uses of this ["product", "process", "technology" or "type of generation"tailor to project]?

[ASK UNPROMPTED FIRST. RECORD OPEN-ENDED RESPONSE]:

- a) ___
- b) ___
- c) ___

[RECORD VERBATIM COMMENTS FIRST; DO NOT READ LIST. THEN, LOOK AT THE LIST AND VERIFY THE RELEVANT SELECTION(S) WITH RESPONDENT.]

- d) No difference
- e) Smaller in scale than previous projects of this type
- f) Larger in scale than previous projects of this type
- g) Different inputs
- h) Different application of the technology
- i) Different type of facility

[POLICY ANALYST CALCULATION #1: DO NOT READ TO SURVEY RESPONDENT.

STEP ONE: IF Q3 = "YES" OR "DON'T KNOW", RECORD 0 ON THE LINE BELOW. SKIP STEP TWO.

STEP TWO: IF Q3 = "NO", LOOK AT ANSWER TO Q5. IF Q5 = D ONLY OR E ONLY, RECORD -1. ELSE RECORD 0.

CALCULATION #1: _____]

6. Now I would like to discuss the [SUMMARIZE CONTRACT DESCRIPTION] Project. How would you describe the objectives of this project? [RECORD OPEN-ENDED RESPONSE]:

7a. Were you involved with planning or executing this project?

a. Yes [ASK Q7B]

b. No [SKIP TO Q9]

7b-1. Can you identify specific challenges you faced when planning this project?

[ASK UNPROMPTED FIRST. RECORD OPEN-ENDED RESPONSE]:

a. _____

b. _____

c. _____

[PROMPT - BE CAREFUL NOT TO BIAS OR INFLUENCE RESPONSE, SUGGEST CODE FOR ANSWERS PROVIDED ABOVE IF APPROPRIATE]

bb. Lack of funding

cc. Cost prohibitive

dd. Lack of qualified personnel or expertise

ee. Lack of interest among potential end users

ff. Could not find an appropriate site

gg. Timing was not right

hh. Regulatory barriers

ii. Technological issues

jj. Other - specify: _____

7b-2. Can you identify specific challenges you faced when executing this project?

[ASK UNPROMPTED FIRST. RECORD OPEN-ENDED RESPONSE]:

a. _____

b. _____

c. _____

[PROMPT - BE CAREFUL NOT TO BIAS OR INFLUENCE RESPONSE, SUGGEST CODE FOR ANSWERS PROVIDED ABOVE IF APPROPRIATE]

s. Lack of funding

t. Cost prohibitive

u. Lack of qualified personnel or expertise

v. Lack of interest among potential end users

w. Could not find an appropriate site

x. Timing was not right

- y. Regulatory barriers
- z. Technological issues
- aa. Other - specify: _____

8a. Can you identify any benefits that you received from planning this project?

[RECORD OPEN-ENDED RESPONSE]:

8b. Can you identify any benefits that you received from executing this project?

[RECORD OPEN-ENDED RESPONSE]:

9. Overall, do you feel this project accomplished all, most, some, or none of its objectives?

- k. All
- l. Most
- m. Some
- n. None
- o. Don't know / refused [DO NOT READ THIS OPTION]

[IF RESPONDENT SELECTS "ALL" OR "DON'T KNOW," SKIP TO Q11. OTHERWISE, ASK Q10.]

10. Please explain why this project did not accomplish all of its objectives: _____

SECTION 2: COST EFFECTIVENESS

Now I would like to ask about the cost-effectiveness of the project.

11. NYSERDA furnished a grant for [NYSERDA \$]. In addition to that amount, how much did your firm invest in this project in terms of staff time and project expenses?

A. [Staff time in hours] \$ [Monetary amount]

B. Are the numbers you just reported annual or total costs?

(1) Annual (2) Total [IDEALLY, COLLECT DATA ON \$ AND STAFF TIME. HOWEVER, IT IS OKAY IF THE RESPONDENT CAN ONLY PROVIDE ONE OR THE OTHER (OR NEITHER).]

12. Is the system still in use?

- a. Yes
- b. No [IF NO, ASK:] When was it decommissioned? ____ [Month] ____ [Year]

13. At the time the project began, were you considering alternatives customers or applications for the ["product", "process", "technology" or "type of generation"] that you used in the NYSERDA project?

- a. Yes, explain: _____
- b. No
- c. Don't know

[IF Q13 = YES, PROCEED TO Q14. OTHERWISE, SKIP TO Q15.]

14. Looking back, do you think the ["product", "process", "technology" or "type of generation"] that you used in the NYSERDA demonstration project was the best alternative for your firm?

- a. Yes, explain: _____
- b. No, explain: _____
- c. Don't know

15. Do you feel the [PROJECT DESCRIPTION] project was a good investment?

- a. Yes, explain: _____
- b. No, explain: _____
- c. Don't know

16. In general terms, how would you describe your return on this project? [READ LIST TO RESPONDENT]

- a. Positive
- b. Negative
- c. Breakeven or neutral

17. Have you advertised or communicated the results of this project to any potential buyers, suppliers, or business partners?

- a. Yes, explain: _____
- b. No, explain: _____
- c. Don't know

SECTION 3: DEMONSTRATION PROJECT IMPACTS

Now I would like to talk with you more about the project's benefits.

[NOTE: WHEN ASKING FOR BENEFITS DATA, TRY TO GET NUMERICAL UNITS AS OPPOSED TO PERCENTAGES. IF RESPONDENT REPORTS A PERCENTAGE OR PERCENTAGE CHANGE, ASK IF HE/SHE CAN NUMERICALLY QUANTIFY THE CHANGE, OR IF HE/SHE CAN PROVIDE THE BASELINE THAT THE PERCENTAGE CHANGE IS BASED ON.]

IF PROGRAM DATA INCLUDES RESOURCE TYPE, ASK Q18-Q22. OTHERWISE, ASK Q18D, THEN SKIP TO Q23.]

18A. NYSERDA program records indicate that this project resulted in [RESOURCE TYPE 1] benefits involving [RESOURCE TYPE 2]. [NOTE: IF A PROJECT HAS MORE THAN ONE ENTRY FOR "RESOURCE TYPE 1," ASK THE QUESTION SEPARATELY FOR EACH ENTRY.]

Is that correct?

- Yes [SKIP TO Q19]
- No [ASK Q18B]
- Don't know [ASK Q18B]

18B. Did you previously report these benefits to NYSERDA?

- Yes [ASK 18C]
- No [SKIP TO 18D]
- Don't know [SKIP TO 18D]

18C. Do you know why there is a difference between NYSEERDA's records and the information that you currently have?

[RECORD OPEN-ENDED RESPONSE]:

18D. Which of the following describe the specific types of quantifiable benefits this project produced? For each benefit that your project produced, please state if it was a direct benefit, indirect benefit, or uncertain benefit.

I. Power Production:

1) Is Power Production a benefit this project produced?

(1) Yes [ASK A2-A4] (2) No [SKIP to A4]

2) [IF YES] Please give a numeric value for power produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

J. Demand Reduction:

1) Is Demand Reduction a benefit this project produced?

(1) Yes [ASK B2-B4] (2) No [SKIP to B4]

2) [IF YES] Please give a numeric value for savings produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

K. Energy Efficiency:

1) Is Energy Efficiency a benefit this project produced?

(1) Yes [ASK C2-C4] (2) No [SKIP to C4]

2) [IF YES] Please give a numeric value for savings produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

L. Other:

1) Are there other benefits this project produced? If so, please specify.

(1) Yes Specify: [RECORD OPEN-ENDED RESPONSE]

2) [IF YES] Please give a numeric value for savings produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

[ASK Q19 – Q23 IF Q18A = 1/YES AND NET UNITS ARE NOT MISSING. OTHERWISE, SKIP TO Q23.]

19. NYSERDA's records indicate that this project *produced* [IF BENEFIT IS POWER PRODUCTION] *saved* [IF BENEFIT IS NOT POWER PRODUCTION]. **IF MORE THAN ONE BENEFIT IS REPORTED, ASK THE QUESTION AND RECORD RESPONSES SEPARATELY FOR EACH REPORTED BENEFIT.**

_____ [Net Units] _____ [Unit Type] _____ [Metric Year]

Are these numbers correct?

(1) Yes [SKIP TO Q24]

(2) No [ASK Q20]

20. Did you previously report these numbers to NYSERDA?

(1) Yes [ASK Q21]

(2) No [SKIP TO Q22]

(3) Don't know [SKIP TO Q22]

21. Do you know why there is a difference between NYSERDA's records and the information that you currently have? [ASK OPEN-ENDED FIRST, READ PROMPTS IF NEEDED.]

Performance of the equipment changed over time

We decommissioned the project

Benefits were realized prior to the first reporting year

Additional benefits accrued over time

Other, please specify: _____

22. Please estimate the actual benefits.

_____ Specify unit: _____ [kWh, kW, MMBtu, pounds of pollutant, etc.]. Year(s): _____

[ASK Q23 IF THE PROGRAM DATA DOES NOT INCLUDE NET UNITS. IF MORE THAN ONE BENEFIT, ASK THE QUESTION AND RECORD RESPONSES SEPARATELY FOR EACH BENEFIT. ASK ABOUT ALL DIRECT AND INDIRECT BENEFITS; DO **NOT** ASK ABOUT UNCERTAIN BENEFITS.]

23. Please provide an estimate of the [REDUCTION IN / PRODUCTION OF] in [ENERGY, kW, EMISSIONS, ETC. – TAILOR TO SPECIFICS]. IF MORE THAN ONE BENEFIT IS REPORTED, ASK THE QUESTION AND RECORD RESPONSES SEPARATELY FOR EACH REPORTED BENEFIT.]

_____ Specify unit: _____ [kWh, kW, MMBtu, pounds of pollutant, etc.] Year(s): _____

[ASK Q24 IF RESPONDENT DID NOT ANSWER Q22 OR Q23. IF RESPONDENT ANSWERED Q22 OR Q23, SKIP TO Q25.]

24. Besides [METRIC YEAR(S) REPORTED IN THE DATABASE], has the project produced any other [UNIT TYPE] benefits?

- (1) Yes, explain: _____ [Net Units] _____ [Unit Type] _____ [Metric Year]
- (2) No
- (3) Don't know

24-AA. Besides [UNIT TYPE], has the project produced any other types of benefits?

- (1) Yes [IF YES, LOOP BACK TO Q18D]
- (2) No
- (3) Don't know

[IF PROGRAM DATA INCLUDES NET DOLLARS, ASK Q25-28. OTHERWISE, SKIP TO Q29.]

25. NYSERDA's records indicate that this project [GENERATED/SAVED]:

[Net Dollars] [Metric Year(s)]

Are these numbers correct?

- (1) Yes [SKIP TO Q33]
- (2) No [ASK Q26]

26. Did you previously report these numbers to NYSERDA?

- (1) Yes [ASK Q27]
- (2) No [SKIP TO Q28]
- (3) Don't know [SKIP TO Q28]

27. Do you know why there is a difference between NYSERDA's records and the information that you currently have?

[RECORD OPEN-ENDED RESPONSE]:

28. Please estimate the actual net dollars in [REVENUE/COST SAVINGS] from this project:

\$_____, year(s): _____

[ASK Q29 IF THE PROGRAM DATA DOES NOT INCLUDE NET DOLLARS. OTHERWISE, SKIP TO Q31]

29. Did this project generate any revenue?

(1) Yes [ASK Q30]

(2) No [SKIP TO Q31]

(3) Don't know [SKIP TO Q30]

30. Please provide an estimate of the revenue generated from this project.

\$_____, year(s): _____

31. Did this project generate any cost savings?

(1) Yes [ASK Q32]

(2) No [SKIP TO Q36]

(3) Don't know [SKIP TO Q36]

32. Please provide an estimate of the cost savings generated from this project.

\$_____, year(s): _____

33. How much of the aforementioned savings were energy cost savings resulting from a change in the fuel type used? [IF 0, SKIP TO 36]

\$_____, year(s): _____

34. What was the original fuel source that the project displaced?

[RECORD OPEN-ENDED RESPONSE]

[ASK Q35 IF RESPONDENT DID NOT ANSWER Q28, Q30, OR Q32. IF RESPONDENT ANSWERED Q28, Q30, OR Q32, SKIP TO Q36.]

35. Besides [METRIC YEAR(S) REPORTED IN THE DATABASE], has the project generated any other [REVENUE/COST SAVINGS]?

(1) Yes, amount: \$_____

(2) No

(3) Don't know

36. Who were the primary end users for this project?

[RECORD OPEN-ENDED RESPONSE]

37. Did you receive any feedback from end-users from this project site?

- a. (1) Yes
- b. (2) No
- c. (3) Don't know

[IF YES, PROCEED TO Q38. IF NO OR DON'T KNOW, SKIP TO Q39]

38. Was the feedback useful for understanding whether or how the technology worked?

- a. (1) Yes
- b. (2) No
- c. (3) Don't know

SECTION 4: NYSERDA INFLUENCE ON THE DEMONSTRATION PROJECT

I would now like to discuss your interactions with NYSERDA concerning the [SUMMARY OF DEMONSTRATION PROJECT] Project.

39. When did you learn about NYSERDA's R&D program? [READ THE LIST OF RESPONSE OPTIONS, EXCEPT "DON'T KNOW." CHECK ALL THAT APPLY.]

- a. (1) Before you began planning this project
- b. (2) During the planning process but before the plans were finalized
- c. (3) After the plans were finalized
- d. (4) After project implementation started
- e. (5) I have not heard about NYSERDA's R&D Program
- f. (6) Don't know

40. Did NYSERDA provide technical assistance for this project?

- a. (1) Yes, explain: _____ Type of assistance: _____ Identify source: _____
- b. (2) No
- c. (3) Don't know

41. Did sources other than NYSERDA provide technical assistance for this project?

- a. (1) Yes, explain: _____ Type of assistance: _____ Identify source: _____
- b. (2) No
- c. (3) Don't know

42. Did sources other than NYSERDA provide funding for this project?

- a. (1) Yes, explain \$_____ Identify source: _____

b. (2) No

[IF MORE THAN 5, GET DATES FOR THE MOST RECENT 5]

c. (3) Don't know

[IF Q50 = YES, ASK Q51. OTHERWISE, SKIP TO Q52.]

51. In what way was the application of the technology different from the original NYSERDA demonstration project?

[RECORD OPEN-ENDED RESPONSES.]

[CONTINUE WITH Q52 IF Q49 = YES; SKIP TO Q67 IF Q49 = NO OR DON'T KNOW.]

52. Please estimate the sales of this technology for similar applications in New York since the completion of the NYSERDA demonstration project? [DO NOT ENTER "DON'T KNOW". QUESTION RESPONDENT TO GET AN ESTIMATE.]

No. of sales: ___ \$ ___

[IF Q52 = 0, \$0, SKIP TO Q67]

53. Did each of the replications receive NYSERDA funding?

a. Yes

b. No [IF NO, ASK:]

Please specify which replications did not receive NYSERDA funding.

[RECORD OPEN-ENDED RESPONSE].

54. From the time that the NYSERDA demonstration project was operational, how long did it take to find the next customer in New York that wanted to use the technology for a similar application? From the NYSERDA demonstration project to second project? To the third project? [GET NUMBER OF YEARS AND/OR MONTHS]

a. First replication

b. Next replication

c. Next replication

55. What are the primary reasons other projects were able to apply the technology used in the demonstration project? [READ LIST OF RESPONSE OPTIONS, EXCEPT "OTHER"]

a. (1) Technical expertise gained

b. (2) Financing available

c. (3) Location available

d. (4) Requested by building owner

e. (5) Operating conditions were right

f. (6) Demonstrable savings were achieved

g. (7) Other [LIST]

[IF 5 OR FEWER REPLICATIONS SKIP TO Q57.]

56. On average over all similar replications completed in New York State, how did the ___ [Unit Type] of the replications compare to the original demonstration? [IF MORE THAN ONE TYPE OF BENEFIT, ASK FOR EACH DIRECT BENEFIT TYPE.]

a. (1) Lower

- b. (2) Same
- c. (3) Higher
- d. (4) Not Comparable, specify
- e. (5) Don't know

[IF Q56 = 4]

56b. Why are the impacts not comparable to the original demonstration project?

[RECORD OPEN-ENDED RESPONSE] [IF MORE THAN 5 REPLICATIONS, ASK Q57 AND Q58 FOR THE MOST RECENT 5 ONLY. IF 5 OR FEWER REPLICATIONS, ASK FOR ALL.]

57. How did the ____ [Net Units and Unit Type] of the replications compare to the original demonstration?

	Replication				
	1	2	3	4	5
Lower than Original Demo	<input type="checkbox"/>				
The same size	<input type="checkbox"/>				
Higher than Original Demo	<input type="checkbox"/>				
Not Comparable, specify	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

58. How did the ____ [net dollars SAVED/GENERATED] of the replications compare to the original demonstration?

	Replication				
	1	2	3	4	5
Lower than Original Demo	<input type="checkbox"/>				
The same size	<input type="checkbox"/>				
Higher than Original Demo	<input type="checkbox"/>				
Not Comparable, specify	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

59. Did NYSERDA provide funding assistance, technical assistance, both of these or other assistance for the replications?

	Replication				
	1	2	3	4	5
Yes, Funding	<input type="checkbox"/>				
Yes, Technology Assistance	<input type="checkbox"/>				
Yes, Both Funding & Technology Assistance	<input type="checkbox"/>				

Yes, Other: _____	<input type="checkbox"/>				
No	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

60. Did any sources other than NYSERDA provide funding for the replications?

- a. (1) Yes, amount \$
- b. (2) No
- c. (3) Don't know

[IF "YES", PROCEED TO Q61. OTHERWISE, SKIP TO Q62]

61. What were the other funding sources?

- a. (1) Investment Capital (internally financed, investment financed through venture capital or stocks, loan) Estimated % of total funding
- b. (2) Federal Government Grant or Subsidized Financing Estimated % of total funding
- c. (3) NYS agency Grant or Subsidized Financing Estimated % of total funding
Specify NYS agency
- d. (4) Other private grant or philanthropic contribution Estimated % of total funding
- e. (5) Utility program Estimated % of total funding
- f. (6) Other, specify Estimated % of total funding
- g. (7) Don't know Estimated % of total funding

62. [On a scale of 0 to 5, where 0 = "strongly disagree" and 5 = "strongly agree," to what extent do you agree or disagree with the following statement: "Overall, the NYSERDA-funded demonstration project was critical for developing the replication project(s)."

(Strongly disagree)

(Strongly agree)

0 1 2 3 4 5

[IF Q62 =>3, ASK Q63. OTHERWISE, SKIP TO Q64.]

63. Please briefly describe how NYSERDA's assistance with the demonstration project influenced the ability to do the replication projects.

64. What is the likelihood that these replication projects would have been developed in New York without the NYSERDA-funded demonstration project? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.

(Not at all likely)

(Very likely)

0 1 2 3 4 5

65. Without the NYSERDA-funded demonstration project, would the **magnitude** of the impacts for these replication projects have been of the same size, smaller or larger?

- a. Same
- b. Smaller
- c. Larger
- d. Replication project(s) would not have happened without NYSERDA

e. Don't know [DO NOT READ]

66. Without the NYSERDA-funded demonstration project, would the replication projects have occurred sooner, at about the same time, or later?

- a. Earlier: ___ years earlier [ASK RESPONDENT TO ESTIMATE YEARS]
- b. About the same time
- c. Later: ___ years later [ASK RESPONDENT TO ESTIMATE YEARS]
- d. Project(s) would not have occurred without NYSERDA
- e. Don't know [DO NOT READ]

67. We are interested in learning more about the benefits of each replication project. What is the contact information (contact name, telephone number, email) for each replication project?

RECORD RESPONSE:

[POLICY ANALYST CALCULATION #6A: IF Q65 = A OR C, RECORD -1. IF Q65 = B, D, OR E RECORD 0.

POLICY ANALYST CALCULATION #6B: IF Q66 = A, RECORD -1. IF Q66 = B OR E, RECORD 0. IF Q66 = C OR D, RECORD +1.

POLICY ANALYST CALCULATION #6C: TAKE THE INVERSE OF Q64. E.G., 0 BECOMES 5, 1 BECOMES 4, ETC.

POLICY ANALYST CALCULATION #6D: TAKE THE AVERAGE OF #6C AND Q58.

POLICY ANALYST CALCULATION #7: ADD THE RESULTS OF CALCULATION #6A, CALCULATION #6B, CALCULATION #6D, AND CALCULATION #1: _____

DO NOT READ TO RESPONDENT]

-[SKIP SECTION 6 IF Q49 =YES and Q52>0]

SECTION 6: NON-REPLICATIONS

68. What do you think are the reasons why the NYSERDA project was not replicated in New York?

69. Do you expect the NYSERDA project will be replicated in New York at some point in the future?

- a. (1) Yes [REASONS]
- b. (2) No [REASONS]

SECTION 7: PROCESS EVALUATION

70. How did you become aware of NYSERDA and the potential for NYSERDA assistance?

[DO NOT READ, MARK ALL STATED IN REPLY]

- a. (1) Prior participation in a NYSERDA R&D program
- b. (2) Another NYSERDA program
- c. (3) Advertising
- d. (4) Word-of-mouth (PROBE FOR FOLLOWING):
 - a) Business colleague/client
 - b) Friend/relative
- e. (5) Contacted by a NYSERDA program representative

- f. (6) Visit to another NYSERDA demonstration project
- g. (7) From the site owner or integrator
- h. (8) I was not aware of the potential for NYSERDA assistance
- i. (9) Other

Please rate your agreement or disagreement with the following statements. Please use a 1 to 5 scale where 5 indicates strongly agree, 4 indicates agree, 3 indicates neither agree nor disagree, 2 indicates disagree, and 1 is strongly disagree.

71. Ease of R&D Demonstration application process.	1	2	3	4	5	N/A	Don't Know
72. Appropriateness of NYSERDA R&D Demonstration incentive amounts.	1	2	3	4	5	N/A	Don't Know
73. Timeliness of your receipt of the R&D Demonstration incentive.	1	2	3	4	5	N/A	Don't Know
74. Adequacy of the communication from NYSERDA R&D staff.	1	2	3	4	5	N/A	Don't Know
75. Comprehensiveness of the NYSERDA R&D staff's knowledge about NYSERDA offering and options.	1	2	3	4	5	N/A	Don't Know
76. Sufficiency of the resolution of any issues by NYSERDA R&D staff.	1	2	3	4	5	N/A	Don't Know
77. Overall satisfaction of the R&D program.	1	2	3	4	5	N/A	Don't Know

78. Would you recommend the R&D Demonstration program to a colleague?

- a. Yes, explain: _____
- b. No, explain: _____

79. Besides increasing financial incentives, how could NYSERDA improve its R&D program to encourage more demonstration projects such as this? [LIST]

80. Besides increasing financial incentives, how could NYSERDA improve its R&D program to encourage more replications of its demonstration projects? [LIST]

SECTION 8: VENDORS FIRMOGRAPHICS

I want to complete our interview with a few final questions about your firm.

81. What is the firm's principal business activity?

82. How many employees does the firm have overall? [APPROXIMATE NUMBER IS ADEQUATE.]

83. How many employees does the firm have in New York? [APPROXIMATE NUMBER IS ADEQUATE.]

[IF THE PROGRAM DATA INCLUDES JOBS CREATED/RETAINED, ASK Q84. OTHERWISE, SKIP TO Q87.]

84. Our records indicate that [COMPANY NAME] [CREATED/RETAINED] [NUMBER] jobs due to the NYSERDA demonstration project. Is this correct?

- a. Yes [SKIP TO Q90]
- b. No [ASK Q85]
- c. Don't Know [DO NOT READ. IF RESPONDENT DOES NOT KNOW, SKIP TO Q88.]

85. Did you report these numbers to NYSERDA?

- a. Yes [ASK Q86]
- b. No [SKIP TO Q87]
- c. Don't Know [SKIP TO Q87.]

86. Do you know why there is a difference between NYSERDA's records and the information you currently have? [ASK OPEN-ENDED FIRST, READ PROMPTS IF NEEDED]

- a. The company [ADDED/LOST] jobs after reporting the numbers to NYSERDA due to factors related to the demonstration project.
- b. The company [ADDED/LOST] jobs after reporting the numbers to NYSERDA due to factors unrelated to the demonstration project.
- c. Other, please specify: _____

87. Has the NYSERDA-funded demonstration project affected the firm's number of employees in New York?

- a. Yes
- b. No [SKIP Q88 and Q89]

88. How has the NYSERDA-funded demonstration project affected the firm's number of employees in New York?

- a. Created/retained jobs
- b. Lost jobs

89. How many jobs were [created/retained FOR Q88=A] [eliminated FOR Q88=B]?

- a. _____
- b. Don't know (DO NOT READ.)

90. Can NYSERDA call you back at a later time to obtain more information about the NYSERDA R&D Program?

- a. Yes
- b. No

91. We are interested in learning more about this project from the site owner and/or integrator of this project. Could you share with us the site owner's and/or integrator's contact information (contact name, telephone number, email)?

RECORD RESPONSE:

ON BEHALF ON NYSERDA, THANK YOU FOR YOUR TIME IN HELPING US CONDUCT THIS RESEARCH.
HAVE A GREAT DAY.

Dear [NAME]:

The New York State Energy Research and Development Authority (NYSERDA) has retained Industrial Economics, Inc. (IEc) and APPRISE to conduct an evaluation of projects NYSEDA has funded for the purpose of demonstrating specific technologies or processes. This important study will enable NYSEDA to better assess program accomplishments and improve programs that serve New York.

We wish to collect data about select NYSEDA's R&D Demonstration projects completed in 2008, 2009, and 2010 that were previously surveyed in 2014. Our records indicate your project was previously surveyed in 2014. We are interested to learn about any changes regarding your ability to demonstrate the effectiveness of this project as well as potential applications beyond this particular site since the last time we surveyed your project.

We would like to schedule an interview with you. The interview will take up to one hour to complete, and someone from APPRISE will call you to schedule a time that is most convenient for you. Policy analysts from IEc and APPRISE will conduct the interview.

IEc and APPRISE are independent researchers. The information you provide will be kept confidential to the extent permitted by law. We will report all responses in aggregate and will not attribute any comments to you.

Someone will be calling you within the next two weeks to conduct this interview. Your participation is important to our evaluation effort. We know your time is valuable, and we sincerely appreciate your efforts to help us. If you have questions about the survey, please call Jennifer Phelps at NYSEDA at (518) 862-1090, extension 3569 or Peter Courtright of IEc at (617) 354-0074. If you would like more information about IEc or APPRISE, please visit their websites: <http://www.indecon.com/> and <http://www.appriseinc.org/>.

Thank you for your assistance.

Sincerely,

Jennifer Phelps
Project Manager
NYSEDA
17 Columbia Circle
Albany, NY 12203
Jennifer.Phelps@nyserda.ny.gov

NYSERDA

Project Survey for Projects Previously Surveyed

Interview Date: [mm/dd/yyyy]

Interviewer name:

Interviewer phone:

CNTRCT_ID:

Project Description:

Best Contact:

NYSERDA Project Manager

PI First Name and PI Last Name

Title:

Phone:

Email:

Project Role:

Company Name:

Program Area: [Buildings, Transportation, Energy Resources, etc.]

Project Type: [PRODUCT, PROCESS OR POWER PRODUCTION]

NYSERDA \$ (Encumbered \$ for this project.)

Earliest contract signed date

Latest contract closed date

Location

THE POLICY ANALYST CONDUCTING THE INTERVIEW WILL WORK THROUGH THE INSTRUMENT USING THE SPECIFIC DATASET INPUT AND PROJECT DESCRIPTION TO REFINE QUESTION WORDING AS NECESSARY TO PROVIDE CLEAR LANGUAGE AND TO OBTAIN THE INFORMATION DESIRED FROM EACH QUESTION. GIVEN THE INFORMATION IN THE DATASET, THE SURVEY INSTRUMENT FOR EACH INTERVIEW WILL BE MARKED FOR THE APPROPRIATE HANDLING OF QUESTIONS AND SKIP PATTERNS.

Identify the Appropriate Contact

Hello, my name is [interviewer name], and I am calling from [company name] on behalf of the New York State Energy Research and Development Authority, also known as NYSERDA. NYSERDA is conducting a study to assess the impact of its funding on New York State companies and on the State's economy. This study will also assess the impact of its funding and technological support on [use "product", "process", or "generation" depending on participant] demonstration projects conducted in New York State.

NYSERDA has contracted with Industrial Economics, Incorporated and APPRISE to perform this study. IEc and APPRISE are independent research and consulting firms. We wish to collect data about the [NAME OF THE PROJECT]. Our records indicate this project received NYSERDA funding from NYSERDA's R&D Program for the project that was completed in [MONTH/YEAR] and was surveyed about project results in 2014. We are interested to learn if benefits persisted and whether there were any additional replications.

The information you provide will be kept confidential to the extent permitted by law. We will report all responses in aggregate and will not attribute any comments to you. The information you provide will be used to improve NYSERDA's research and development programs.

SCREENING

Our records show that NYSERDA provided \$_____ in funding to [COMPANY NAME] for the demonstration project [CONTRACT DESCRIPTION] and that either IEc or APPRISE spoke with [2014 SURVEY RESPONDENT NAME] on [DATE OF LAST SURVEY]

SCR-1. This survey will take about one hour to complete. We would like to talk to the person who is most knowledgeable about the project since our last survey. If not you, could you please direct me to, or provide me with the name of the person who is the most qualified to discuss this project?

- a. Caller [PROCEED TO SECTION 1: NYSERDA PROJECT OVERVIEW]
- b. Most qualified contact [CONTACT THIS PERSON, REPEAT INITIAL INTRODUCTION AND THE INTRODUCTION TO THE SCREENING SECTION, AND CONTINUE WITH THE FOLLOWING QUESTION]

SCR-2 Mr./Ms. [name] referred me to you to answer specific about this project [DESCRIBE PROJECT BRIEFLY as this is another person]. This survey will take about one hour to complete. Can we discuss the project now, or can we schedule a time when I can call you back?

- a. Can discuss now [PROCEED TO SCR-3.]
- b. Call back on _____ at time:
- c. [IF THIS PERSON IS NOT THE MOST QUALIFIED PERSON, LOOP BACK TO SCR-1]

SCR-3 Do you have any reports or presentations that describe the results of the [PROJECT]?

- a. Yes [ASK THE RESPONDENT TO SEND THE REPORTS IN ADVANCE OF THE CALL]
- b. No

SECTION 1: NYSERDA PROJECT OVERVIEW

[NOTE: PRIOR TO BEGINNING THE DISCUSSION, ASK THE RESPONDENT WHETHER OR NOT IT IS OKAY TO RECORD THE CALL.]

1. Our records show that NYSERDA provided funding to [COMPANY NAME] for a project involving [CONTRACT DESCRIPTION]. Is this an accurate description of the project?
- a) (1) Yes
b) (2) No

[IF Q1 = YES, SKIP TO Q3. IF Q1 = NO, ASK Q2.]

2. How would you describe the project?

[RECORD OPEN-ENDED RESPONSE]:

3. Has this project changed in objective since it was last reviewed by NYSERDA in 2014?
- a) (1) Yes; how?
b) (2) No

4. Have any new challenges arose in executing this project since it was last reviewed by NYSERDA in 2014?

[ASK UNPROMPTED FIRST. RECORD OPEN-ENDED RESPONSE]:

- a. _____
b. _____
c. _____

[PROMPT - BE CAREFUL NOT TO BIAS OR INFLUENCE RESPONSE, SUGGEST CODE FOR ANSWERS PROVIDED ABOVE IF APPROPRIATE]

- a. Lack of funding
b. Cost prohibitive
c. Lack of qualified personnel or expertise
d. Lack of interest among potential end users
e. Could not find an appropriate site
f. Timing was not right
g. Regulatory barriers
h. Technological issues
- Other - specify: _____

5. Have any new benefits arose in executing this project since it was last reviewed by NYSERDA in 2014?
[RECORD OPEN-ENDED RESPONSE]

SECTION 2: COST EFFECTIVENESS

Now I would like to ask about changes in cost-effectiveness of the project.

6. Is the system still in use?
- a. Yes
b. No [IF NO, ASK:] When was it decommissioned? _____ [Month] _____ [Year]

7. In 2014, your firm indicated that the project was a [good/bad investment; INSERT PREVIOUS ANSWER]. Do you still hold the same opinion?
- a. Yes, explain: _____
- b. No, explain: _____
- c. Don't know
8. In 2014, you described your return on this project as [positive, negative, breakeven or neutral; INSERT PREVIOUS ANSWER]. Is this still the case?
- a. Yes, explain: _____
- b. No, explain: _____
- c. Don't know

SECTION 3: DEMONSTRATION PROJECT IMPACTS

Now I would like to talk with you more about the project's benefits.

[NOTE: WHEN ASKING FOR BENEFITS DATA, TRY TO GET NUMERICAL UNITS AS OPPOSED TO PERCENTAGES. IF RESPONDENT REPORTS A PERCENTAGE OR PERCENTAGE CHANGE, ASK IF HE/SHE CAN NUMERICALLY QUANTIFY THE CHANGE, OR IF HE/SHE CAN PROVIDE THE BASELINE THAT THE PERCENTAGE CHANGE IS BASED ON.]

[IF PREVIOUS SURVEY INFORMATION INCLUDES BENEFITS AND RESOURCE TYPE, ASK Q9. OTHERWISE, SKIP TO Q12.]

9. Our records indicate that this project *produced* [IF BENEFIT IS POWER PRODUCTION] / *saved* [IF BENEFIT IS NOT POWER PRODUCTION]. IF MORE THAN ONE BENEFIT IS REPORTED, ASK THE QUESTION AND RECORD RESPONSES SEPARATELY FOR EACH REPORTED BENEFIT

_____ [Net Units] _____ [Unit Type] _____ [Metric Year]

Are these numbers correct?

- (1) Yes [SKIP TO Q13]
- (2) No [ASK Q10]
- (3) Don't know [ASK Q10]

10. Did you previously report these numbers in 2014?

- (1) Yes [ASK Q11]
- (2) No [SKIP TO Q12]

11. Do you know why there is a difference between our records and the information that you currently have? [ASK OPEN-ENDED FIRST, READ PROMPTS IF NEEDED.]

- Performance of the equipment changed over time
- We decommissioned the project
- Benefits were realized prior to the first reporting year
- Additional benefits accrued over time
- Other, please specify: _____

12. Please estimate the actual benefits the project accrued by 2014.

_____ Specify unit: _____ [kWh, kW, MMBtu, pounds of pollutant, etc.]. Year(s): _____

13. Has the project accrued any additional benefits since the project was last reviewed in 2014?
- (1) Yes, explain: _____ [Net Units] _____ [Unit Type] _____ [Metric Year]
- (2) No [If no, ask why additional benefits have not been created since the project was last reviewed in 2014.]
14. Besides [BENEFIT DESCRIBED ABOVE], has the project produced any other [UNIT TYPE] benefits since 2014?
- (1) Yes, explain: _____ [Net Units] _____ [Unit Type] _____ [Metric Year]
- (2) No
- (3) Don't know

[IF PREVIOUS SURVEY INFORMATION INCLUDES REVENUES/COST SAVINGS DATA, ASK Q15. OTHERWISE, SKIP TO Q19.]

15. NYSERDA's records indicate that this project [GENERATED/SAVED]:

 [Net Dollars] [Metric Year(s)]

Are these numbers correct?

(1) Yes [SKIP TO Q19]

(2) No [ASK Q16]

(3) Don't know [ASK Q16]

16. Did you previously report these numbers to NYSERDA?

(1) Yes [ASK Q17]

(2) No [SKIP TO Q18]

17. Do you know why there is a difference between NYSERDA's records and the information that you currently have?

[RECORD OPEN-ENDED RESPONSE]:

18. Please estimate the actual net dollars in [REVENUE/COST SAVINGS] accrued by 2014 from this project:

\$_____, year(s): _____

19. Has the project generated any additional [REVENUE/COST SAVINGS] since the project was last reviewed in 2014?

(1) Yes [\$_____, year(s): _____]

(2) No [If no, ask why additional net dollars have not been generated since the project was last reviewed in 2014.]

SECTION 5: REPLICATIONS

I have some questions now concerning your experience with demonstration projects and replications. NYSERDA classifies the project we have been discussing as a demonstration project.

We define a **demonstration** project as the demonstration of a new technology or process or application of an existing technology in a commercial setting. Demonstration projects are designed to showcase the value and effectiveness of the technology or process being demonstrated.

[IF 4 IS SELECTED, PROCEED TO Q25b]

25b. Why are the impacts not comparable to the original demonstration project?

26. On average over all similar replications completed in New York State, how did the ___ [net dollars SAVED/GENERATED] of the replications since 2014 compare to the original demonstration?

- a) (1) Lower
- b) (2) Same
- c) (3) Higher
- d) (4) Not Comparable, specify
- e) (5) Don't know

[IF 4 IS SELECTED, PROCEED TO Q26b]

26b. Why are the impacts not comparable to the original demonstration project?

[IF MORE THAN 5 REPLICATIONS, ASK Q27 AND Q28 FOR THE MOST RECENT 5 ONLY. IF 5 OR FEWER REPLICATIONS, ASK FOR ALL.]

27. How did the ___ [Net Units and Unit Type] of the replications since 2014 compare to the original demonstration?

	Replication				
	1	2	3	4	5
Lower than Original Demo	<input type="checkbox"/>				
The same size	<input type="checkbox"/>				
Higher than Original Demo	<input type="checkbox"/>				
Not Comparable, specify	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

28. How did the ___ [net dollars SAVED/GENERATED] of the replications since 2014 compare to the original demonstration?

	Replication				
	1	2	3	4	5
Lower than Original Demo	<input type="checkbox"/>				
The same size	<input type="checkbox"/>				
Higher than Original Demo	<input type="checkbox"/>				
Not Comparable, specify	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

29. Did NYSERDA provide funding assistance, technical assistance, both of these or other assistance for the replications conducted after the project was reviewed in 2014?

	Replication				
	1	2	3	4	5
Yes, Funding	<input type="checkbox"/>				
Yes, Technology Assistance	<input type="checkbox"/>				
Yes, Both Funding & Technology Assistance	<input type="checkbox"/>				
Yes, Other: _____	<input type="checkbox"/>				
No	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

30. Did any sources other than NYSERDA provide funding for the replications?

- a) (1) Yes, amount \$ _____
b) (2) No
c) (3) Don't know

[IF "YES", PROCEED TO Q31. OTHERWISE, SKIP TO Q32]

31. What were the other funding sources?

- a) (1) Investment Capital (internally financed, investment financed through venture capital or stocks, loan)
Estimated % of total funding
b) (2) Federal Government Grant or Subsidized Financing Estimated % of total funding
c) (3) NYS agency Grant or Subsidized Financing Estimated % of total funding
Specify NYS agency
d) (4) Other private grant or philanthropic contribution Estimated % of total funding
e) (5) Utility program Estimated % of total funding
f) (6) Other, specify Estimated % of total funding
g) (7) Don't know Estimated % of total funding

32. [On a scale of 0 to 5, where 0 = "strongly disagree" and 5 = "strongly agree," to what extent do you agree or disagree with the following statement: "Overall, the NYSERDA-funded demonstration project was critical for developing the replication project(s)."

(Strongly disagree)

(Strongly agree)

0 1 2 3 4 5

[IF Q32 =>3, ASK Q33. OTHERWISE, SKIP TO Q34.]

33. Please briefly describe how NYSERDA's assistance with the demonstration project influenced the ability to do the replication projects.

34. What is the likelihood that these replication projects would have been developed in New York without the NYSERDA-funded demonstration project? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.

(Not at all likely)

(Very likely)

0 1 2 3 4 5

35. Without the NYSERDA-funded demonstration project, would the magnitude of the impacts for these replication projects have been of the same size, smaller or larger?

- a. (1) Same
- b. (2) Smaller
- c. (3) Larger
- d. (4) Replication project(s) would not have happened without NYSERDA
- e. (5) Don't know [DO NOT READ]

36. Without the NYSERDA-funded demonstration project, would the replication projects have occurred sooner, at about the same time, or later?

- a. (1) Earlier: ___ years earlier [ASK RESPONDENT TO ESTIMATE YEARS]
- b. (2) About the same time
- c. (3) Later: ___ years later [ASK RESPONDENT TO ESTIMATE YEARS]
- d. (4) Project(s) would not have occurred without NYSERDA
- e. (5) Don't know [DO NOT READ]

37. We are interested in learning more about the benefits of each replication project. What is the contact information (contact name, telephone number, email) for each replication project?

RECORD RESPONSE:

ON BEHALF ON NYSERDA, THANK YOU FOR YOUR TIME IN HELPING US CONDUCT THIS RESEARCH.
HAVE A GREAT DAY.

NYSERDA
Replicator Project Survey

Replicators

Interview Date: [mm/dd/yyyy]

Interviewer name:

Interviewer phone:

CNTRCT_ID of Project Replicated:

Project Description of Replicated Project:

Best Contact:

NYSERDA Project Manager

PI First Name and PI Last Name of Replicated Project

Title:

Phone:

Email:

Project Role:

Company Name of Replicated Project:

Program Area of Replicated Project: [Buildings, Transportation, Energy Resources, etc.]

Project Type of Replicated Project: [PRODUCT, PROCESS OR POWER PRODUCTION]

NYSERDA \$ for Replicated Project: (Encumbered \$ for this project.)

Earliest contract signed date of Replicated Project:

Latest contract closed date of Replicated Project:

Location of Replicated Project:

THE POLICY ANALYST CONDUCTING THE INTERVIEW WILL WORK THROUGH THE INSTRUMENT USING THE SPECIFIC DATASET INPUT AND PROJECT DESCRIPTION TO REFINE QUESTION WORDING AS NECESSARY TO PROVIDE CLEAR LANGUAGE AND TO OBTAIN THE INFORMATION DESIRED FROM EACH QUESTION. GIVEN THE INFORMATION IN THE DATASET, THE SURVEY INSTRUMENT FOR EACH INTERVIEW WILL BE MARKED FOR THE APPROPRIATE HANDLING OF QUESTIONS AND SKIP PATTERNS.

Identify the Appropriate Contact

Hello, my name is [interviewer name], and I am calling from [company name] on behalf of the New York State Energy Research and Development Authority, also known as NYSERDA. NYSERDA is conducting a study to assess the impact of its funding on New York State companies and on the State's economy. This study will also assess the impact of its funding and technological support on [use "product", "process", or "generation" depending on participant] demonstration projects conducted in New York State.

NYSERDA has contracted with Industrial Economics, Incorporated and APPRISE to perform this study. IEC and APPRISE are independent research and consulting firms. Our interviews with other NYSERDA grantees indicate that your project is a replication of [NAME OF PROJECT]. I would like to ask some questions and collect information about this replication project to learn about the reach and impact of NYSERDA projects. The information you provide will be kept confidential to the extent permitted by law. We will report all responses in aggregate and will not attribute any comments to you. The information you provide will be used to improve NYSERDA's research and development programs. NYSERDA is contacting all participants who completed replication projects within the last five years.

SCREENING

SCR-1. This survey will take about one hour to complete. We would like to talk to the person who is most knowledgeable about the replication project. If not you, could you please direct me to, or provide me with the name of the person who is the most qualified to discuss this project?

- a. Caller [PROCEED TO SECTION 1: NYSERDA REPLICATION PROJECT OVERVIEW]
- b. Most qualified contact [CONTACT THIS PERSON, REPEAT INITIAL INTRODUCTION AND THE INTRODUCTION TO THE SCREENING SECTION, AND CONTINUE WITH THE FOLLOWING QUESTION]

SCR-2 Mr./Ms. [name] referred me to you to answer specific about this project [DESCRIBE PROJECT BRIEFLY as this is another person]. This survey will take about one hour to complete. Can we discuss the project now, or can we schedule a time when I can call you back?

- a. Can discuss now [PROCEED TO SECTION 1: NYSERDA REPLICATION PROJECT OVERVIEW]
- b. Call back on _____ at time:
- c. [IF THIS PERSON IS NOT THE MOST QUALIFIED PERSON, LOOP BACK TO SCR-1]

SCR-3 Do you have any reports or presentations that describe the results of the [REPLICATION PROJECT]?

- a. Yes [ASK THE RESPONDENT TO SEND THE REPORTS IN ADVANCE OF THE CALL]
- b. No

Don't Know [ASK THE RESPONDENT TO CHECK AND SEND WHAT THEY HAVE IN ADVANCE OF THE CALL]

SECTION 1: REPLICATION PROJECT OVERVIEW

[NOTE: PRIOR TO BEGINNING THE DISCUSSION, ASK THE RESPONDENT WHETHER OR NOT IT IS OKAY TO RECORD THE CALL.]

1. Our records show that other NYSERDA grantees indicate this project is a replication of [NAME OF PROJECT]. Is this an accurate description of the project?

- a) (1) Yes
- b) (2) No

2. How would you describe the replication project?

[RECORD OPEN-ENDED RESPONSE]:

3. How would you describe the objectives of this replication project?
[RECORD OPEN-ENDED RESPONSE]:

4. How did your firm hear/get involved with this particular project?
[RECORD OPEN-ENDED RESPONSE]:

5. Is this replication project at the same site as its NYSERDA demonstration project?
a) (1) Yes
b) (2) No; name the site:

6. Is this replication project conducted by the same firm as the NYSERDA demonstration project?
a) (1) Yes
b) (2) No; name the firm:

7. Can you identify specific challenges you faced when planning this replication project?

[ASK UNPROMPTED FIRST. RECORD OPEN-ENDED RESPONSE]:

- a. _____
- b. _____
- c. _____

[PROMPT - BE CAREFUL NOT TO BIAS OR INFLUENCE RESPONSE, SUGGEST CODE FOR ANSWERS PROVIDED ABOVE IF APPROPRIATE]

- d. Lack of funding
- e. Cost prohibitive
- f. Lack of qualified personnel or expertise
- g. Lack of interest among potential end users
- h. Could not find an appropriate site
- i. Timing was not right
- j. Regulatory barriers
- k. Technological issues
- l. Other - specify: _____

8. Can you identify specific challenges you faced when executing this replication project?

[ASK UNPROMPTED FIRST. RECORD OPEN-ENDED RESPONSE]:

- a. _____
- b. _____
- c. _____

[PROMPT - BE CAREFUL NOT TO BIAS OR INFLUENCE RESPONSE, SUGGEST CODE FOR ANSWERS PROVIDED ABOVE IF APPROPRIATE]

- i. Lack of funding
- j. Cost prohibitive
- k. Lack of qualified personnel or expertise
- l. Lack of interest among potential end users
- m. Could not find an appropriate site
- n. Timing was not right

- o. Regulatory barriers
- p. Technological issues
- q. Other - specify: _____

9. Can you identify any benefits that you received from planning this replication project?
[RECORD OPEN-ENDED RESPONSE]:

10. Can you identify any benefits that you received from executing this replication project?
[RECORD OPEN-ENDED RESPONSE]:

11. Overall, do you feel this project accomplished all, most, some, or none of its objectives?

- All
- Most
- Some
- None
- Don't know / refused [DO NOT READ THIS OPTION]

[IF RESPONDENT SELECTS "ALL" OR "DON'T KNOW," SKIP TO Q13. OTHERWISE, ASK Q12.]

12. Please explain why this project did not accomplish all of its objectives: _____

SECTION 2: COST EFFECTIVENESS

Now I would like to ask about the cost-effectiveness of the project.

13. How much did you invest in this replication project in terms of staff time and project expenses?

A. [Staff time in hours] \$, [Monetary amount]

B. Are the numbers you just reported annual or total costs?

(1) Annual (2) Total over _____ years [IDEALLY, COLLECT DATA ON \$ AND STAFF TIME. HOWEVER, IT IS OKAY IF THE RESPONDENT CAN ONLY PROVIDE ONE OR THE OTHER (OR NEITHER).]

14. Is the system still in use?

a. Yes

b. No [IF NO, ASK:] When was it decommissioned? _____ [Month] _____ [Year]

15. Do you feel the [REPLICATION PROJECT DESCRIPTION] project was a good investment?

a. Yes, explain: _____

b. No, explain: _____

c. Don't know

16. In general terms, how would you describe your return on this project? [READ LIST TO RESPONDENT]

a. Positive

b. Negative

c. Breakeven or neutral

17. Have you advertised or communicated the results of this project to any potential buyers, suppliers, or business partners?

- a. Yes, explain: _____
- b. No, explain: _____
- c. Don't know

SECTION 3: REPLICATION PROJECT IMPACTS

Now I would like to talk with you more about the project's benefits.

[NOTE: WHEN ASKING FOR BENEFITS DATA, TRY TO GET NUMERICAL UNITS AS OPPOSED TO PERCENTAGES. IF RESPONDENT REPORTS A PERCENTAGE OR PERCENTAGE CHANGE, ASK IF HE/SHE CAN NUMERICALLY QUANTIFY THE CHANGE, OR IF HE/SHE CAN PROVIDE THE BASELINE THAT THE PERCENTAGE CHANGE IS BASED ON.]

18. Which of the following describe the specific types of quantifiable benefits this project produced? For each benefit that your project produced, please state if it was a direct benefit, indirect benefit, or uncertain benefit.

A. Power Production:

1) Is Power Production a benefit this project produced?

- (1) Yes [ASK A2-A4] (2) No [SKIP to A4]

2) [IF YES] Please give a numeric value for power produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

- (1) Annual (2) Total over _____ years

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

- Direct Indirect Uncertain

B. Demand Reduction:

1) Is Demand Reduction a benefit this project produced?

- (1) Yes [ASK B2-B4] (2) No [SKIP to C]

2) [IF YES] Please give a numeric value for savings produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

- (1) Annual (2) Total over _____ years

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

- Direct Indirect Uncertain

C. Energy Efficiency:

1) Is Energy Efficiency a benefit this project produced?

- (1) Yes [ASK C2-C4] (2) No [SKIP to D]

2) [IF YES] Please give a numeric value for savings produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total over _____ years

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

D. Other:

1) Are there other benefits this project produced? If so, please specify.

(1) Yes Specify: [RECORD OPEN-ENDED RESPONSE]

(2) No [SKIP to 19]

2) [IF YES] Please give a numeric value for savings produced.

_____ [Net Units] _____ [Unit Type]

3) Is the timing of this benefit annual or total?

(1) Annual (2) Total over _____ years

4) Would you classify this as a direct benefit, or would you classify this as an indirect benefit?

Direct Indirect Uncertain

19. Please provide an estimate of the [REDUCTION IN / PRODUCTION OF] in [ENERGY, kW, EMISSIONS, ETC. – TAILOR TO SPECIFICS]. IF MORE THAN ONE BENEFIT IS REPORTED, ASK THE QUESTION AND RECORD RESPONSES SEPARATELY FOR EACH REPORTED BENEFIT]

20. Besides [energy savings/produced; SELECT BASED ON DESCRIPTION OF PROJECT], has the project produced any other [UNIT TYPE] benefits?

(1) Yes, explain: _____ [Net Units] _____ [Unit Type] _____ [Metric Year]

(2) No

(3) Don't know

21. Did your project include any cost savings or revenue benefits?

(1) Yes [ASK Q22]

(2) No [SKIP to Q28]

22. Please estimate the actual net dollars in [REVENUE/COST SAVINGS] from this project:

\$_____, year(s): _____

23. Please provide an estimate of the revenue generated from this project.

\$_____, year(s): _____

24. Please provide an estimate of the cost savings generated from this project.

\$_____, year(s): _____

31. How many times has your firm or another firm replicated this project in New York? [DO NOT ENTER "DON'T KNOW". QUESTION RESPONDENT TO GET AN ESTIMATE.]

[IF Q31 = 0, SKIP TO Q42]

32. Did each of the replications receive NYSERDA funding?

- a. Yes
- b. No [IF NO, ASK:]

Please specify which replications did not receive NYSERDA funding.

[RECORD OPEN-ENDED RESPONSE].

33. From the time that your replication project was operational, how long did it take to complete the next replication in New York? From your replication project to the completion of the 2nd replication of your project in New York? To the completion of the 3rd replication? [GET NUMBER OF YEARS AND/OR MONTHS]

- a) First replication
- b) Next replication
- c) Next replication

34. What are the primary reasons the demonstration project was able to be replicated? [READ LIST OF RESPONSE OPTIONS, EXCEPT "OTHER"]

- a) (1) Technical expertise gained
- b) (2) Financing available
- c) (3) Location available
- d) (4) Requested by building owner
- e) (5) Operating conditions were right
- f) (6) Demonstrable savings were achieved
- g) (7) Other [LIST]

[IF 5 OR FEWER REPLICATIONS SKIP TO Q36.]

35. On average over all similar replications completed in New York State, how did the ___ [Unit Type] of the replications compare to your project? [IF MORE THAN ONE TYPE OF BENEFIT, ASK FOR EACH DIRECT BENEFIT TYPE.]

- a) (1) Lower
- b) (2) Same
- c) (3) Higher
- d) (4) Not Comparable, specify
- e) (5) Don't know

[IF Q35 = 4]

35b. Why are the impacts not comparable to your project?

[RECORD OPEN-ENDED RESPONSE] [IF MORE THAN 5 REPLICATIONS, ASK Q36 AND Q37 FOR THE MOST RECENT 5 ONLY. IF 5 OR FEWER REPLICATIONS, ASK FOR ALL.]

36. How did the ___ [Net Units and Unit Type] of the replications compare to your project?

	Replication				
	1	2	3	4	5
Lower than Original Demo	<input type="checkbox"/>				
The same size	<input type="checkbox"/>				
Higher than Original Demo	<input type="checkbox"/>				
Not Comparable, specify	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

37. How did the ___ [net dollars SAVED/GENERATED] of the replications compare to your project?

	Replication				
	1	2	3	4	5
Lower than Original Demo	<input type="checkbox"/>				
The same size	<input type="checkbox"/>				
Higher than Original Demo	<input type="checkbox"/>				
Not Comparable, specify	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

38. Did NYSERDA provide funding assistance, technical assistance, both of these or other assistance for the replications of your project?

	Replication				
	1	2	3	4	5
Yes, Funding	<input type="checkbox"/>				
Yes, Technology Assistance	<input type="checkbox"/>				
Yes, Both Funding & Technology Assistance	<input type="checkbox"/>				
Yes, Other: _____	<input type="checkbox"/>				
No	<input type="checkbox"/>				
Don't Know	<input type="checkbox"/>				

39. Did any sources other than NYSERDA provide funding for the replications?

- a) (1) Yes, amount \$
- b) (2) No
- c) (3) Don't know

[IF "YES", PROCEED TO Q40. OTHERWISE, SKIP TO Q41]

40. What were the other funding sources?

- a) (1) Investment Capital (internally financed, investment financed through venture capital or stocks, loan)
Estimated % of total funding
- b) (2) Federal Government Grant or Subsidized Financing Estimated % of total funding
- c) (3) NYS agency Grant or Subsidized Financing Estimated % of total funding
Specify NYS agency
- d) (4) Other private grant or philanthropic contribution Estimated % of total funding
- e) (5) Utility program Estimated % of total funding
- f) (6) Other, specify Estimated % of total funding
- g) (7) Don't know Estimated % of total funding

41. [On a scale of 0 to 5, where 0 = "strongly disagree" and 5 = "strongly agree," to what extent do you agree or disagree with the following statement: "Overall, the original replication project was critical for developing the replication project(s)."]

(Strongly disagree) (Strongly agree)
0 1 2 3 4 5

42. We are interested in learning more about the benefits of each replication project. What is the contact information (contact name, telephone number, email) for each replication project?

RECORD RESPONSE:

[SKIP SECTION 5 IF Q28 =YES and Q31>0]

SECTION 5: NON-REPLICATIONS

43. What do you think are the reasons why the NYSERDA project was not replicated in New York?

44. Do you expect the NYSERDA project will be replicated in New York at some point in the future?

- a) (1) Yes [REASONS]
- b) (2) No [REASONS]

SECTION 6: REPLICATION FIRMOGRAPHICS

I want to complete our interview with a few final questions about your firm.

45. What is the firm's principal business activity?

46. How many employees does the firm have overall? [APPROXIMATE NUMBER IS ADEQUATE.]

47. How many employees does the firm have in New York? [APPROXIMATE NUMBER IS ADEQUATE.]

48. Has this replication project affected the firm's number of employees in New York?

- a) Yes

b) No [SKIP Q29 and Q50]

49. How has this replication project affected the firm's number of employees in New York?

a) Created/retained jobs

b) Lost jobs

50. How many jobs were [created/retained FOR Q49=A] [eliminated FOR Q49=B]?

a) _____

b) Don't know (DO NOT READ.)

51. Can NYSERDA call you back at a later time to obtain more information about this replication project?

a) Yes

b) No

ON BEHALF ON NYSERDA, THANK YOU FOR YOUR TIME IN HELPING US CONDUCT THIS RESEARCH.
HAVE A GREAT DAY.

COMPARISON OF SURVEY RESULTS FROM ROUNDS 1, 2, AND 3

Appendix B presents a comparison of high-level conclusions from the first three rounds of the R&D demonstration survey. It should be noted that the surveys covered three distinct populations: projects completed in 2004-2007 (Round 1), projects completed in 2008-2010 (Round 2), and projects completed in 2011-2013 (Round 3).¹ The methodology was revised for the second round, especially the method for estimating NYSERDA's contribution to project impacts. Round 3 estimated *total* impacts achieved through 2015 (the year the survey was conducted), while Rounds 1 and 2 estimated impacts on an *annual* basis. Therefore, the impact figures for Round 3 are not directly comparable to the impact figures for previous rounds, and caution should be exercised when attempting to draw direct comparisons between the results of the three surveys. Nonetheless, a high-level comparison of major findings from Rounds 1, 2, and 3 can provide insight about the performance of NYSERDA's R&D demonstration portfolio over time.

B.1 COMPARISON OF IMPACTS

Tables B-1, B-2, and B-3 display the impacts in Rounds 1, 2, and 3, respectively.

Table B-1. Summary of "Net Savings" in Round 1 (n = 43)

Savings Type	Estimated Net Savings by Project Type			Total Estimated Net Savings
	Power Production	Process Improvement	Product Demonstration	
Program Net Savings (kW)	94	0	1,263	1,357
Replication Net Savings (kW)	7,967	0	3,032	10,999
Total Net kW Savings	8,061	0	4,295	12,356
Program Net Savings (MWh/year)	9,711	142,744	200	152,655
Replication Net Savings (MWh/year)	46,314	46,107	4,106	96,527
Total Net MWh/year Savings	56,025	188,851	4,306	249,182
Total Net Waste Water Savings¹ (x1000 Gallons)	509	35,522	0	36,031

¹ No replications were conducted for projects with estimated waste water treatment impacts.
Source: Megdal & Associates, *R&D Demonstration Survey Report*. September 2012.

Table B-2. Summary of Savings to Which NYSERDA Contributed in Round 2 (n = 61)

Benefits Type	Estimated Benefits by Project Type			Total Benefits
	Power Production	Process Improvement	Product Demonstration	
Demonstration Installed Capacity (kW)	3,988	75	538	4,601
Replication Installed Capacity (kW)	4,075	63	-	4,138
Total Installed Capacity (kW)	8,063	138	538	8,739
Demonstration Electricity Savings (MWh/year)	17,062	88	4,688	21,838
Replication Electricity Savings (MWh/year)	16,558	-	146	16,704
Total Electricity Savings (MWh/Year)	33,620	88	4,834	38,542
Demonstration Fuel Savings (Therms/Year)	0	44,137	13,729	57,866
Replication Fuel Savings (Therms/Year)	-	1,000	29,318	30,318
Total Fuel Savings (Therms/Year)	0	45,137	43,047	88,184
Demonstration Cost Savings	\$11,748,933	\$8,514,463	\$3,545,264	\$23,808,660
Replication Cost Savings	\$36,160,752	\$5,435,000	\$274,719	\$41,870,471
Total Cost Savings	\$47,909,685	\$13,949,463	\$3,819,983	\$65,679,131
Demonstration Revenue	\$3,194,233	\$1,050,180,000	\$9,590,000	\$1,062,964,233
Replication Revenue	\$12,515,540	\$202,500	\$60,480,000	\$73,198,040
Total Revenue	\$15,709,773	\$1,050,382,500	\$70,070,000	\$1,136,162,273

¹ IEc and APPRISE re-surveyed some projects from Round 2 in the current survey, but the results of those re-surveys are not included in the impacts presented in Tables B-2 or B-3.

Table B-3. Summary of Benefits to Which NYSERDA Contributed in Round 3 (n = 51*)

Impact Category	Benefit Amount
Demonstration Electricity Produced or Saved (MWh)	1,957
Replication Electricity Produced or Saved (MWh)	2,366
Total Electricity Saved or Produced (MWh)	4,322
Demonstration Fuel Savings (Therms)	2,066,219
Replication Fuel Savings (Therms)	766,348
Total Fuel Savings (Therms)	2,832,567
Demonstration Cost Savings	\$581,760
Replication Cost Savings	\$2,227,925
Total Cost Savings	\$2,809,685
Demonstration Revenue	\$6,195,000
Replication Revenue	\$1,667
Total Revenue	\$6,196,667

Note: 51 projects include 48 product demonstrations and 3 process improvement projects.

In terms of electricity saved or produced, the projects completed in 2011 to 2013 (Round 3) reported 4,322 MWh *total* through the time the survey was conducted, compared to 249,182 MWh *per year* in Round 1 and 38,542 MWh *per year* in Round 2.² The figures in Round 3 are much lower than those reported in the two previous rounds. However, the vast majority of electricity savings in Round 1 was from process improvement projects and the vast majority of electricity savings in Round 2 was from power production projects. Round 3 did not include any power production projects and just three of the 51 projects surveyed were process improvement projects.

Since 94 percent of Round 3's projects were product demonstration projects rather than process improvement or power production projects, it may be more appropriate to compare electricity savings to the previous rounds' product demonstration projects. Round 1's product demonstration projects reported 4,306 MWh per year in electricity savings, 95 percent of which came from replications. Round 2 reported 4,834 MWh per year in electricity savings. These figures compare more closely with the 4,322 MWh saved or produced by Round 3 projects. However, as discussed above, the figures are not directly comparable given the difference between annual values (Rounds 1 and 2) vs. total values (Round 3).

In terms of fuel savings, Round 3 projects generated 2,832,567 therms of fuel savings in total through 2015, compared to 88,184 therms per year by Round 2 projects. For some perspective, it would take Round 2 projects over 32 years to reach the same level of fuel savings as the amount achieved by Round 3 projects through 2015.

The projects surveyed in Round 2 generated about 23 times more cost savings than projects surveyed in Round 3: approximately \$65.6 million compared to approximately \$2.8 million, respectively. Similarly, projects surveyed in Round 2 generated \$1.1 billion in revenue, about 183 times more than the \$6.2 million generated by projects in Round 3. These differences again appear to be largely due to differences in the types of projects surveyed, as power production and process improvement projects comprised 94 percent of cost savings and 92 percent of revenues in Round 2. However, product demonstration projects in Round 2 also reported significantly higher cost savings than Round 3 projects, and product demonstration projects in Round 2 led reported replications with over \$60 million in revenue. Thus, even when comparing Round 3 projects to Round 2 product demonstration projects, the Round 2 projects still reported substantially higher cost savings and revenues.

² Rounds 1 and 2 reported electricity saved or produced on an annual basis; Round 3 reports total electricity savings through when the survey was conducted. See Appendix C for more information on how savings were calculated in Round 3.

B.2 COMPARISON OF FACTORS SUPPORTING AND HINDERING REPLICATION

Tables B-4, B-5, and B-6 show the reasons that respondents identified for replications in Rounds 1, 2, and 3, respectively. In all three rounds, technical expertise/experience and success/demonstrable savings were cited as key factors for successful replications. More than one in five respondents cited financing in all three rounds. The percentage increased from Round 1 to Round 2 (from 22 percent to 32 percent) and remained constant from Round 2 to Round 3 (both 32 percent). In both Rounds 2 and 3, the fact that demonstrable savings were achieved was the second-most-common reason for replication, at 50 percent and 44 percent, respectively.

Table B-4. Reasons for Replications in Round 1

Reasons for Replications	Number of Projects (n=18)	Percent of Projects	Adjusted Percent of Projects
Financing Available	4	22%	27%
Success of Demonstration	3	17%	20%
Technical Experience Gained	2	11%	13%
Willing Participants	2	11%	13%
Other	4	22%	27%
No Answer	3	17%	--
Total	18		

Table B-5. Reasons for Replications in Round 2

Reasons for Replications	Number of Projects (n=28)*	Percent of Projects (Out of 28)
Technical Expertise Gained	21	75%
Demonstrable Savings were Achieved	14	50%
Operating Conditions were Right	12	43%
Location Available	11	39%
Requested by Building Owner	10	36%
Financing Available	9	32%
Other	6	21%

Notes: (*) Respondents were allowed to select multiple answers.

Table B-6. Reasons for Replications in Round 3

	Number of Projects (n=25)*	Percent of Projects (Out of 25)
Technical Expertise Gained	12	48%
Demonstrable Savings Were Achieved	11	44%
Financing Available	8	32%
Operating Conditions Were Right	6	24%
Location Available	5	20%
Requested by Building Owner	5	20%

Notes: (*) Respondents were allowed to select more than one answer.

Tables B-7, B-8, and B-9 show the factors that respondents identified as barriers to project replication. The lack of customer interest, location issues, and replication not requested/needed in Round 1 correspond to the lack of suitable companies, institutions, or locations identified in Round 2 and the lack of a market identified in Round 3. In each round, it appears that the most significant barrier to replication was a limited market. Cost was also identified in all three surveys. It appears as fewer participants knew why there were no replications in Round 3. The percentage of respondents that could not give an answer rose to 50 percent in Round 3, up from 27 percent and 10 percent in Rounds 1 and 2, respectively.

Table B-7. Barriers to Replication Identified in Round 1

Reason	Number of Projects ¹ (n=22)	Percent of Projects	Adjusted Percent of Projects
Lack of Resources	5	23%	31%
Lack of Consumer Interest	3	14%	19%
Production Costs	2	9%	13%
Insufficient/ Unavailable Equipment	2	9%	13%
Replication not requested/needed	2	9%	13%
Administrative Issues	1	5%	6%
Location Issues	1	5%	6%
Unsuccessful Product	1	5%	6%
Replicated by others instead	1	5%	6%
Specialization incompatibilities	1	5%	6%
Not meant for commercialization	1	5%	6%
Don't Know/No Answer/Refused	6	27%	

¹ Multiple responses were allowed. Percentages are based on the 22 projects without replications.

Table B-8. Barriers to Replication Identified in Round 2

Reason	Number of Projects* (n=29)	Percent of Projects	Adjusted Percent of Projects
Absence of Suitable Companies/Institutions/Locations	4	14%	15%
Cost	3	10%	12%
Technology is Still Being Proven	3	10%	12%
Permitting/Regulatory Barriers	2	7%	8%
Proprietary Technology	2	7%	8%
Lack of Proximity to Potential Users	2	7%	8%
No Other Similar Company in New York State	2	7%	8%
Lack of Effective Marketing/Publicity	2	7%	8%
Complex Operating Environment/Too Many Competing Actors	2	7%	8%
New Markets/New Technologies	1	3%	4%
Company No Longer Makes the Product	1	3%	4%
Never Saw the Project Through to Completion	1	3%	4%
Project Answered all Questions it Set Out to Answer	1	3%	4%
Denied Commercialization	1	3%	4%
Don't Know	3	10%	12%

Notes: (*) Respondents could select more than one answer. Four projects without replications did not answer the question.

Table B-9. Barriers to Project Replication

Barriers to Replications	Number of Projects (n=26)*	Percent of Projects	Adjusted Percent of Projects
Absence of market to take advantage of the demonstrated technology	6	23%	46%
Cost	6	23%	46%
Technology unproven	1	4%	8%

*Note: 13 projects without replications could not identify barriers to replication.

B.3 COMPARISON OF PROCESS EVALUATION RESULTS

All three rounds included similar questions about participant satisfaction with NYSERDA's R&D Program. As shown in Tables B-10, B-11 and B-12, overall program satisfaction was high in all three rounds, although overall satisfaction has been declining with each survey. The percentage of respondents stating they agreed or strongly agreed that they are satisfied with the program overall was 98 percent, 92 percent, and 84 percent in Rounds 1, 2, and 3, respectively. Opinions about the qualifications of staff working with this program were also consistently high, although the specific questions varied from survey to survey. Overall, the findings suggest that the program is maintaining a high level of satisfaction in most categories.

Table B-10. Round 1 Respondent Feedback on NYSERDA's R&D Program Characteristics

Program Characteristic	Agree or Strongly Agree	Disagree or Strongly Disagree
Overall Program Satisfaction	98%	2%
NYSERDA staff working with this program are well qualified	95%	0%
NYSERDA provides information that is highly supportive of the demonstration process	79%	5%
Turn-around time for assistance from NYSERDA does not significantly hamper demonstration efforts	64%	21%
The process of obtaining funding from NYSERDA is adequate	64%	24%
The assistance that NYSERDA provides to encourage knowledge gained from the demonstration is adequate	62%	14%
NYSERDA's effort to increase market knowledge greatly assists in obtaining replications	46%	22%

Table B-11. Round 2 Respondent Feedback on NYSERDA's R&D Program Characteristics (n=61)

Statement	Calculation	Strongly Disagree (1) to Strongly Agree (5)					Don't Know/Refused
		1	2	3	4	5	
Overall, I am satisfied with my participation in NYSERDA's R&D program.	Raw	7%	-	-	33%	59%	2%
	Adjusted ¹	7%	-	-	33%	60%	--
NYSERDA communicates well with demonstration project participants.	Raw	-	7%	8%	38%	43%	5%
	Adjusted ¹	-	7%	9%	40%	45%	--
NYSERDA staff members working with this program are well qualified.	Raw	5%	3%	3%	28%	56%	5%
	Adjusted ¹	5%	3%	3%	29%	59%	--
NYSERDA provides assistance in a timely manner.	Raw	7%	7%	11%	34%	39%	2%
	Adjusted ¹	7%	7%	12%	35%	40%	--
NYSERDA provides technical information that supports the demonstration process.	Raw	7%	16%	26%	25%	20%	7%
	Adjusted ¹	7%	18%	28%	26%	21%	--
NYSERDA provides technical information that supports the replication process.	Raw	10%	13%	28%	23%	16%	10%
	Adjusted ¹	11%	15%	31%	25%	18%	--
NYSERDA provides marketing information that supports the demonstration process.	Raw	10%	20%	23%	21%	15%	11%
	Adjusted ¹	11%	22%	26%	24%	17%	--
NYSERDA provides market intelligence that supports the demonstration process.	Raw	15%	21%	26%	15%	8%	15%
	Adjusted ¹	17%	25%	31%	17%	10%	--

Notes: (1) Adjusted percentages exclude “Don’t Know/Refused.” Percentages may not sum exactly to 100% due to rounding.

Table B-12. Round 3 Respondent Feedback on NYSERDA’s R&D Program Characteristics (n=50*)

Statement	Strongly Disagree (1) to Strongly Agree (5)					Don’t Know/Refused
	1	2	3	4	5	
Overall Satisfaction	0%	6%	10%	32%	52%	0%
Ease of Application	2%	6%	26%	30%	26%	10%
Appropriateness of Incentive Amounts	2%	6%	10%	40%	40%	2%
Timeliness of Incentive Receipt	2%	8%	16%	28%	42%	4%
Adequacy of Communication	2%	2%	8%	30%	56%	2%
Comprehensiveness of Knowledge	2%	4%	6%	26%	56%	6%
Sufficiency of Resolution of Issues	2%	4%	10%	16%	52%	16%

Notes: (*) One of the 51 respondents did not answer this section of the survey.

B.4 COMPARISON OF COST EFFECTIVENESS

While there was no cost effectiveness analysis in Round 1, both Round 2 and Round 3 analyzed the cost effectiveness of NYSERDA’s R&D demonstrations and replications. As reported in section B.1, the projects surveyed in Round 2 generated far more total cost savings and revenues than Round 3. As shown in Tables B-13 and B-14 below, projects from Round 2 generated more cost savings and revenue per NYSERDA dollar invested than projects in Round 3. Even with the major outlier from Round 2 removed, projects in Round 2 generated \$6.69 per NYSERDA dollar invested. Projects in Round 3 generated \$0.98 per NYSERDA dollar invested. As discussed in Section B.1 above, some of this difference is due to the fact that Round 3 did not survey any power production projects and only surveyed three process improvement projects. Process improvement and power production projects generally reported substantially more cost savings and revenues than product demonstration projects.

Table 7-3. Cost Effectiveness for Combined Demonstration and Replication Benefits in Round 2

Benefit Type	Cost Effectiveness	Cost Effectiveness Adjusted (Outlier Removed)
Demonstration and Replication Cost Savings per NYSERDA \$	\$2.90	\$2.90
Demonstration and Replication Project Revenues per NYSERDA \$	\$50.09	\$3.80
Demonstration and Replication Total Dollars (Revenues and Cost Savings) per NYSERDA \$	\$52.98	\$6.69

Table B-14. Cost Effectiveness for Combined Demonstration and Replication Benefits in Round 3

Benefit Type	Cost Effectiveness
Demonstration and Replication Project Revenues per NYSERDA \$	\$0.72
Demonstration and Replication Cost Savings per NYSERDA \$	\$0.26
Demonstration and Replication Total Dollars (Revenues and Cost Savings) per NYSERDA \$	\$0.98

B.5 COMPARISON OF BENEFITS AND CHALLENGES REPORTED IN ROUNDS 2 AND 3

Round 2 and Round 3 projects reported many similar benefits and challenges with their demonstrations, as reported in the final section of Chapter 3. For example, while most respondents reported reaching all or most of their objectives in both rounds, the reasons for not meeting *all* objectives were largely the same for both rounds: (1) operating and maintenance costs were higher than expected; (2) expected energy savings or productivity gains were lower than expected; and (3) acceptance by the target market was lower than expected.

Additionally, many respondents in Rounds 2 and 3 reported similar benefits from planning and executing their projects. The most commonly cited benefit in both reports was increased knowledge about the technology, process, method, or approach being demonstrated. Several respondents in both rounds also reported that the demonstration allowed them to establish relationships and gain valuable experience with manufacturers, regulators, market actors, and/or potential business partners.

Tables B-15 and B-16 below show the challenges identified by respondents in implementing their NYSERDA demonstration projects in Round 2 and Round 3, respectively. In both rounds, technological barriers were cited most frequently as a challenge. However, regulatory barriers were cited by 20 percent of respondents in Round 2, but were cited relatively infrequently in Round 3, with just six percent of respondents citing regulatory issues as a challenge to implement their project. Similarly, the second-most commonly identified barrier in Round 3, lack of interest by potential end users (cited by 22 percent of respondents), was rarely cited as a challenge in Round 2 (five percent of respondents).

Table B-15. Round 2 Challenges in Implementing the NYSERDA Demonstration Project

Challenge	Number of Projects* (n=61)	Percent
Technological barriers	16	26%
Regulatory barriers	12	20%
Cost prohibitive	4	7%
Lack of interest among potential end users	3	5%
Could not find an appropriate site	3	5%
Lack of qualified personnel or expertise	2	3%
Lack of funding	1	2%
Timing was not right	1	2%
Other	15	25%

Notes (*): Multiple responses were allowed. The percentages are calculated based on the 61 projects.

Table B-16. Round 3 Challenges in Implementing the NYSERDA Demonstration Project

Challenge	Number of Projects* (n=51)	Percent
Technological issues	15	29%
Lack of interest among potential end users	11	22%
Lack of qualified personnel or expertise	8	16%
Timing was not right	8	16%
Could not find an appropriate site	8	16%
Lack of funding	7	14%
Regulatory barriers	3	6%
Cost prohibitive	2	4%
Other	21	41%

Notes (*): Multiple responses were allowed. The percentages are calculated based on the 51 projects.

METHODS FOR ESTIMATING KEY RESULTS

C.1 METHOD FOR ESTIMATING REPLICATION PROJECT IMPACTS

A primary goal of the survey was to estimate the number of replication projects and their impacts. Integrators and site owners were asked to provide the number of replication projects; vendors were asked to provide the number and volume of sales. All respondents who reported at least one replication for a similar application in New York were asked how their replication impacts compared to the original demonstration impacts. Because replication projects are often implemented by a different firm than the original demonstration project, quantifying the impacts of replication projects can be quite challenging. Therefore, respondents were asked to consider the size of the replication impacts relative to the original demonstration impacts, which provides an indication of the scale of replication benefits without requiring a precise numeric estimate. Specifically, respondents were asked whether the replication impacts were lower, the same, or higher compared to the original demonstration project.

As shown in Table C-1, a strong majority of respondents (64 percent excluding those who answered “Don’t Know”) stated that the replication benefits were *the same or higher* compared to the benefits of the original demonstration project. Similarly, 62 percent of respondents (excluding “Don’t Know”) stated that revenues generated or costs saved from the replications were *the same or higher* compared to the demonstration project. Through a separate replication survey, respondents were asked to provide data on quantifiable benefits. However, most respondents who reported “higher” replication impacts were not able to estimate how much higher the impacts were. For those who were unable to provide specific, quantifiable benefit data, the evaluators assume that replication benefits are *equal* to the original demonstration benefits.³ Although this assumption will not hold for every project (and is, overall, a conservative assumption), it provides a lower-bound estimate of replication benefits that can be compared to the cost of NYSERDA’s investment. If the benefits estimated under this conservative approach compare favorably with NYSERDA’s costs, it increases confidence in the overall cost-effectiveness of the portfolio. Also, this conservative approach for estimating replication impacts is largely consistent with the method used in the previous survey.

³ For example, if a hypothetical demonstration project installed a 10-kW power production system, and the project was replicated 10 times, replication impacts would be estimated as 100 kW.

Table C-1. Scope of Replications in Comparison to NYSERDA Demonstration Project

	Comparison of Impacts to Original Demonstration			Comparison of Revenue Generation and Cost Savings to Original Demonstration		
	Number	Percentage	Percentage Excluding “Don’t Know”	Number	Percentage	Percentage Excluding “Don’t Know”
Lower than Original Demo	3	4%	8%	9	13%	35%
The Same Size	18	26%	46%	14	21%	54%
Higher than Original Demo	7	10%	18%	2	3%	8%
Not Comparable	11	16%	28%	1	1%	4%
Don’t Know	29	43%	-	42	62%	-
Total	68	100%	100%	68	100%	100%

*Note: Respondents who reported at least one replication in New York were asked the questions for their *five most recent* replications. Because some respondent had more than five replications, the number of responses shown in the table (n=68) is less than the total number of replications in New York.

C.2 METHOD FOR ESTIMATING NYSERDA’S CONTRIBUTION

An important element in impact assessment is separating impacts to which the program contributed from impacts that would have occurred without the program. The analysis estimates NYSERDA’s contribution based on a composite of five factors, which are in turn based on the respondent’s answers to a number of survey questions:

- **Novelty:** Was this the first time that participants had demonstrated the technology?
 - *Is this the first time your firm used this technology? If no:*
 - *How many times had your firm used this technology prior to the demonstration project?*
 - *How did the demonstration project differ from previous uses of the technology?*

- **Importance:** How important was NYSERDA’s assistance in developing the demonstration projects?
 - *On a scale of 0 to 5, where 0 = “not at all important” and 5 = “very important,” how important or unimportant was NYSERDA’s financial assistance in your decision to do this project?*
 - *On a scale of 0 to 5, where 0 = “not at all important” and 5 = “very important,” how important or unimportant was NYSERDA’s technical assistance in your decision to do this project?⁴*

- **Likelihood:** What is the likelihood that participants would have carried out the demonstration projects without NYSERDA?
 - *What is the likelihood that your firm would have completed this project in New York without NYSERDA’s financial assistance? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.*

⁴ This question was only asked for respondents who indicated that NYSERDA provided technical assistance for the demonstration project.

- *What is the likelihood that your firm would have completed this project in New York without NYSERDA's technical assistance? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.*⁵
- **Magnitude:** How did NYSERDA affect the magnitude of the impacts of the demonstration projects?
 - *Overall, without NYSERDA's involvement, would the magnitude of the impacts for this project have been of the same size, smaller, or larger?*
- **Timing:** How did NYSERDA affect the timing of the demonstration projects?
 - *Without NYSERDA's support, would you have carried out this project earlier, at about the same time, or later?*

Based on the respondent's answers to the previous questions, the policy analysts who administered the survey calculated NYSERDA's contribution score using the algorithm shown in Table C-2.

The composite contribution score (Calculation #5 in Table C-2) can range from -3 to +6. IEC converted the score to a percentage to estimate NYSERDA's contribution, as follows:

- **-3, -2, -1, or 0:** NYSERDA contributed to *none* of the reported benefits (0%).
- **1 or 2:** NYSERDA contributed to a *modest* portion of the reported benefits (25%).
- **3:** NYSERDA contributed to a *moderate* portion of the reported benefits (50%).
- **4 or 5:** NYSERDA contributed to a *substantial* portion of the reported benefits (75%).
- **6:** NYSERDA contributed to *all* of the reported benefits (100%).⁶

IEC multiplied NYSERDA's contribution score for each project (expressed as a percentage) by the project's reported benefits.⁷ This calculation represents the best estimate of NYSERDA's contribution to each project. Summing these figures across all projects provides an estimate of NYSERDA's overall contribution. Given the uncertainties inherent in this type of analysis, the results are best interpreted as indicative of the general level and scale of NYSERDA's contribution, rather than a precise quantification of the benefits can be attributed directly to NYSERDA.

⁵ Again, this question was only asked for respondents who indicated that NYSERDA provided technical assistance for the demonstration project.

⁶ If the contribution score was not an integer, the evaluators calculated the percentage as the midpoint between the two closest integers. For example, a contribution score of 5.5 was translated to 87.5% (the midpoint between 5 = 75% and 6 = 100%).

⁷ For example, if a project installed a 100-kW system and had a composite contribution score of 3 (i.e., 50%), NYSERDA's estimated contribution would be 50 kW (equals 50% of 100 kW).

Table C-2. Method for Calculating NYSERDA’s Demonstration Contribution Score

Component	Survey Questions	Calculations
Novelty	<p>Is this the first time your firm used this technology?</p> <p><i>If no:</i></p> <p>How many times had your firm used this technology prior to the demonstration project?</p> <p>How did the demonstration project differ from previous uses of the technology?</p>	<p>Calculation #1: If the firm had used the technology before, <i>and</i> the NYSERDA demonstration project was the same or smaller than the previous demonstrations, adjust downward by -1. Otherwise, the adjustment factor is 0.</p>
Importance	<p>On a scale of 0 to 5, where 0 = “not at all important” and 5 = “very important,” how important or unimportant was NYSERDA’s <i>financial</i> assistance in your decision to do this project?</p> <p>On a scale of 0 to 5, where 0 = “not at all important” and 5 = “very important,” how important or unimportant was NYSERDA’s <i>technical</i> assistance in your decision to do this project?</p>	<p>Calculation #2: Take the <i>higher</i> of the respondent’s ratings for the importance of NYSERDA’s financial assistance and NYSERDA’s technical assistance.</p>
Likelihood	<p>What is the likelihood that your firm would have completed this project in New York without NYSERDA’s <i>financial</i> assistance? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.</p> <p>What is the likelihood that your firm would have completed this project in New York without NYSERDA’s <i>technical</i> assistance? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.</p>	<p>Calculation #3A: Take the <i>lower</i> of the respondent’s ratings for financial assistance and technical assistance. <i>If the firm did not receive technical assistance from NYSERDA, use financial assistance rating only.</i></p> <p>Calculation #3B: Now, take the inverse (e.g., 0 becomes 5, 1 becomes 4, etc.).</p>
Magnitude	<p>Overall, without NYSERDA’s involvement, would the magnitude of the impacts for this project have been of the same size, smaller, or larger?</p>	<p>Calculation #4A: If the respondent indicates that the impacts of the demonstration project would have been <i>the same or larger</i> without NYSERDA’s assistance, adjust downward by -1. Otherwise, make no further adjustment.</p>
Timing	<p>Without NYSERDA’s support, would you have carried out this project earlier, at about the same time, or later?</p>	<p>Calculation #4B: If the respondent indicates that the project would have occurred earlier without NYSERDA, adjust downward by -1. If the project would have occurred at the same time, make no further adjustment. If the project would have occurred later, the adjustment factor is +1.</p>
Demonstration Contribution Score	<p>This is a composite score based on the previous questions.</p> <p>This calculation averages the respondent’s assessment of the significance of NYSERDA’s contribution and the likelihood of completing the project without NYSERDA, and adjusts by the factors noted above (i.e., comparable previous projects, magnitude of benefits, and timing).</p>	<p>Calculation #5: Take the average of calculations #2 and #3B, then add Calculations #1, #4A, and #4B to the total.</p>

A similar method was used to estimate NYSERDA’s contribution to replication benefits:

- **Importance:** How important was the demonstration project for developing the replication projects?
 - *On a scale of 0 to 5, where 0 = "strongly disagree" and 5 = "strongly agree," to what extent do you agree or disagree with the following statement: "Overall, the NYSERDA-funded demonstration project was critical for getting the replication project(s) developed."*
- **Likelihood:** What is the likelihood that the replication projects would have been developed in New York without the demonstration project?
 - *What is the likelihood that these replication projects would have been developed in New York without the NYSERDA-funded demonstration project? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.*
- **Magnitude:** Would the impacts of the replication projects have been smaller without the demonstration projects?
 - *Without the NYSERDA-funded demonstration project, would the magnitude of the impacts for these replication projects have been of the same size, smaller or larger?*
- **Timing:** How did the demonstration project affect the timing of the replication projects?
 - *Without the NYSERDA-funded demonstration project, would the replication projects have occurred sooner, at about the same time, or later?*

Table C-3 shows how the survey analysts calculated NYSERDA’s contribution to the replication projects, based on the respondent’s answers to the questions above.

Table C-3. Method for Calculating NYSERDA’s Replication Contribution Score

Component	Survey Questions	Calculations
Magnitude	Without the NYSERDA-funded demonstration project, would the magnitude of the impacts for these replication projects have been of the same size, smaller or larger?	Calculation #6A: If the impacts of the replication project(s) would have been the same or larger without the demonstration project, adjust downward by -1. Otherwise, the adjustment factor is 0.
Timing	Without the NYSERDA-funded demonstration project, would the replication projects have occurred sooner, at about the same time, or later?	Calculation #6B: If the project would have occurred earlier without NYSERDA, adjust downward by -1. If the project would have occurred at the same time, the adjustment factor is 0. If the project would have occurred later, the adjustment factor is +1.
Likelihood	What is the likelihood that these replication projects would have been developed in New York without the NYSERDA-funded demonstration project? Please answer on a scale from 0 to 5, where 0 is not at all likely and 5 is very likely.	Calculation #6C: Take the <i>inverse</i> of rating.
Importance	On a scale of 0 to 5, where 0 = “strongly disagree” and 5 = “strongly agree,” to what extent do you agree or disagree with the following statement: “Overall, the NYSERDA-funded demonstration project was critical for getting the replication project(s) developed.”	Calculation #6D: Take the average of rating and Calculation #6C.
Replication Contribution Score	This is a composite score based on the previous questions.	Calculation #7: Add the results of Calculations #6A, #6B, #6D, and #1.

As with the demonstration score, the replication contribution score can range from -3 to +6. IEC converted the score to a percentage using the same method described above for the demonstration projects. For each replication project, IEC multiplied NYSERDA's contribution (in percentage terms) by the estimated benefits of the replication.

C.3 METHOD FOR ESTIMATING REPLICATION PROJECT IMPACTS

NYSERDA is interested in assessing the cost effectiveness of its R&D demonstration projects. This evaluation assesses cost effectiveness in two ways: quantitatively (from NYSERDA's perspective) and qualitatively (from the firm's perspective). These methods are explained below:

- **Quantitative (NYSERDA's perspective):** In total, NYSERDA spent \$13,101,302 on the 51 surveyed R&D demonstrations that closed in 2011-2013. IEC calculated the following metrics using the cost data and the benefits data described in the previous section:
 - NYSERDA cost per demonstration project revenues, adjusted for NYSERDA's estimated contribution.
 - NYSERDA cost per demonstration project cost savings, adjusted for NYSERDA's estimated contribution.
 - NYSERDA's cost per demonstration project net dollars; this is the sum of the two previous calculations.
 - All of the above including demonstration benefits *and* replication benefits. The cost-effectiveness calculation was not able to account for the costs that NYSERDA incurred for NYSERDA replication projects.

In addition, IEC estimated the monetary value of electricity savings and fuel savings from the demonstration and replication projects, and the cost effectiveness of NYSERDA's investment relative to the estimated savings. To reflect different potential scenarios for future energy prices and technology lifespans, the analysis was carried out under a "low," "medium," and "high" scenario. The results of the scenario analysis are presented in Section 7.

- **Qualitative (firm's perspective):** Ideally, the evaluators would be able to calculate the "fully loaded" cost of the demonstration projects, including NYSERDA's costs and costs incurred by private firms. However, while the survey asked respondents for cost data, these data were not provided in a comprehensive or consistent way. Therefore, it was not possible to quantify firms' contributions to the demonstration projects. This was predictable given firms' general reluctance to share specific cost data with external parties. Therefore, the survey also included qualitative questions designed to assess the respondent's perceptions about cost effectiveness. Four questions were relevant for this analysis:
 - *Q13:* At the time the project began, were you considering alternatives to the ["product," "process," "technology," or "type of generation"] that you used in the NYSERDA project?
 - *Q14 (if "yes" to Q13):* Looking back, do you think the ["product," "process," "technology," or "type of generation"] that you used in the NYSERDA project was the best alternative?
 - *Q15:* Do you feel the [NYSERDA project description] project was a good investment?
 - *Q16:* In general terms, how would you describe your return on this project – positive, negative, or breakeven/neutral?

C.4 METHOD FOR ESTIMATING CO₂ EMISSIONS OFFSET

CO₂ emissions offset benefits were calculated for projects that reported estimated energy-related benefits. In addition, for projects that reported both CO₂ reductions and energy reductions, we calculated the CO₂ offset from energy information reported. CO₂ emissions offset benefits were calculated by applying CO₂ factors to reported energy benefits using the following factors provided by NYSERDA:⁸

	CO ₂ Factor
Electricity (lb CO ₂ e/MWhr)	1,160
Diesel (lb CO ₂ e/MMBTU)	163
Propane (lb CO ₂ e/MMBTU)	136.1
Gasoline (lb CO ₂ e/MMBTU)	158

⁸ NYSERDA. Emissions Factors. Provided 3/21/2017.

ENERGY SAVINGS AND PRICE FORECAST

ENERGY SAVINGS AND PRICE FORECAST

- Methodology for Estimating Future Energy Savings
- AEO 2015 Energy Prices by Sector and Source, Middle Atlantic, High Economic Growth
- AEO 2015 Energy Prices by Sector and Source, Middle Atlantic, Reference Case
- AEO 2015 Energy Prices by Sector and Source, Middle Atlantic, Low Economic Growth
- U.S. Energy Information Administration (EIA) *Annual Energy Review 2011*.

Appendix D describes the methodology used for estimating future energy savings in the cost-effectiveness analysis. As described in Sections 4 and 5 of the main report, respondents reported electricity and fuel savings. Many of these respondents indicated that savings will continue into the future. However, all of NYSERDA’s demonstration project costs were incurred upfront. Therefore, to compare the benefits and costs on equal terms, the analysis estimates the monetary value of future energy savings.

This analysis assumes that the future annual energy savings for any given project are equivalent to that same project’s current annual energy savings (i.e., energy savings produced in 2015). As described in Sections 4 and 5 of the main report, respondents reported electricity and fuel savings annually or over the lifetime of the project (i.e., in aggregate). To determine current annual energy savings, reported electricity and fuel savings were annualized on a project by project basis.

Aggregate savings were annualized using the assumption that benefits began to accrue one year after the contract sign date. For example, if a project contract was signed in 2009, it was assumed that project benefits began accruing in 2010. The survey also asked users if the project was still in use, and if not, when the project was decommissioned. If the project was no longer in use, the year that the project was decommissioned was used as the end date. For instance, if a project produced 200,000 MWh of electricity savings over its lifetime, had a contract sign date in 2009, and was decommissioned in 2015, the project was considered to have produced benefits in 2010, 2011, 2012, 2013, and 2014. Without detailed data to determine how benefits may have changed through time, the analysis assumes that benefits were the same during each year of operation. In this example, the 200,000 MWh of electricity would be divided by 5 years, to yield 40,000 MWh of electricity saved annually. If a project was not decommissioned, it was assumed that benefits accrued through the end of 2015.

Once each project’s benefits were annualized, both electricity and fuel benefits were converted to MMBTU, using the standard conversion factors in Table D-1.

Table D-1. Energy Savings Conversions

Original Unit	Equivalent Unit
1 kWh	.001 MWh
1 gallon (US) of Motor Gasoline	1.2491420207 therms (US)
1 gallon (US) of Diesel	1.38907323067 therms (US)
1 gallon (US) of Distillate No. 2 Fuel Oil	0.667428499114 therms (US)
1 gallon (US) of Propane	0.955228065593 therms (US)
1 MWh	3.412 MMBTU
1 therm	.1 MMBTU

The analysis was conducted separately for electricity (MWh) and fuel (therms), but apart from the conversion factors and prices used, the process was the same.⁹ For electricity, annual savings (MWh/year) were converted to MMBTU, which is the unit that EIA uses in its historic energy pricing tables and energy price forecasts. The analysis used the standard conversion factor of 3.412

⁹ All values used in this analysis are adjusted for NYSERDA’s contribution.

MMBTU/MWh. For example, demonstration projects reported 21,838 MWh/year in electricity savings; multiplying 21,838 MWh by 3.412 yielded 74,511 MMBTU/year.

Next, the value of already accrued electricity savings was found by multiplying annual savings by electricity prices for that year. Past energy prices are taken from the U.S. Energy Information Administration (EIA) *Annual Energy Review 2011*. These values reflect a cross-sector average and are reported nominally. Nominal pricing was converted to 2013 dollars for consistency, using the Bureau of Labor Statistics' online CPI Inflation Calculator.¹⁰ Expressing all savings in current dollars adjusts for the effects of inflation on energy prices in later years, and therefore represents a reasonably accurate assessment of the world from NYSERDA's point of view. It does not, however, account for the firm's opportunity cost of capital – i.e., other investments the firm could have made instead of investing in the project. If a private firm were considering the investments described in this section, it would further discount the future energy savings by its weighted average cost of capital – i.e., the cost required to finance the firm's mix of debt and equity – thereby reducing the present value of the savings.

Future benefits were calculated in a similar fashion. Forecasted energy prices were taken from the U.S. Energy Information Administration (EIA) *Annual Energy Outlook 2015* for the U.S. Middle Atlantic region, which includes New York State. *Annual Energy Outlook 2015* expresses all energy prices in 2013 dollars, unless otherwise noted. Therefore, it was not necessary for this analysis to discount future prices back to current dollars.

As shown in Tables D-2 through D-4, the EIA price forecast shows residential, commercial, transportation and industrial energy prices separately. Each project was reviewed to determine which of the aforementioned sectors its energy savings fell into. In the case where it was unclear which sector a project belonged to, the analysis took the simple average of the commercial and industrial prices.

This type of analysis is complicated by the uncertainties inherent in predicting future energy prices and energy savings. It is also uncertain how far the technologies or processes resulting in the energy savings will continue into the future. To reflect these uncertainties, the analysis calculates NYSERDA's cost-effectiveness under a variety of scenarios. The scenario analysis considers two variables that determine the value of future energy savings: energy prices and technology lifespan. To account for future energy price uncertainty, three energy price scenarios are considered. The "medium" energy prices represent the EIA's reference case; the "low" and "high" cases represent the EIA's forecast under a lower-economic growth scenario and higher-growth scenario, respectively.

To account for technology lifespan uncertainty, this analysis presents benefits as though projects produced benefits for 5, 10, 15 and 20 years, respectively. NYSERDA's experience has shown that many projects stay online longer than one year, while a 20-year lifetime might be longer than average. For instance, if a project had a contract sign date in 2009, and began accruing benefits in 2010, the analysis would use actual benefits for 2010-2015 and projected benefits for 2016-2030 to calculate benefits over a 20-year lifespan. Projected annual savings were then multiplied by forecasted energy prices for that year, under each economic scenario.

Finally, already accrued and future benefits were summed. For instance, Year 5 values presented in Tables 7-4 through 7-12 are inclusive of the first five years of accrued savings for all projects that have been accruing benefits for more than five years, and include a combination of accrued and projected savings for projects that have been operational for less than five years.

¹⁰ Bureau of Labor Statistics online *CPI Inflation Calculator*: <http://data.bls.gov/cgi-bin/cpicalc.pl>

Table D-2: AEO 2015 Energy Prices by Sector and Source, Middle Atlantic, High Economic Case

EIA 2015 Energy Prices by Sector and Source, Middle Atlantic, High Economic Growth											
Year	High Commercial Industrial Average					Transportation		Residential			
	Propane	Distillate Fuel Oil	Residual Fuel Oil	Natural Gas	Electricity	Motor Gasoline	Diesel	Propane	Distillate Fuel Oil	Natural Gas	Electricity
2012	21.8980545	26.880247	23.007141	7.4179545	30.702997	31.038273	29.702719	28.142542	27.530216	12.108257	45.732353
2013	20.889121	26.809017	22.2325195	7.8723835	29.5051915	29.61368	29.115074	27.283117	27.458988	11.576024	47.178741
2014	21.236767	25.793997	19.9353665	5.3924125	29.62356	27.939785	27.868557	27.79151	26.408352	9.514367	44.552685
2015	17.7210675	16.984522	11.06079	4.6922075	29.0061445	19.861973	19.366474	24.38356	17.963648	8.987507	44.685303
2016	19.295961	19.6761515	13.205349	5.093861	29.378496	22.250172	22.06204	25.813459	20.650803	9.255709	45.926697
2017	19.803008	20.6340325	13.848237	5.772649	29.2359925	22.719643	23.048782	26.259209	21.547356	9.986217	46.294796
2018	19.9908125	20.7206765	13.898465	6.33317	30.0934565	22.773125	23.151394	26.412212	21.606888	10.56897	47.584671
2019	20.1871615	21.0290515	14.157909	7.117804	31.7284975	22.883471	23.471251	26.572098	21.891409	11.476918	49.798031
2020	20.3291025	21.348486	14.424098	7.6930755	33.2670585	23.171406	23.811266	26.681797	22.171259	12.152122	52.035606
2021	20.460508	21.750024	14.772669	8.2116605	34.229126	23.543005	24.215494	26.781528	22.564602	12.753044	53.302845
2022	20.6588945	22.2504855	15.157444	8.595479	34.9266035	23.957619	24.729748	26.940434	23.039669	13.197439	54.206882
2023	20.939969	22.761944	15.557531	8.9594775	35.650283	24.308187	25.257008	27.171886	23.518999	13.611982	55.051907
2024	21.0690335	23.234302	15.950519	9.044315	36.222741	24.713345	25.724808	27.268356	24.005289	13.739272	55.892155
2025	21.2201775	23.769074	16.307482	8.9052775	36.348343	25.129053	26.272774	27.38372	24.514706	13.634092	56.27092
2026	21.4710025	24.291501	16.751163	8.7032865	36.142152	25.512716	26.791748	27.585934	25.044298	13.471081	56.225197
2027	21.700794	24.8217085	17.170053	8.55642	36.2419915	25.929216	27.318489	27.768681	25.585821	13.371422	56.351807
2028	21.848276	25.3740615	17.616268	8.3735425	36.021262	26.390057	27.871761	27.879759	26.137333	13.238879	56.190144
2029	22.0470915	26.0221215	18.113756	8.2268685	35.805682	26.833435	28.492315	28.035528	26.820206	13.140978	56.071899
2030	22.303825	26.6094545	18.558582	8.3496015	35.7289335	27.279615	29.09366	28.24028	27.396471	13.326464	56.128986
2031	22.6476005	27.202887	19.023224	8.472921	35.8168495	27.869341	29.689281	28.51911	27.982721	13.515055	56.399414
2032	22.886937	27.798931	19.511654	8.4881645	36.1255665	28.366577	30.277798	28.70801	28.563013	13.597921	56.82111
2033	23.173204	28.4582825	20.018986	8.6669205	36.551211	28.970266	30.961451	28.935825	29.216341	13.846746	57.365612
2034	23.4497765	29.063441	20.535162	8.773897	36.9451275	29.518234	31.557959	29.155514	29.83514	14.021453	57.884476
2035	23.7389515	29.861937	21.086487	8.8825465	37.4744855	30.186806	32.377789	29.384979	30.599262	14.203214	58.551071
2036	24.0938225	30.619485	21.687229	9.1144985	37.8726835	30.884914	33.143066	29.66803	31.360439	14.510627	59.048016
2037	24.3482105	31.414604	22.229881	9.2706015	38.5087055	31.485209	33.933487	29.865757	32.147343	14.755589	59.829453
2038	24.617837	32.242548	22.854851	9.7250485	39.188576	32.208042	34.761227	30.074762	32.968056	15.318356	60.632793
2039	25.138424	33.076981	23.540461	10.17135	40.1616475	33.010071	35.607651	30.490574	33.797314	15.861003	61.692047
2040	25.4540175	33.873114	24.120653	10.5481435	40.972017	33.71772	36.41127	30.734453	34.579231	16.324278	62.63945

Source: U. S. Energy Information Administration. "Annual Energy Outlook 2015, Table: Energy Prices by Sector and Source". April, 2015. Accessed August 15, 2016, at: <http://www.eia.gov/forecasts/aeo/data/browser/#/?id=3-AEO2015®ion=1-2&cases=highmacro&start=2012&end=2040&f=A&sourcekey=0>

Table D-3: AEO 2015 Energy Prices by Sector and Source, Middle Atlantic, Reference Case

EIA 2015 Energy Prices by Sector and Source, Middle Atlantic, Reference												
Year	Commerical Industrial Average					Transportation			Residential			
	Propane	Distillate Fuel Oil	Residual Fuel Oil	Natural Gas	Electricity	Motor Gasoline	Diesel	Propane	Distillate Fuel Oil	Natural Gas	Electricity	
2012	21.89789	26.880247	23.007141	7.4179545	30.702997	31.038273	29.702719	28.142542	27.530216	12.108257	45.732353	
2013	20.889064	26.809017	22.2325195	7.872384	29.505204	29.61368	29.115074	27.283117	27.458988	11.576024	47.178741	
2014	21.248389	25.793997	19.9353665	5.3938035	29.563401	27.939785	27.868557	27.801861	26.408352	9.515597	44.493473	
2015	17.686847	18.466257	11.343304	4.6857345	28.9578745	19.249784	20.336033	24.351486	18.911442	8.975016	44.67131	
2016	19.1700355	20.193575	13.8541455	5.0481695	29.2433385	21.920891	22.74003	25.700779	20.692181	9.196383	45.933739	
2017	19.666685	20.5349035	13.77094	5.6576585	29.474466	22.791595	22.938389	26.140102	21.470434	9.84891	46.636528	
2018	19.881566	20.592953	13.820502	6.146341	29.5799745	22.78426	23.017994	26.31999	21.48031	10.351859	47.17186	
2019	20.11277	20.881405	14.081467	6.8057235	30.5484485	22.837547	23.318291	26.513573	21.748508	11.112218	48.639824	
2020	20.222229	21.1837855	14.334475	7.2831345	31.743947	23.074312	23.645283	26.596737	22.000408	11.673899	50.459484	
2021	20.364502	21.58278	14.667925	7.695316	33.309105	23.449318	24.050253	26.708986	22.38862	12.160452	52.484253	
2022	20.5020495	22.109088	15.018478	7.981449	33.955513	23.774092	24.635248	26.816782	22.793848	12.505082	53.411633	
2023	20.717869	22.5446615	15.377455	8.224764	34.497205	24.131285	25.068119	26.993629	23.235207	12.794317	54.180817	
2024	20.8930025	22.989673	15.749786	8.446543	34.7963285	24.513081	25.514544	27.133913	23.677187	13.04578	54.685837	
2025	21.074066	23.4616755	16.127825	8.643229	35.398835	24.904678	25.994429	27.278517	24.131411	13.275362	55.673122	
2026	21.313907	23.951144	16.531345	8.6204615	35.6616755	25.319557	26.481812	27.474575	24.627747	13.296224	56.144485	
2027	21.497282	24.46235	16.937944	8.408982	35.8628255	25.707561	27.009254	27.620106	25.107431	13.107347	56.417961	
2028	21.6692435	24.984106	17.350704	8.171804	36.174636	26.097742	27.509527	27.755695	25.669334	12.90983	56.894978	
2029	21.880829	25.500641	17.783155	8.0032865	35.9875805	26.517849	28.010778	27.925539	26.221718	12.780709	56.859165	
2030	22.0912525	26.0400885	18.232559	7.849669	36.0005295	26.959978	28.528467	28.09273	26.8008	12.673633	57.062485	
2031	22.361021	26.6019755	18.719397	7.858082	35.838628	27.464859	29.08239	28.310802	27.368063	12.728128	57.02663	
2032	22.6792055	27.1708765	19.199316	7.9277495	36.089963	28.023838	29.649078	28.570112	27.951475	12.847721	57.411602	
2033	22.947378	27.818635	19.652445	8.026035	36.3791665	28.601141	30.309782	28.784943	28.563509	13.000167	57.835796	
2034	23.219733	28.4470575	20.187599	8.112783	36.598476	29.127537	30.945114	29.003382	29.195032	13.143868	58.231663	
2035	23.495977	29.094944	20.704107	8.2937495	36.7893715	29.704512	31.591055	29.224285	29.83955	13.381749	58.503056	
2036	23.777892	29.76002	21.228264	8.401756	36.9466515	30.287733	32.265556	29.448406	30.488129	13.55365	58.736546	
2037	24.025061	30.4391925	21.755644	8.7048975	37.403225	30.889112	32.936478	29.64242	31.175714	13.926421	59.293217	
2038	24.2969285	31.202588	22.328657	9.0805615	38.057167	31.564096	33.707005	29.855951	31.932364	14.388193	60.080128	
2039	24.6614225	31.9306485	23.291914	9.52611	38.838657	32.320168	34.440174	30.145424	32.650333	14.919749	61.007141	
2040	25.049693	32.632939	24.445456	9.8930645	39.3698765	32.938381	35.140083	30.452778	33.343605	15.357826	61.576092	

Source: U.S. Energy Information Administration. "Annual Energy Outlook 2015, Table: Energy Prices by Sector and Source". April, 2015. Accessed August 15, 2016, at: <http://www.eia.gov/forecasts/aeo/data/browser/#/?id=3-AEO2015®ion=1-2&cases=ref2015&start=2012&end=2040&f=A&sourcekey=0>

Table D-3: AEO 2015 Energy Prices by Sector and Source, Middle Atlantic, Low Economic Case

EIA 2015 Energy Prices by Sector and Source, Middle Atlantic, Low Economic Growth												
Year	Commerical Industrial Average					Transportation		Residential				
	Propane	Distillate Fuel Oil	Residual Fuel Oil	Natural Gas	Electricity	Motor Gasoline	Diesel	Propane	Distillate Fuel Oil	Natural Gas	Electricity	
2012	21.8980545	26.880247	23.007141	7.4179545	30.702997	31.038273	29.702719	28.142542	27.530216	12.108257	45.732353	
2013	20.889104	26.809017	22.2325195	7.8723845	29.505203	29.61368	29.115074	27.283117	27.458988	11.576024	47.178741	
2014	21.2445695	25.793997	19.9353665	5.3968285	29.557049	27.939785	27.868557	27.79851	26.408352	9.518049	44.486351	
2015	17.7010575	16.9493295	11.041319	4.686071	28.912035	19.848646	19.33032	24.365324	17.931879	8.973889	44.630806	
2016	19.2981585	19.6297605	13.19541	5.0859615	29.0851765	22.236372	22.012289	25.8197	20.606173	9.224598	45.803284	
2017	19.683471	20.411105	13.782987	5.669744	28.6493175	22.788317	22.812572	26.159121	21.348125	9.848686	46.010384	
2018	19.790846	20.346294	13.787467	6.10579	28.8754	22.750298	22.769032	26.244181	21.236126	10.286528	46.574249	
2019	19.930272	20.6085645	13.986333	6.624324	29.7285385	22.755567	23.038879	26.358011	21.482006	10.892508	47.804806	
2020	19.991461	20.853677	14.209913	6.9471925	30.5548885	22.924154	23.305359	26.40062	21.686544	11.284561	49.360184	
2021	20.1907865	21.229234	14.529444	7.4205615	31.0845915	23.267841	23.688118	26.567375	22.043106	11.813798	50.175762	
2022	20.335397	21.7654615	14.847905	7.7073175	31.90345	23.462337	24.295174	26.684835	22.43733	12.150622	51.279465	
2023	20.5899755	22.188637	15.150658	8.015604	32.7918365	23.787756	24.73978	26.900127	22.810814	12.495681	52.307568	
2024	20.7226125	22.6033375	15.452411	8.170997	33.7331015	24.114227	25.165405	27.006641	23.202198	12.679527	53.565601	
2025	20.885441	23.018809	15.788991	8.288389	34.120444	24.452496	25.584967	27.139584	23.607159	12.821917	54.193897	
2026	21.1498385	23.4710265	16.202242	8.3753645	34.503296	24.846544	26.038542	27.361834	24.055441	12.942874	54.774208	
2027	21.3544485	23.8887825	16.671528	8.4507255	34.831913	25.246517	26.479975	27.530205	24.423439	13.060806	55.296581	
2028	21.447931	24.3452355	17.07799	8.32534	34.976616	25.659546	26.926613	27.601488	24.90081	12.965193	55.651711	
2029	21.6231995	24.813308	17.459869	8.199862	35.1460555	26.043982	27.387037	27.744513	25.388378	12.871184	55.897694	
2030	21.817745	25.3519545	17.892817	8.1278285	35.3381325	26.451466	27.900936	27.903084	25.964121	12.833418	56.234344	
2031	22.0609895	25.859335	18.297529	8.0970305	34.9221945	26.863834	28.401909	28.103497	26.49288	12.844226	55.932587	
2032	22.346092	26.4073255	18.748005	8.011503	35.346793	27.325626	28.94742	28.340034	27.054388	12.798545	56.564831	
2033	22.634346	26.9870985	19.229567	7.9499975	35.181715	27.851852	29.518682	28.577526	27.638453	12.776108	56.550457	
2034	22.9344565	27.6377555	19.768982	7.9513055	35.460107	28.358402	30.152672	28.825666	28.319918	12.817562	57.016991	
2035	23.1869535	28.2209785	20.261835	7.96415	35.8127815	28.889643	30.726589	29.032286	28.920446	12.872958	57.553391	
2036	23.434327	28.8057785	20.792831	8.0005065	36.085528	29.430082	31.311306	29.233364	29.507658	12.952581	57.945618	
2037	23.733307	29.488795	21.667511	8.1463275	36.650039	30.028204	32.000648	29.477041	30.182316	13.153271	58.73489	
2038	24.032404	30.1875895	22.881042	8.5271225	37.3074395	30.670412	32.703697	29.719286	30.872095	13.614419	59.57571	
2039	24.3585595	30.855217	23.464457	8.998995	38.476864	31.237328	33.369492	29.983065	31.544586	14.160873	60.875267	
2040	24.7800545	31.52186	24.136192	9.371909	39.261902	31.888617	34.035858	30.324638	32.208065	14.598119	61.743065	

Source: U.S. Energy Information Administration. "Annual Energy Outlook 2015, Table: Energy Prices by Sector and Source". April, 2015. Accessed August 15, 2016, at: <http://www.eia.gov/forecasts/aeo/data/browser/#/?id=3-AEO2015®ion=1-2&cases=lowmacro&start=2012&end=2040&f=A&linechart=lowmacro-d021915a.5-3-AEO2015.1-2&map=lowmacro-d021915a.5-3-AEO2015.1-2&sourcekey=0>

Table D-4: U.S. Energy Information Administration (EIA) Annual Energy Review 2011.

Year	Primary Energy ²											Electric Power Sector ^{13,12}	Retail Electricity ¹⁵	Total Energy ^{4,10,14}	
	Coal	Natural Gas ³	Petroleum							Nuclear Fuel	Biomass ⁸				Total ^{9,10}
			Distillate Fuel Oil	Jet Fuel ⁴	LPG ⁵	Motor Gasoline ⁶	Residual Fuel Oil	Other ⁷	Total						
1970	0.38	0.59	1.14	0.73	1.43	2.85	0.42	1.38	1.7	0.16	1.29	1.08	0.32	4.98	1.65
1971	0.42	0.63	1.22	0.77	1.46	2.9	0.58	1.45	1.78	0.16	1.3	1.1	0.38	5.3	1.76
1972	0.45	0.68	1.22	0.79	1.49	2.88	0.62	1.49	1.78	0.16	1.33	1.16	0.42	5.54	1.84
1973	0.48	0.73	1.46	0.92	2	3.1	0.75	1.58	1.97	0.16	1.38	1.24	0.47	5.86	2.02
1974	0.88	0.89	2.44	1.58	2.8 [R]	4.32	1.82	2.6	3.06 [R]	0.2	1.5	1.94	0.87	7.42	2.87
1975	1.03	1.11	2.6	2.05	2.96 [R]	4.65	1.93	2.94	3.35 [R]	0.24	1.5	2.15	0.97	8.61	3.33
1976	1.04	1.46	2.77	2.25	3.2 [R]	4.84	1.5	3.08	3.47 [R]	0.25	1.53	2.34	1.03	9.13	3.57
1977	1.11	1.76	3.1	2.59	3.66 [R]	5.13	2.14	3.27	3.73	0.27	1.58	2.58	1.11	10.11	3.98
1978	1.27	1.95	3.26	2.87	3.61 [R]	5.24	2.08	3.45	3.84	0.3	1.6	2.72 [R]	1.27	10.92	4.23
1979	1.36	2.31	4.69	3.9	4.5 [R]	7.1	2.83	4.7	5.23	0.34	1.88	3.47	1.5	11.75	5.21
1980	1.46	2.86	6.7	6.36	5.64 [R]	9.84	3.88	7.04	7.4	0.43	2.26	4.57	1.77	13.95	6.89
1981	1.64	3.43	8.03	7.57	6.19 [R]	10.94	4.91	8.67	8.68	0.48	2.52	5.25	2.04	16.14	8.03
1982	1.73	4.23	7.78	7.23	6.68 [R]	10.38	4.65	7.87	8.4 [R]	0.54	2.6	5.33 [R]	2.05	18.19	8.46
1983	1.7	4.72	7.32	6.53	7.2 [R]	9.12	4.5	7.6	7.77	0.58	2.44	5.12 [R]	2.02	18.62	8.39
1984	1.7	4.75	7.37	6.25	6.95 [R]	8.89	4.75	7.72	7.68	0.67	2.53	5.04	2.02	18.5	8.29 [R]
1985	1.68	4.61	7.22	5.91	6.63 [R]	9.01	4.3	7.55	7.63	0.71	2.47	4.93 [R]	1.9	19.05	8.37
1986	1.62	4.07	5.68	3.92	6.49 [R]	6.79	2.37	5.8	5.74 [R]	0.7	2.12	3.97	1.6	19.05	7.3
1987	1.53	3.77	5.97	4.03	6.11 [R]	7.23	2.86	5.63	6.04	0.71	2.07	4	1.57	18.74	7.34
1988	1.5	3.78	5.83	3.8	5.92 [R]	7.33	2.35	5.26	5.91	0.73	2.09	3.89	1.41	18.68	7.26
1989	1.48	3.82	6.43	4.39	5.58 [R]	8.02	2.72	5.5	6.43	0.7	1.42	4.07	1.5	18.98	7.56 [R]
1990	1.49	3.82	7.68	5.88	6.83 [R]	9.12	3.17	5.82	7.47	0.67	1.32	4.46 [R]	1.48	19.32	8.25 [R]
1991	1.48	3.74	7.29	4.83	6.87 [R]	8.93	2.62	5.73	7.2 [R]	0.63	1.39	4.29 [R]	1.4	19.84	8.21 [R]
1992	1.45	3.83	7.09	4.52	6.25 [R]	8.96	2.28	5.51	7.07	0.59	1.32	4.24	1.38	20.06	8.13
1993	1.42	4.1	7.08	4.29	6.27 [R]	8.83	2.26	5.49	7.01 [R]	0.56	1.28	4.26 [R]	1.4	20.38	8.25
1994	1.38	4.08	6.99	3.95	6.61 [R]	8.96	2.32	5.47	7.06	0.56	1.38	4.27	1.36	20.33	8.3
1995	1.37	3.73	6.98	4	6.51 [R]	9.22	2.46	5.74	7.28	0.54	1.4	4.23	1.28	20.29	8.28
1996	1.33	4.25	7.87	4.82	7.98 [R]	9.85	2.8	6.2	8.01	0.51	1.25	4.63	1.35	20.16	8.75
1997	1.32	4.53	7.66	4.53	7.39 [R]	9.81	2.93	5.89	7.86	0.51	1.11	4.66	1.38	20.13	8.8
1998	1.28	4.13	6.57	3.35	5.95 [R]	8.45	2.15	5.02	6.63	0.5	1.27	4.08	1.32	19.6	8.2
1999	1.27	4.16	7.15	4.01	6.6 [R]	9.31	2.51	5.3	7.33	0.48	1.34	4.37	1.33	19.52	8.53
2000	1.24	5.6 [R]	9.86	6.64	9.55 [R]	11.8	4.32	7.04	9.82	0.46	1.57 [R]	5.7	1.7	20.03	10.28
2001	1.28	6.87	9.18	5.72	9.53 [R]	11.34	3.99	6.41	9.32	0.44	2.08	5.83	1.85	21.4	10.73
2002	1.3	5.31	8.64	5.33	8.09 [R]	10.68	3.91	6.59	8.83	0.43	2.19	5.25	1.54	21.15	10.06
2003	1.32	7.08	10.05	6.46	10.32 [R]	12.34	4.75	7.62	10.3	0.42	1.98	6.28	1.84	21.85	11.42
2004	1.41	7.91	12.23	8.93	12.24 [R]	14.67	4.92	8.56	12.27	0.42	2.17	7.37	2	22.38	12.87
2005	1.62	9.92	16.4	12.86	14.58 [R]	17.85	6.65	10.98	15.53	0.43	3.1	9.24	2.61	23.92	15.52
2006	1.78	9.62	18.55	14.8	16.85 [R]	20.27	7.93	13.37	17.92	0.44	3.13 [R]	10.2	2.48	26.15	17.36
2007	1.88	9.31	19.87	16.0	18.76 [R]	22.01	8.57	14.94	19.47	0.46	3.32 [R]	10.74 [R]	2.68	26.84	18.24
2008	2.21	10.83	26.33	22.56	23.35 [R]	25.53	12.64	18.83	24.18	0.47	3.69 [R]	12.93	3.21	28.64	21.37
2009	2.33	7.67 [R]	16.88	12.6	16.38 [R]	18.5	9.69	14.3 [R]	16.87 [R]	0.55	3.27 [R]	9.37	2.45 [R]	28.9	17.02 [R]
2010	2.42	7.41	20.62	16.28	19.6 [R]	21.98	11.2	17.97 [R]	20.32	0.62	3.45	10.63	2.62	28.92	18.73

Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

¹Includes electricity imports, which are not separately displayed. For 1981-1992, also includes fuel ethanol blended into motor gasoline that is not included in the motor gasoline data for those years.

²Consumption-weighted average prices for all sectors, including the electric power sector.

³Electricity-only and combined-heat-and-power (CHP) plants within the NAICS (North American Industry Classification System) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power producers.

⁴Natural gas, plus a small amount of supplemental gaseous fuels.

⁵Consumption-weighted average electric power sector price for coal, natural gas, petroleum, nuclear fuel, wood, waste, and electricity imports.

⁶Through 2004, includes kerosene-type and naphtha-type jet fuel. Beginning in 2005, includes kerosene-type jet fuel only.

⁷Retail electricity prices paid by ultimate customers, reported by electric utilities and, beginning in 1996, other energy service providers.

⁸Liquefied petroleum gases.

⁹Consumption-weighted average price for primary energy and retail electricity in the four end-use sectors (residential, commercial, industrial, and transportation); excludes energy in the electric power sector.

¹⁰Beginning in 1993, includes fuel ethanol blended into motor gasoline.

¹¹Notes: • Prices include taxes where data are available. • There are no direct fuel costs for hydroelectric, geothermal, wind, or solar energy.

¹²Wood and wood-derived fuels, and biomass waste; excludes fuel ethanol and biodiesel. Through 2000, also includes non-biomass waste.

¹³Includes coal coke imports and exports, which are not separately displayed. In 2010, coal coke imports averaged 13.37 dollars per million Btu, and coal coke exports averaged 6.74 dollars per million Btu.

¹⁴Source: U.S. Energy Information Administration, "State Energy Data 2010: Prices and Expenditures" (June 2012), U.S. Table ET.1.

[Web Page: For related information, see http://www.eia.gov/state/seds/seds-data-complete.cfm.](http://www.eia.gov/state/seds/seds-data-complete.cfm)