

Combined Heat and Power and Onsite Resilient Power Market Assessment

Appendix

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Table of Contents

NYSERDA RECORD OF REVISION.....	I
NOTICE.....	II
TABLE OF CONTENTS	I
APPENDIX A CUSTOMERS INTERVIEW GUIDE.....	A-1
A.1 Invitation.....	A-1
A.1.1 Those with CHP.....	A-1
A.1.2 Those without CHP.....	A-2
A.2 Instrument.....	A-4
A.2.1 Introduction and Screening Script.....	A-4
A.2.2 Nonparticipants with a CHP System.....	A-5
A.2.3 Nonparticipant without a CHP System.....	A-21
APPENDIX B PROFESSIONALS INTERVIEW GUIDE.....	B-1
B.1 Email Request for Interview	B-1
B.2 Phone Introduction.....	B-2
B.3 Voicemail Script.....	B-2
B.4 Screening Script	B-3
B.5 Company Overview	B-4
B.6 Company’s 2018 CHP Systems.....	B-5
B.6.1 2018 NYSERDA CHP Catalog Systems	B-5
B.6.2 2018 Non-NYSERDA CHP Catalog Systems.....	B-7
B.6.3 2018 Modular CHP Systems.....	B-10
B.7 Company’s Pre-2018 CHP Systems in NYS.....	B-11
B.8 Company’s CHP Systems in Upstate and Downstate NYS	B-12
B.9 Company’s CHP Costs	B-13
B.9.1 CHP Equipment Cost Trends.....	B-13
B.9.2 Balance-of-System Cost Categories.....	B-13
B.9.3 2018 NYS CHP Balance-of-System Cost Estimates	B-16
B.10 DOE CHP eCatalog	B-20
B.11 On-Site Resilient Power Systems	B-22
B.12 Closing	B-25

APPENDIX C	PROFESSIONALS WEB SURVEY	C-1
C.1	Introduction	C-1
C.1.1	Request to Complete Survey for Those We Did Not Reach Earlier in Year	C-1
C.1.2	Email Request to Complete Survey for Those We Surveyed Earlier in Year.....	C-1
C.2	Screening [ASK ALL]	C-2
C.3	Company Projects.....	C-3
APPENDIX D	SOFT COST COMPONENT DESCRIPTIONS	D-1

Appendix A Customers Interview Guide

A.1 Invitation

A.1.1 Those with CHP

A.1.1.1 Email Request for Interview – Those with CHP Systems

Subject: Let’s talk about CHP systems: NYSERDA wants to know your perspectives

Hello,

I am contacting you on behalf of the New York State Energy Research and Development Authority (NYSERDA). I am working with NYSERDA to understand the market for combined heat and power (CHP) systems in New York State. I understand that your firm has a CHP system at one of your New York buildings.

We’re offering a \$50 gift card in exchange for speaking with me on the phone for about 30 minutes. I’ll ask questions about why your organization chose to install a CHP system, if you installed other CHP systems in the state, and the costs of the system. There are no right or wrong answers, and everything you say is confidential.

It is important that I speak with someone who makes decisions about energy-using systems at your organization, such as an engineer or facilities manager. If you are not the right person, we would greatly appreciate you forwarding this message to the right contact.

To arrange a time to talk, or if there are any questions I can answer for you about this, please reply to this email or call me at ___-___-____.

Kind regards,

[NAME]

A.1.1.2 Phone Introduction

Hello,

My name is [NAME] and I am working with NYSERDA to better understand the New York market for combined heat and power (CHP) systems. I understand that your firm has a CHP system(s) in one of your New York buildings, is that correct?

We're offering a \$50 gift card in exchange for speaking with me for 20-30 minutes about your CHP system. Are you a good person to talk to about that system?

I would like to speak with a facilities manager or someone at your organization about why your organization chose to install a CHP system, if you installed other CHP systems in the state, and the costs of the system. There are no right or wrong answers, and everything you say is confidential.

Is there a good time to chat in the next week or so?

[SCHEDULE TIME]

A.1.1.3 Voicemail Script

Hi, my name is [NAME] and I'm calling on behalf of NYSERDA. My firm is working with NYSERDA to better understand the New York market for combined heat and power (CHP) systems. I understand that your firm has a CHP system(s) in New York. We're offering a \$50 gift card if I can speak with someone at your organization familiar with this system for 30 minutes. I'd ask questions about why your organization chose to install a CHP system, if you installed other CHP systems in the state, and the costs of the system. There are no right or wrong answers and everything you say is confidential. If you're not the best person to speak with about this, I'd greatly appreciate you helping connect me with who is.

Please give me a call back at ___-___-____. Again, my name is [NAME] and my number is ___-___-____ and I'm happy to answer any questions you may have. Thank you.

A.1.2 Those without CHP

A.1.2.1 Email Request for Interview

Subject: NYSERDA Needs Your Input to Help Customers Like You!

Hello,

I am contacting you on behalf of the New York State Energy Research and Development Authority (NYSERDA). I am working with NYSERDA to better understand the market for combined heat and power (CHP) systems, sometimes known as cogeneration systems, in New York State. Organizations like yours are leading the way on CHP adoption.

I'd like to hear whether your organization has ever considered a CHP system and, in general, how much you know about these onsite energy generation systems. There are no right or wrong

Combined Heat and Power and Onsite Resilient Power Market Assessment

answers and everything you say is confidential and not tied to your name or your company name in what we submit to NYSERDA. We're offering a \$50 gift card in exchange for speaking with me over the phone for about 20 minutes. We are not trying to sell anything. This call is purely about understanding interest and knowledge of CHP systems in New York so NYSERDA can best support the market for CHP systems in the state.

It is important that I speak with someone at your organization who makes decisions about the installation and use of large-scale energy-using systems at your facility. If you are not the appropriate person, we would greatly appreciate you forwarding this to the right contact or letting me know how to best reach that contact.

To schedule a time that works well for you, or if you have any questions for me, please reply to this email or call me at 503-943-2139. I look forward to hearing from you soon.

Kind regards,

[NAME]

A.1.2.2 Phone Request

Hello,

[If front desk/gatekeeper] My name is [NAME] and I'm working with the New York State Energy Research and Development Authority to understand how organization's like yours make decisions about onsite energy systems. Can I please speak with someone at your engineering dept/facilities dept?

[Once right contact on phone] My name is [NAME] and I am working with NYSERDA to better understand the market for combined heat and power (CHP) systems in New York State.

We're offering a \$50 gift card in exchange for speaking with me for 20 minutes about whether your organization has ever considered a CHP system and, in general, how much you know or don't know about them. There are no right or wrong answers and everything you say is confidential and not tied to your name or your company name.

Are you the right person to speak to about decisions regarding your company's energy-using systems?

[If no:] Ask for their contact information or to be transferred to them.

[If yes:] Schedule a time to talk] Is there a good time for us to chat in the next week or so?

[If needed:] We really want to hear from you because the market for these systems is still pretty limited, but organizations like yours [INSERT TYPE: College, hospital, nursing home, etc.] are leading the way in using these systems. NYSERDA really wants to hear from people like you to see the level of awareness and consideration given to these systems.

A.1.2.3 Voicemail Script

Hi, my name is [NAME]. My firm is working with NYSERDA to better understand the market for combined heat and power (CHP) systems in New York State. Organizations like yours are leading the way on CHP adoption. I'd like to chat with someone at your organization who makes decisions regarding energy-using systems. We're offering a \$50 gift card in exchange for speaking with me for about 20 minutes to hear how familiar your organization is with these systems or if you've ever considered one for your building. There are no right or wrong answers.

To schedule a time that works well for you, or if there's any questions I can answer about this, please call me back at XXX-XXX-XXXX. Again my name is [NAME]. I hope to hear from you soon. Thank you.

A.2 Instrument

A.2.1 Introduction and Screening Script

Hello. My name is _____ and I am contacting you from Opinion Dynamics on behalf of NYSERDA. My company is helping NYSERDA better understand the market for combined heat and power (CHP) systems in New York State. A CHP system is something that supplies power to your facility and uses the heat generated from making power for other purposes in the building such as heating water?

[ASK ALL]

S1. Do you have a CHP system at [Read Address from Call List if there is one or say "your location"?

1. Yes
2. No

[ASK IF S1 = 1 “Yes”]

S2. Did that CHP system receive an incentive from NYSERDA?

1. Yes [Thank and terminate; skip to end of survey]
2. No
3. Don’t know

[ASK IF S2 = 2 “No”]

S3. Great. We would like to ask questions about how and why you decided to install a CHP system, some of the installation costs, and how the CHP system has been working so far. Which of the following can you address?

1. Why your firm installed a CHP?
2. What the installations costs were for you CHP?
3. How the CHP system is working today?

A.2.2 Nonparticipants with a CHP System

A.2.2.1 Company Overview [ASK ALL]

[ASK ALL]

Q1. Before we begin, I want to get or verify a few details about you and your company. What is ... ? [Ask about each below.]

1. Your Name: [OPEN END]
2. Your company’s name: [OPEN END]
3. Your job title and role: [OPEN END]
4. Number of years you’ve been with your company: [OPEN END]
5. Role with the CHP system [OPEN END]

[ASK ALL]

Q2. How many employees (FTE) does your company have in the U.S. and in New York State? Your best estimates are fine.

1. Number of U.S. employees: [OPEN-ENDED RESPONSE] [This includes NYS employees]
2. Number of NYS employees: [OPEN-ENDED RESPONSE]

[ASK ALL]

Q3. How many buildings does your company have in the U.S. and in New York State? Your best estimates are fine.

1. Number of U.S. buildings: [OPEN-ENDED RESPONSE] [This includes NYS buildings]
2. Number of NYS buildings: [OPEN-ENDED RESPONSE]

[Do not read:]

98. Don't know
99. Refused

[IF Q3.2 > 1]

Q4. Thinking about you firm's buildings in New York State, how many of your company's buildings in New York State use an onsite CHP system?

1. Number of NYS buildings that use CHP system: [OPEN-ENDED RESPONSE]

[Do not read:]

98. Don't know
99. Refused

[ASK ALL]

Q5. Our records show that the building(s) or facility(ies) with an onsite CHP system is(are) used as a [INSERT BUILDING TYPE]. Is that correct? *[If needed: Our records are from the U.S. Department of Energy's CHP System database, which is publicly available on the Department of Energy's website.]*

1. Yes
2. No → [COLLECT CORRECT BUILDING TYPE]
98. Don't know
99. Refused

[ASK ALL]

Q6. Our records also show that the CHP system became operational in [INSERT INSTALLATION YEAR]. Is that correct? *[If needed: Our records are from the U.S.*

Department of Energy's CHP System database, which is publicly available on the Department of Energy's website.]

1. Yes
2. No → [COLLECT CORRECT INSTALLATION YEAR]
98. Don't know
99. Refused

A.2.2.2 Decision Making to Install CHP [ASK IF S2_1 = Yes]

Next, I have a few questions about how you learned about CHP systems and decided to purchase one for your building or facility.

[ASK ALL]

Q7. Would you say you know a lot, some, or a little about your CHP system? *[If needed: "Knowing a lot" would mean you know how CHP systems work, their different components and applications, and their impact on your company's energy usage and bills, and the like. "Knowing a little" would mean you know about the concept of CHP systems but not any of the details about how they work and the like. And, "knowing some" would be in between; you're aware of how they work and know some but not much about their components and applications and the like.]*

1. A lot
2. Some
3. A little
98. Don't know
99. Refused

[ASK IF Q7 = 1 or Q7 =2]

Q8. How did you first become aware of CHP systems?

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

Combined Heat and Power and Onsite Resilient Power Market Assessment

[ASK IF Q7 = 2 or Q7 =3]

Q9. How did you learn more about CHP systems? [*Probe: NYSERDA, other government agencies, training, peers/competitors/other buildings with CHP systems, your coworkers*]

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

[ASK IF Q7 = 1 or Q7 =2]

Q10. How did you learn that your facility or building would benefit from a CHP system?

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

[ASK IF Q7 = 1 or Q7 =2]

Q11. How did you determine what size and type of CHP system would work well for your building?

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

[ASK IF Q7 = 1 or Q7 =2]

Q12. Generally speaking, why did your company decide to purchase a CHP system instead of keeping what you had or going with something other than a CHP system?

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

[ASK IF Q7 = 1 or Q7 =2]

Q13. Who – as in what type of people (facilities staff, management staff, C-suite staff, etc.) - at your company were involved in the decision to purchase the CHP system?

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

[ASK IF Q7 = 1 or Q7 =2]

Q14. What company or vendor installed the CHP system? [If multiple companies] What role did each company play?

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

[ASK IF Q7 = 1 or Q7 =2]

Q15. Did you get bids from other companies or vendors?

1. Yes → How many?
2. No → Why not?
98. Don't know
99. Refused

[ASK IF Q7 = 1 or Q7 =2]

Q16. Why did you decide to purchase the specific CHP system you have instead of a different size, type, or brand of CHP system?

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

[ASK IF Q7 = 1 or Q7 =2]

Q17. Thinking about when you first started considering installing a CHP system, about how long did it take to decide to purchase a CHP system?

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

[ASK IF Q7 = 1 or Q7 =2]

Q18. Then, once the decision was made to purchase and install the CHP system, about how long did it take for the system to come online?

1. [OPEN-ENDED RESPONSE]
98. Don't know

99. Refused

A.2.2.3 Replication

[ASK ALL]

Q19. At the time you decided to install a CHP system, were you aware of NYSERDA's incentives for CHP?

1. Yes
2. No
98. Don't know

[ASK ALL]

Q20. Did you receive information from NYSERDA that helped you make a decision about CHP?

1. Yes
2. No
98. Don't know

[ASK IF Q20= 1]

Q21. How important was the information received from NYSERDA?

1. Very Important
2. Somewhat important
3. A little important.
4. Not at all important

[ASK IF Q21 = 1 OR 2 OR 3]

Q22. What information from NYSERDA was most useful?

1. [OPEN-ENDED RESPONSE]
98. Don't know

[ASK IF Q19 = 1]

Q23. Did you consider participating in NYSERDA's CHP program?

1. Yes
2. No
98. Don't know

[ASK IF Q23 = 1]

Q24. Why did you consider participating in NYSERDA's CHP program?

1. [OPEN-ENDED RESPONSE]
98. Don't know

[ASK IF Q23 = 2]

Q25. Why did you NOT consider participating in NYSERDA's CHP program?

1. [OPEN-ENDED RESPONSE]
98. Don't know

A.2.2.4 Non-Equipment Costs of CHP [ASK IF S2_2 = Yes]

Now, I have a few questions about the soft costs of your CHP system. The soft costs are the non-equipment costs associated with designing and installing CHP systems, such as the engineering, construction, permitting, interconnection, and other non-equipment expenses.

[ASK IF S2_2= YES]

Q26. What was the total cost of the CHP system, including all the soft costs and the equipment costs? Was it higher, lower, or about the same as expected?

1. CHP Total costs Equipment and non-Equipment costs: \$
2. Higher, lower, same as expected:

[ASK IF S2_2= YES]

Q27. Did you company break out the cost of the hardware from the total cost?

1. Yes
2. CHP Equipment cost: \$
3. CHP non-Equipment costs: \$
4. No → Why not? [OPEN END RESPONSE] SKIP TO 4

[ASK IF Q27=1]

Q28. Did your company itemize or record the various soft cost components involved in designing and installing the CHP system?

1. Yes
98. Don't know
99. Refused

[ASK IF S2_2= YES]

Q29. Great. We learned from CHP system vendors and installers that they tend to categorize the CHP system soft costs into 11 components. As I read each component and a short description, please tell me whether your company itemized or recorded the cost component.

CHP Cost Categories and Descriptions Table

Category	Component	Description
Design	Engineering and Architecture	Cost of designing the system and integrating it with electrical and mechanical systems
Construction	Site preparation	Cost to prepare the site where CHP system will be installed (e.g. concrete flooring)
	Installation labor/materials	Labor cost for the civil, mechanical, and electrical work and cost of materials such as ductwork, piping, and wiring
	Rigging and coordination	Cost of items such as crane rental and use, insurance etc. associated with moving large CHP systems
	Project and construction management	General contractor mark-up and bonding, and performance guarantees
Permits	Permitting fees	Fees related to procuring required permits
	Permitting labor	Labor related to procuring required permits
Interconnection	Interconnection Fees	Cost of interconnection and paralleling. For larger systems, this reflects the cost of paralleling a synchronous generator. For smaller systems, this may be included in the cost of equipment
	Interconnection Labor	Labor associated with interconnection
Contingency	Project contingency	Reserve for unexpected expenses
Financing	Project financing	Cost, interest, and other charges involved in borrowing the money to purchase the system

CHP Cost Category Answers Table

Balance-of-System Cost Components	1. [ASKALL] Track cost component?	2. [IF Q29.1 = NO] Is it bundled with other costs? Which costs?
A. Engineering and Architecture, or Design Costs	1. Yes 2. No 98. DK	[OPEN ENDED]
B. Site preparation costs	1. Yes 2. No 98. DK	[OPEN ENDED]

Combined Heat and Power and Onsite Resilient Power Market Assessment

Balance-of-System Cost Components	1. [ASKALL] Track cost component?	2. [IF Q29.1 = NO] Is it bundled with other costs? Which costs?
C. Installation labor and materials costs	1. Yes 2. No 98. DK	[OPEN ENDED]
D. Rigging and coordination costs	1. Yes 2. No 98. DK	[OPEN ENDED]
E. Project and construction management costs	1. Yes 2. No 98. DK	[OPEN ENDED]
F. Permitting fees	1. Yes 2. No 98. DK	[OPEN ENDED]
G. Permitting labor costs	1. Yes 2. No 98. DK	[OPEN ENDED]
H. Interconnection fees	1. Yes 2. No 98. DK	[OPEN ENDED]
I. Interconnection labor costs	1. Yes 2. No 98. DK	[OPEN ENDED]
J. Project contingency costs	1. Yes 2. No 98. DK	[OPEN ENDED]
K. Project financing costs	1. Yes 2. No 97. NA 98. DK	[OPEN ENDED]

Combined Heat and Power and Onsite Resilient Power Market Assessment

[ASK IF S2_2= YES]

Q30. For each soft cost component you tracked, how much did you pay for it and was it higher, lower, or about the same as what you expected?

Balance-of-System Cost Components	1. [ASKALL] How much?	2. [ASKALL] Higher, lower, or same as expected?
[DISPLAY IF Q29A.1 = 1] A. Engineering and Architecture	\$	1. Higher 2. Same 3. Lower 98. DK
[DISPLAY IF Q29B.1 = 1] B. Site preparation	\$	1. Higher 2. Same 3. Lower 98. DK
[DISPLAY IF Q29C.1 = 1] C. Installation labor/ materials	\$	1. Higher 2. Same 3. Lower 98. DK
[DISPLAY IF Q29D.1 = 1] D. Rigging and coordination	\$	1. Higher 2. Same 3. Lower 98. DK
[DISPLAY IF Q29E.1 = 1] E. Project and construction management	\$	1. Higher 2. Same 3. Lower 98. DK
[DISPLAY IF Q29F.1 = 1] F. Permitting fees	\$	1. Higher 2. Same 3. Lower 98. DK
[DISPLAY IF Q29G.1 = 1] G. Permitting labor	\$	1. Higher 2. Same 3. Lower 98. DK
[DISPLAY IF Q29H.1 = 1] H. Inter-connection fees	\$	1. Higher 2. Same 3. Lower 98. DK

Combined Heat and Power and Onsite Resilient Power Market Assessment

Balance-of-System Cost Components	1. [ASKALL] How much?	2. [ASKALL] Higher, lower, or same as expected?
[DISPLAY IF Q29I.1 = 1] I. Interconnection labor	\$	1. Higher 2. Same 3. Lower 98. DK
[DISPLAY IF Q29J.1 = 1] J. Project contingency	\$	1. Higher 2. Same 3. Lower 98. DK
[DISPLAY IF Q29K.1 = 1] K. Project financing	\$	1. Higher 2. Same 3. Lower 98. DK

Barriers to Installing CHP Systems [ASK ALL]

These next questions are about your satisfaction with the CHP system and the process of purchasing and installing it.

[ASK ALL]

Q31. Overall, how satisfied or dissatisfied are you with the process you went through from first learning about to ultimately purchasing and installing the CHP system? Would you say you are ...?

1. Very satisfied
2. Somewhat satisfied
3. A little satisfied
4. A little dissatisfied
5. Somewhat dissatisfied
6. Very dissatisfied
98. Don't know
99. Refused

[ASK ALL]

Q32. Why do you say that?

1. [OPEN-ENDED RESPONSE]
98. Don't know

99. Refused

[ASK ALL]

Q33. What do you think were the most difficult steps or aspects of the process from first learning about CHP to installing a system?

1. [OPEN-ENDED RESPONSE]

98. Don't know

99. Refused

[ASK ALL]

Q34. How do think the process could have been improved?

1. [OPEN-ENDED RESPONSE]

98. Don't know

99. Refused

[ASK ALL]

Q35. What do you think worked well in that process from learning about CHP to installing?

1. [OPEN-ENDED RESPONSE]

98. Don't know

99. Refused

[ASK ALL]

Q36. Other than costs and payback, what are the biggest challenges or barriers that prevent companies like yours from purchasing a CHP system? [*If needed: We are interested in knowing if there are barriers other than financial?*]

1. [OPEN-ENDED RESPONSE]

98. Don't know

99. Refused

[ASK ALL]

Q37. Overall, how satisfied or dissatisfied are you with the CHP system?

1. Very satisfied

2. Somewhat satisfied

3. A little satisfied

- 4. A little dissatisfied
- 5. Somewhat dissatisfied
- 6. Very dissatisfied
- 98. Don't know
- 99. Refused

[ASK ALL]

Q38. Why do you say that?

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know
- 99. Refused

[ASK ALL]

Q39. Are you planning on replacing or upgrading the CHP system when it is no longer operational?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

[ASK IF Q39 = 1, YES]

Q40. What changes, if any, do you plan to make or would like to make to the CHP system when you have to upgrade or replace it?

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know
- 99. Refused

[ASK IF Q39 = 2, NO]

Q41. Why are you not planning on replacing or upgrading the CHP?

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know
- 99. Refused

A.2.2.5 Interest in On-Site Resilient Power Systems

Solar

[ASK ALL]

Q42. Have you investigated installing on-site solar for your facility?

1. Yes
2. No
98. Don't know
99. Refused

[ASK ALL]

Q43. Has a vendor/contractor ever tried to sell you on-site solar for your facility?

1. Yes
2. No
98. Don't know
99. Refused

[ASK IF Q42= YES]

Q44. Why did you investigate solar for your facility?

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

[ASK IF Q42 = YES]

Q45. How did you investigate solar for your facility? [*Probes: Did you identify contractors to provide estimates? Did you look to what your peers were doing with solar?*]

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

[ASK IF Q42 = NO]

Q46. How interested are you in investigating installing on-site solar for your site in the next year?

1. [OPEN-ENDED RESPONSE]

- 98. Don't know

Storage

[ASK ALL]

Q47. Have you investigated installing power storage for your facility?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

[ASK ALL]

Q48. Has a vendor/contractor ever tried to sell you on-power storage for your facility?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

[ASK IF Q47 = YES]

Q49. Why did you investigate power storage for your facility?

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know
- 99. Refused

[ASK IF Q47 = YES]

Q50. How did you investigate power storage for your facility? [*Probes: Did you identify contractors to provide estimates? Did you look to what your peers were doing with power storage?*]

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know
- 99. Refused

[ASK IF Q47= NO]

Q51. How interested are you in investigating installing on-site power storage for your site in the next year?

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know
- 99. Refused

Combined

We are almost done with the questions I have. Thanks for hanging in there with me for these last few questions.

[ASK ALL]

Q52. How often, if at all, have power outages occurred at your facility? [Probes: Do you experience frequent power outages or disruptions?]

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know
- 99. Refused

[ASK ALL]

Q53. Have you experienced a power outage that had significant negative effects on your operations? If so, what were those negative effects?

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know
- 99. Refused

[ASK ALL]

Q54. How interested, if at all, are you in learning more about ways to mitigate the negative effects of power reliability problems?

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know
- 99. Refused

A.2.2.6 Closing

[ASK ALL]

Q55. Based on your experience, what suggestions do you have about how NYSERDA could facilitate more widespread adoption of CHP and associated systems like solar and storage in New York State? [*Probe: What are the market adoption barriers? Any differences across building types, system types, geography, or other characteristics? How can NYSERDA help?*]

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK ALL]

Q56. Can we contact you again if we need clarification on any of the questions we asked today?

1. Yes → Collect contact info if needed [OPEN END]
2. No

Have a great rest of your day/evening and thanks so much for taking the time to answer our questions. Your feedback will be very helpful.

A.2.3 Nonparticipant without a CHP System

A.2.3.1 Introduction and Screening Script

Hello. My name is _____ and I am contacting you on behalf of NYSERDA from Opinion Dynamics. My company is helping NYSERDA better understand the market for onsite electric and thermal energy generation technologies for commercial and industrial buildings in New York State.

A.2.3.2 Company Overview [ASK ALL]

[ASK ALL]

Q57. Before we begin, I want to get a few details about you and your company. What is ... ?
[Ask about each below.]

1. Your Name: [OPEN END]
2. Your company's name: [OPEN END]

3. Your job title and role: [OPEN END]
4. Number of years you've been with your company: [OPEN END]

[ASK ALL]

Q58. How many employees (FTE) does your company have in the U.S. and in New York State? Your best estimates are fine.

1. Number of U.S. employees: [OPEN-ENDED RESPONSE]
2. Number of NYS employees: [OPEN-ENDED RESPONSE]

[ASK ALL]

Q59. How many buildings does your company have in the U.S. and in New York State? Your best estimates are fine.

1. Number of U.S. buildings: [OPEN-ENDED RESPONSE]
2. Number of NYS buildings: [OPEN-ENDED RESPONSE]

A.2.3.3 Barriers: Awareness CHP Systems [ASK ALL]

Q60. Are you aware of onsite combined heat and power systems that generate electricity for a building or facility and then use the heat from the electric generation for space or water heating in the building or facility? These are often referred to as CHP systems.

1. Yes → SKIP TO Q72
2. No

A.2.3.4 Unaware of CHP: Barriers: Interest in CHP and Onsite Generation [ASK IF Q60 = NO, NOT AWARE OF CHP]

[ASK [IF Q60 = 2, NO]

Q61. Okay, have you and/or your company investigated any technologies that generate onsite electricity and thermal energy at one or more of your buildings or facilities?

1. Yes
2. No → SKIP TO Q64
98. Don't know
99. Refused

[ASK IF Q60 = NO AND Q61 = YES]

Q62. What types of technologies did you investigate?

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q60 = 2, NO AND Q61 = 1, YES]

Q63. Did your company have this/these installed at any of your buildings or facilities in New York State?

1. Yes → SKIP TO Q65
2. No → Why not? [OPEN END RESPONSE] → SKIP TO Q65
98. Don't know
99. Refused

[ASK IF Q60 = 2, NO AND Q61 = 2, NO]

Q64. Why not?

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q60 = 2, NO]

Q65. [IF Q60 = NO] Does your company have any onsite generation technologies at any of your buildings or facilities in New York State?

1. Yes → What types of technologies? [OPEN END RESPONSE]
2. No → Why not? [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q60 = 2, NO]

Q66. Combined heat and power systems use gas or liquid fuels, like natural gas, propane, waste gas, or oils, to power a turbine or engine that generates electricity and heat onsite for a facility or building. The heat is then used to create steam or hot water that can be used for space heating, water heating, or other process that use thermal energy in the

Combined Heat and Power and Onsite Resilient Power Market Assessment

facility or building. How interested would you and/or your company be in investigating an onsite CHP system?

1. Very interested → SKIP TO Q68
2. Somewhat interested → SKIP TO Q68
3. A little interested → SKIP TO Q68
4. Not interested
98. Don't know
99. Refused

[ASK IF Q60 = 2, NO AND Q66 = NOT INTERESTED]

Q67. Why not?

1. [OPEN END RESPONSE] → SKIP TO 0
98. Don't know
99. Refused

[ASK IF Q60 = NO AND Q66= 1, 2, or 3 INTERESTED]

Q68. If you were to want to investigate a CHP system for your building, would you know where to begin to find more information?

1. Yes → Where? [OPEN END RESPONSE]
2. No
98. Don't know
99. Refused

[ASK IF Q60 = NO AND Q66= 1, 2, or 3 INTERESTED]

Q69. [IF Q60 = NO AND Q65 = INTERESTED] Who else in your company would be involved in making decisions about purchasing and installing a CHP system? [*If needed: facilities staff, management staff, C-suite staff, etc.*]

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q60 = NO AND Q66= 1, 2, or 3 INTERESTED]

Q70. Do you think those in your company who would be involved in decisions about a CHP system would also be interested in learning more about a CHP system for your company?

1. Yes
2. No → Why not? [OPEN END RESPONSE]
98. Don't know
99. Refused

Unaware of CHP Closing [IF Q60 = NO, NOT AWARE OF CHP]

Q71. That's all the questions I have for you today. Just so you know, you can find more information about CHP systems through NYSERDA and the U.S. Department of Energy. Do you have any questions for me? Thanks for feedback and have great rest of your day.

A.2.3.5 Aware of CHP: Barriers: Interest in CHP Systems [ASK IF Q60 = YES, AWARE OF CHP]

[ASK IF Q60 = 1, YES]

Q72. [ASK IF Q60 = YES] How much would you say you know a lot, some, or a little about CHP systems? *[If needed: "Knowing a lot" would mean you know a lot about how CHP systems work, their different components and applications, and the like. "Knowing a little" would mean you know about the concept of CHP systems but not any of the details about how they work and the like. And, "knowing some" would be in between; you're aware of how they work and know some but not much about their components and applications and the like.]*

1. A lot
2. Some
3. A little
98. Don't know
99. Refused

[ASK IF Q60 = 1, YES]

Q73. How did you first become aware of CHP systems?

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

[ASK IF Q60 = 1, YES]

Q74. How, if at all, did you learn more about CHP systems? [*Probe: NYSERDA, other government agencies, training, peers/competitors/other buildings with CHP systems, your coworkers*]

1. [OPEN-ENDED RESPONSE]
98. Don't know
99. Refused

[ASK IF Q60 = 1, YES]

Q75. Have you and/or your company investigated CHP systems for one or more of your buildings or facilities?

1. Yes → Why? [OPEN END RESPONSE] SKIP TO Q81
2. No → Why not? [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q75 = NO]

Q76. How interested would you and/or your company be in investigating an onsite CHP system?

1. Very interested → SKIP TO Q78
2. Somewhat interested → SKIP TO Q78
3. A little interested → SKIP TO Q78
4. Not interested
98. Don't know
99. Refused

[ASK IF Q60 = YES AND Q75 = NO AND Q76 = NOT INTERESTED]

Q77. Why are you not interested in onsite CHP?

1. [OPEN END RESPONSE] → *Just so you know, you can find more information about CHP systems through NYSERDA and the U.S. Department of Energy* → SKIP TO Q86
98. Don't know
99. Refused

[ASK IF Q60 = YES AND Q75 = NO AND Q76 = INTERESTED]

Q78. [IF Q60 = YES AND Q75 = NO AND Q76 = INTERESTED] If you were to want to investigate a CHP system for your building, would you know where to begin to find more information?

1. Yes → Where? [OPEN END RESPONSE]
2. No
98. Don't know
99. Refused

[ASK IF Q60 = YES AND Q75 = NO AND Q76 = INTERESTED]

Q79. Who else in your company would be involved in making decisions about purchasing and installing a CHP system?

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q60 = YES AND Q75 = NO AND Q76 = INTERESTED]

Q80. Do you think those in your company who would be involved in decisions about a CHP system would also be interested in learning more about a CHP system for your company?

1. Yes → SKIP TO Q86
2. No → Why not? [OPEN END RESPONSE] → *Just so you know, you can find more information about CHP systems through NYSERDA and the U.S. Department of Energy* → SKIP TO Q86
98. Don't know
99. Refused

[ASK IF Q75 = YES]

Q81. How far along in the process of investigating a CHP system did you get? [*If needed: Did you just do some preliminary research and about what and from where (NYSERDA, DOE, peers/competitors, etc.)? Did you talk to any CHP vendors or installers, and how many? Did you get proposals or bids from vendors or installers? Did you have an engineering analysis done?*]

1. [OPEN END RESPONSE]

- 98. Don't know
- 99. Refused

[ASK IF Q75 = YES]

Q82. Why did you decide to stop the investigation or stop short of purchasing a CHP system?

- 1. [OPEN END RESPONSE]
- 98. Don't know
- 99. Refused

[ASK IF in Q75 = YES]

Q83. Do you think you will continue the investigation or move forward with purchasing a CHP system in the future?

- 1. Yes → When? [OPEN END RESPONSE]
- 2. No → Why not? [OPEN END RESPONSE]
- 98. Don't know
- 99. Refused

[ASK IF Q60 = YES AND Q75 = YES]

Q84. Who else in your company would be involved in making decisions about purchasing and installing a CHP system? *[If needed: facilities staff, management staff, C-suite staff, etc.]*

- 1. [OPEN END RESPONSE]
- 98. Don't know
- 99. Refused

[ASK IF Q60 = YES AND Q75 = YES]

Q85. When you were investigating the system, were the people in your company who would be involved in the decision, supportive of learning more about a CHP system for your company?

- 1. Yes
- 2. No → Why not? [OPEN END RESPONSE]
- 98. Don't know
- 99. Refused

[ASK IF Q60 = YES]

Q86. Have you or your company investigated any other technologies that generate onsite electricity and thermal energy at one or more of your buildings or facilities?

1. Yes
2. No → SKIP TO Q89
98. Don't know
99. Refused

[ASK IF Q60 = YES AND Q86 = YES]

Q87. What types of technologies did you investigate?

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q60 = YES AND Q86 = YES]

Q88. [ASK IF Q60 = YES AND Q86 = YES] Did your company have this/these installed at any of your buildings or facilities in New York State?

1. Yes → SKIP TO Q90
2. No → Why not? [OPEN END RESPONSE] SKIP TO Q90
98. Don't know
99. Refused

[ASK IF Q60 = YES AND Q86 = NO]

Q89. Why not?

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q60 = YES]

Q90. Does your company have any onsite generation technologies at any of your buildings or facilities in New York State?

1. Yes → What types of technologies? [OPEN END RESPONSE]
2. No → Why not? [OPEN END RESPONSE]

- 98. Don't know
- 99. Refused

A.2.3.6 Aware of CHP: Interest in On-Site Resilient Power Systems [ASK ALL]

Solar

[ASK ALL]

Q91. Have you investigated installing on-site solar for your facility?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

[ASK ALL]

Q92. Has a vendor/contractor ever tried to sell you on-site solar for your facility?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

[ASK IF Q91 = YES]

Q93. Why did you investigate solar for your facility?

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know
- 99. Refused

[ASK IF Q91 = YES]

Q94. How did you investigate solar for your facility? [*Probes: Did you identify contractors to provide estimates? Did you look to what your peers were doing with solar?*]

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know
- 99. Refused

[ASK IF Q91 = NO]

Q95. How interested are you in investigating installing on-site solar for your site in the next year?

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know

Storage

[ASK ALL]

Q96. Have you investigated installing power storage for your facility?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

[ASK ALL]

Q97. Has a vendor/contractor ever tried to sell you on-power storage for your facility?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

[ASK IF Q96= YES]

Q98. Why did you investigate power storage for your facility?

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know
- 99. Refused

[ASK IF Q96= YES]

Q99. How did you investigate power storage for your facility? [*Probes: Did you identify contractors to provide estimates? Did you look to what your peers were doing with power storage?*]

- 1. [OPEN-ENDED RESPONSE]
- 98. Don't know

99. Refused

[ASK IF Q96= NO]

Q100. How interested are you in investigating installing on-site power storage for your site in the next year?

1. [OPEN-ENDED RESPONSE]

98. Don't know

99. Refused

Combined

We're almost done, just a few more questions.

[ASK ALL]

Q101. How often, if at all, have power outages occurred at your facility? [Probes: Do you experience frequent power outages or disruptions?]

1. [OPEN-ENDED RESPONSE]

98. Don't know

99. Refused

[ASK ALL]

Q102. Have you experienced a power outage that had significant negative effects on your operations? If so, what were those negative affects?

1. [OPEN-ENDED RESPONSE]

98. Don't know

99. Refused

[ASK ALL]

Q103. How interested, if at all, are you in learning more about ways to mitigate the negative effects of power reliability problems?

1. [OPEN-ENDED RESPONSE]

98. Don't know

99. Refused

A.2.3.7 Aware of CHP: Closing [IF Q60 = YES, AWARE OF CHP]

Q104. Based on your experience, what suggestions do you have about how NYSERDA could facilitate more widespread adoption of CHP and associated systems like solar and storage in New York State? [*Probe: What are the market adoption barriers? Any differences across building types, system types, geography, or other characteristics? How can NYSERDA help?*]

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK ALL]

Q105. Can we contact you again if we need clarification on any of the questions we asked today?

1. Yes → Collect contact info if needed [OPEN END]
2. No

Have a great rest of your day/evening and thanks so much for taking the time to answer our questions. Your feedback will be very helpful.

Appendix B Professionals Interview Guide

B.1 Email Request for Interview

Subject: Your assistance needed to understand the CHP market in New York

Hello,

I am contacting you on behalf of the New York State Energy Research and Development Authority (NYSERDA). I work for a company called Opinion Dynamics and I am working with NYSERDA to understand the market for combined heat and power (CHP) systems in New York State. I understand that your firm has experience selling and installing CHP systems in New York State.

I would like to schedule a time to speak with you about your company's CHP work in New York State over the course of the next few weeks. It is very important that we get feedback from people like you in order to understand the CHP market and for NYSERDA to understand how they can best support the market.

We need about 45 to 60 minutes of your time to go through the questions we have and it may require that we email you some questions. The topics we want to cover are

- CHP Systems you installed/designed in 2018
- CHP Systems you installed/designed prior to 2018
- Modular CHP systems you sell
- Where in New York you sell CHP systems
- Costs of CHP, especially costs associated with installation, permits, and design
- CHP systems combined with solar and battery storage

Please contact me at ____@*opiniondynamics.com* or ____-____-____ with some times that work for you or I will call you in the next several days to arrange a time to talk.

B.2 Phone Introduction

Hello,

My name is _____ and I am contacting you on behalf of NYSERDA from a company called Opinion Dynamics. I am working with NYSERDA to understand the market for combined heat and power (CHP) systems in New York State. I understand that your firm has experience selling and installing CHP systems in New York State.

I would like to schedule a time to speak with you about your company's CHP work in New York State over the course of the next few weeks. It is very important that we get feedback from people like you in order to understand the CHP market and for NYSERDA to understand how they can best support the market.

We need about 45 to 60 minutes of your time.

[IF NEEDED] The topics we want to cover are

- *CHP Systems you installed/designed in 2018*
- *CHP Systems you installed/designed prior to 2018*
- *Modular CHP systems you sell*
- *Where in New York you sell CHP systems*
- *Costs of CHP, especially costs associated with installation, permits, and design*
- *CHP systems combined with solar and battery storage*

[SCHEDULE TIME]

B.3 Voicemail Script

Hi, my name is [NAME] and I'm calling on behalf of NYSERDA. My firm is working with NYSERDA to better understand the market for combined heat and power (CHP) systems in New York State. I understand that your firm has either sold or installed CHP systems in New York State in the past.

I'd like to see if we can schedule a time to talk about your company's CHP work in New York State in the next couple weeks. It is only by getting feedback from people like you that we can understand the CHP market and so that NYSERDA can understand how they can best support the market.

Please give me a call back at ___-___-____. Again, my name is [NAME] and I'm happy to answer any questions you may have. Thank you.

B.4 Screening Script

[ASK ALL]

S1. Did your company install or assist in installing CHP systems in New York State in the past?

1. Yes
2. No → [THANK AND TERMINATE]

[Do not read:]

98. Don't know → [THANK AND TERMINATE]

[ASK IF S1 = 1, YES]

S2. Are you familiar with your company's work to install those CHP systems?

1. Yes
2. No → [THANK AND TERMINATE]

[Do not read:]

98. Don't know → [THANK AND TERMINATE]

[IF S2 = 2 OR 98]

S3. Can you provide contact information for someone at your company who would be more familiar with your company's work to install CHP systems in New York?

1. Yes → [COLLECT CONTACT INFO, THANK AND TERMINATE]
2. No → [THANK AND TERMINATE]

[Do not read:]

98. Don't know → [THANK AND TERMINATE]
99. Refused → [THANK AND TERMINATE]

[IF S2 = 1, PROCEED WITH SCHEDULING/CONDUCTING INTERVIEW]

Great. It looks like you are the person we would like to speak with. We would like to ask you some general questions about your perceptions and experience with the CHP market and some specific questions about the number and size of CHP systems by building type. If there are some questions you can't answer over the phone, we will follow up with an email questionnaire that

you can complete at your convenience. Do you have availability in the next two weeks when we can talk?

[SCHEDULE TIME OR BEGIN INTERVIEW]

B.5 Company Overview

[ASK ALL]

Q1. Before we begin, can I get your name, your company's name, your job title and role, the number of years you've been working for your company, and the number of years you've been working in the CHP market?

1. Employee's Name: [OPEN END]
2. Company name: [OPEN END]
3. Job title and role: [OPEN END]
4. Years with company: [OPEN END]
5. Years in CHP market: [OPEN END]

[ASK ALL]

Q2. How many employees (FTE) does your company have in the U.S. and in New York State? Your best estimates are fine.

1. Number of U.S. employees: [OPEN-ENDED RESPONSE]
2. Number of NYS employees: [OPEN-ENDED RESPONSE]

[Do not read:]

98. Don't know
99. Refused

[ASK ALL]

Q3. Approximately how many CHP installations that your company was involved in became operational during 2018 anywhere in the U.S.?

1. Total number of 2018 CHP systems: [OPEN-ENDED RESPONSE]

[Do not read:]

98. Don't know
99. Refused

[ASK ALL]

Q4. What was your company’s total revenue from the CHP systems that became operational in 2018? *[If needed: This includes all CHP systems that your company installed or assisted in installing and that became operational anywhere in the U.S. during 2018.]*
Your best estimates are fine.

1. Total revenue from 2018 CHP systems: [OPEN-ENDED RESPONSE]

[Do not read:]

- 98. Don't know
- 99. Refused

B.6 Company’s 2018 CHP Systems

The next several questions are about the CHP systems your company completed or assisted in completing in New York State in 2018.

B.6.1 2018 NYSERDA CHP Catalog Systems

[ASK ALL]

Q5. Thinking about the CHP systems your company was involved in and that became operational in New York State in 2018, how many were systems included in NYSERDA’s “Combined Heat and Power Catalog”? *[If needed: These are CHP systems that would have qualified for NYSERDA incentives and support. Put in number of unique system types, not projects]*

1. Number of NYSERDA Catalog CHP systems in 2018: [OPEN-ENDED RESPONSE]
→ IF = 0, SKIP TO Q10

[Do not read:]

- 98. Don't know
- 99. Refused

[ASK IF Q5 > 0]

Q6. Was (Were) any of your company’s NYSERDA CHP catalog system(s) that became operational in 2018 in New York State installed in...?

Building Type	1. Yes	2. No	98. Don’t know
A. Multifamily building(s)			
B. K-12 School(s)			

Combined Heat and Power and Onsite Resilient Power Market Assessment

Building Type	1. Yes	2. No	98. Don't know
C. College or University campus(es)			
D. Hotel(s)			
E. Hospital(s)			
F. Assisted Living or Nursing Home(s)			
G. Office(s)			
H. Other type(s) [specify: OPEN END]			

[ASK IF Q5 > 1]

Q7. For those building types, How many of your company's 2018 NYSERDA CHP catalog systems were installed in...?

DISPLAY LOGIC	Building Type	1. Number of NYSERA CHP systems in 2018	98. Don't know
[IF Q6_A SELECTED]	Multifamily buildings		
[IF Q6_B SELECTED]	K-12 Schools		
[IF Q6_C SELECTED]	Colleges or Universities		
[IF Q6_D SELECTED]	Hotels		
[IF Q6_E SELECTED]	Hospitals		
[IF Q6_F SELECTED]	Assisted Living or Nursing Homes		
[IF Q6_G SELECTED]	Offices		
[IF Q6_H SELECTED]	All other types		

[ASK IF Q5 > 0]

Q8. What is the total aggregate capacity, in kilowatts, of your company's NYSERDA CHP catalog system(s) that became operational in 2018 that was(were) installed in...? [*If needed: If you don't know the kilowatt capacity by building type, do you know the total capacity of all your 2018 NYSERDA CHP catalog systems?*]

DISPLAY LOGIC	Building Type	1. Total Aggregate kW Capacity of NYSERA CHP systems in 2018	98. Don't know
[IF Q6_A SELECTED]	Multifamily buildings		
[IF Q6_B SELECTED]	K-12 Schools		
[IF Q6_C SELECTED]	Colleges or Universities		
[IF Q6_D SELECTED]	Hotels		
[IF Q6_E SELECTED]	Hospitals		
[IF Q6_F SELECTED]	Assisted Living or Nursing Homes		

Combined Heat and Power and Onsite Resilient Power Market Assessment

DISPLAY LOGIC	Building Type	1. Total Aggregate kW Capacity of NYSERDA CHP systems in 2018	98. Don't know
[IF Q6_G SELECTED]	Offices		
[IF Q6_H SELECTED]	All other types		
[IF A-H = DON'T KNOW]	Total across all buildings		

[ASK IF Q5 > 0]

Q9. What is the estimated total aggregate cost to the customer of your company's NYSERDA CHP catalog system(s) that became operational in 2018 that was(were) installed in...? *[If needed: If you don't know the costs by building type, do you know the total aggregate costs of all your 2018 NYSERDA CHP catalog systems?]* Your best estimate is fine.

DISPLAY LOGIC	Building Type	1. Total Aggregate Cost (\$) to Customer of NYSERDA CHP systems in 2018	98. Don't know
[IF Q6_A SELECTED]	Multifamily buildings		
[IF Q6_B SELECTED]	K-12 Schools		
[IF Q6_C SELECTED]	Colleges or Universities		
[IF Q6_D SELECTED]	Hotels		
[IF Q6_E SELECTED]	Hospitals		
[IF Q6_F SELECTED]	Assisted Living or Nursing Homes		
[IF Q6_G SELECTED]	Offices		
[IF Q6_H SELECTED]	All other types		
[IF A-H = DON'T KNOW]	Total across all buildings		

B.6.2 2018 Non-NYSERDA CHP Catalog Systems

[ASK ALL]

Q10. Thinking about the CHP systems your company was involved in and that became operational in New York State in 2018, how many were systems that are **not included in NYSERDA's "Combined Heat and Power Catalog"**? *[If needed: These are CHP systems that would not have qualified for NYSERDA incentives and support.]*

- Number of Non-NYSERDA Catalog CHP systems in 2018: [OPEN-ENDED RESPONSE] → IF = 0, SKIP TO Q15

[Do not read:]

- Don't know

Combined Heat and Power and Onsite Resilient Power Market Assessment

99. Refused

[ASK IF Q10 > 0]

Q11. Was (Were) any of your company’s 2018 Non-NYSERDA CHP catalog system(s) in New York State installed in...?

Building Type	1. Yes	2. No	98. Don’t know
A. Multifamily building(s)			
B. K-12 School(s)			
C. College or University campus(es)			
D. Hotel(s)			
E. Hospital(s)			
F. Assisted Living or Nursing Home(s)			
G. Office(s)			
H. Other type(s) [specify: OPEN END]			

[ASK IF Q10 > 1]

Q12. For those building types, how many of your company’s 2018 Non-NYSERDA CHP catalog systems were installed in...?

DISPLAY LOGIC	Building Type	1. Number of NYSERA CHP systems in 2018	98. Don’t know
[IF Q11_A SELECTED]	Multifamily buildings		
[IF Q11_B SELECTED]	K-12 Schools		
[IF Q11_C SELECTED]	Colleges or Universities		
[IF Q11_D SELECTED]	Hotels		
[IF Q11_E SELECTED]	Hospitals		
[IF Q11_F SELECTED]	Assisted Living or Nursing Homes		
[IF Q11_G SELECTED]	Offices		
[IF Q11_H SELECTED]	All other types		

[ASK IF Q10 > 0]

Q13. What is the total aggregate capacity, in kilowatts, of your company’s 2018 Non-NYSERDA CHP catalog system(s) that was(were) installed in...? *[If needed: If you don’t*

Combined Heat and Power and Onsite Resilient Power Market Assessment

know the kilowatt capacity by building type, do you know the total capacity of all your 2018 Non-NYSERDA CHP catalog systems?]

DISPLAY LOGIC	Building Type	1. Total Aggregate kW Capacity of NYSEDA CHP systems in 2018	98. Don't know
[IF Q11_A SELECTED]	Multifamily buildings		
[IF Q11_B SELECTED]	K-12 Schools		
[IF Q11_C SELECTED]	Colleges or Universities		
[IF Q11_D SELECTED]	Hotels		
[IF Q11_E SELECTED]	Hospitals		
[IF Q11_F SELECTED]	Assisted Living or Nursing Homes		
[IF Q11_G SELECTED]	Offices		
[IF Q11_H SELECTED]	All other types		
[IF A-H = DON'T KNOW]	Total across all buildings		

[ASK IF Q10 > 0]

Q14. What is the estimated total aggregate cost to the customer of your company's 2018 Non-NYSERDA CHP catalog system(s) that was(were) installed in...? [If needed: If you don't know the costs by building type, do you know the total aggregate costs of all your 2018 Non-NYSERDA CHP catalog systems?] Your best estimate is fine.

DISPLAY LOGIC	Building Type	1. Total Aggregate Cost (\$) to Customer of NYSEDA CHP systems in 2018	98. Don't know
[IF Q11_A SELECTED]	Multifamily buildings		
[IF Q11_B SELECTED]	K-12 Schools		
[IF Q11_C SELECTED]	Colleges or Universities		
[IF Q11_D SELECTED]	Hotels		
[IF Q11_E SELECTED]	Hospitals		
[IF Q11_F SELECTED]	Assisted Living or Nursing Homes		
[IF Q11_G SELECTED]	Offices		
[IF Q11_H SELECTED]	All other types		
[IF A-H = DON'T KNOW]	Total across all buildings		

B.6.3 2018 Modular CHP Systems

Next, I have a few questions about any modular CHP systems your company may have worked on in 2018, by which we mean standardized, pre-packaged CHP systems that are not customized for specific projects.

[ASK ALL]

Q15. Did you install any modular CHP system projects anywhere in the U.S. that became operational in 2018? Please do not include any of the NYSERDA CHP catalog systems your company was involved in.

1. Yes
2. No

[Do not read:]

98. Don't know
99. Refused

[ASK IF Q15 = 1]

Q16. How many non-NYSERDA catalog modular CHP systems did you install in 2018 in New York State and what was the aggregate kilowatt capacity of those projects?

1. Number of non-NYSERDA catalog modular CHP systems: [OPEN-ENDED RESPONSE]
2. Aggregate kW of those projects: [OPEN-ENDED RESPONSE]

[Do not read:]

98. Don't know
99. Refused

[ASK IF Q15 =1]

Q17. How many non-NYSERDA catalog modular CHP systems did you install in 2018 outside New York State, and what was the aggregate kilowatt capacity of those projects?

1. Number of non-NYSERDA catalog modular CHP systems: [OPEN-ENDED RESPONSE]
2. Aggregate kW of those projects: [OPEN-ENDED RESPONSE]

[Do not read:]

98. Don't know
99. Refused

B.7 Company’s Pre-2018 CHP Systems in NYS

Now, I want to ask about the CHP systems your company was involved in and that became operational in New York State before 2018. For these questions, please include all the CHP systems your company was involved in that, to the best of your knowledge, are still operational. Please also include any CHP systems that were in and were not in the NYSERDA CHP Catalog.

[ASK ALL]

Q18. Prior to 2018, How many of your company’s CHP systems were installed in each of the following building types...? *[If needed: If you don’t know number of systems by building type, do you know the total number of your company’s pre-2018 CHP systems?]*

Building Type	1. Total Number of CHP systems pre-2018	98. Don’t know
A. Multifamily buildings		
B. K-12 Schools		
C. Colleges or Universities		
D. Hotels		
E. Hospitals		
F. Assisted Living or Nursing Homes		
G. Offices		
H. All other types [specify: OPEN-ENDED]		
I. [IF A-H = Don’t know] Total number of systems		

[ASK ALL]

Q19. For those building types, What is the total aggregate capacity, in kilowatts, of your company’s pre-2018 CHP systems that were installed in...? *[If needed: If you don’t know the kilowatt capacity by building type, do you know the total capacity of all your 2018 Non-NYSERDA CHP catalog systems?]*

DISPLAY LOGIC	Building Type	1. Total Aggregate kW Capacity of NYSERDA CHP systems in 2018	98. Don’t know
[IF Q18_A SELECTED]	Multifamily buildings		
[IF Q18_B SELECTED]	K-12 Schools		
[IF Q18_C SELECTED]	Colleges or Universities		
[IF Q18_D SELECTED]	Hotels		
[IF Q18_E SELECTED]	Hospitals		

DISPLAY LOGIC	Building Type	1. Total Aggregate kW Capacity of NYSERDA CHP systems in 2018	98. Don't know
[IF Q18_F SELECTED]	Assisted Living or Nursing Homes		
[IF Q18_G SELECTED]	Offices		
[IF Q18_H SELECTED]	All other types		
[IF A-H = DON'T KNOW]	Total across all buildings		

B.8 Company's CHP Systems in Upstate and Downstate NYS

To finish this section of questions, I'd like to know where in New York State your company has installed CHP systems.

[ASK ALL]

Q20. Thinking about all the NYSERDA Catalog CHP systems your company completed in New York State and that remain operational, to the best of your knowledge, about how many are in...

1. New York City and Westchester County: [NUMBER OF NYSERDA CATALOG CHP SYSTEMS]
2. The rest of New York State: [NUMBER OF NYSERDA CATALOG CHP SYSTEMS]

[ASK ALL]

Q21. Thinking about all the non-NYSERDA Catalog CHP systems your company completed in New York State and that remain operational to the best of your knowledge, about how many are in...?

1. New York City and Westchester County: [NUMBER OF Non-NYSERDA CATALOG CHP SYSTEMS]
2. The rest of New York State: [NUMBER OF Non-NYSERDA CATALOG CHP SYSTEMS]

B.9 Company's CHP Costs

This next section of questions is about the CHP system costs. First, I have a couple of questions about equipment costs.

B.9.1 CHP Equipment Cost Trends

[ASK ALL]

Q22. Thinking about the costs of CHP system components during the past two years, would you say that costs have...?

1. Increased a lot
2. Increased some
3. Increased a little
4. Stayed same
5. Decreased a little
6. Decreased some
7. Decreased a lot
98. Don't know
99. Refused

Q23. [IF Q22 = 1, 2, OR 3 (Increased)] What do you think caused the increase in the costs of CHP system components? [*Probe: Tariffs placed on steel, aluminum, and other products/resources; inflation; fewer suppliers, lower demand; something else.*]

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

B.9.2 Balance-of-System Cost Categories

Now, I have a few questions about balance-of-system costs for CHP systems. These are sometimes referred to as "soft costs," and include 11 categories of non-equipment costs associated with designing and installing CHP systems, such as the architectural, engineering, construction, permitting, interconnection, and other non-equipment expenses.

[ASK ALL]

Q24. To begin, I'd like to ask some questions about each of the 11 categories of balance-of-system costs that NYSERDA identified through previous research. I'll read each

Combined Heat and Power and Onsite Resilient Power Market Assessment

component and a description, and then ask my questions before moving to the next component.

[ASK AFTER READING EACH COMPONENT AND DESCRIPTION IN THE FIRST TABLE BELOW, INPUT ANSWERS IN SECOND TABLE BELOW]

1. [ASK ALL] Does your company track balance-of-system costs associated with [INSERT COMPONENT]?
2. [IF Q24.1 = NO] Why not track all the time?
3. Is that a cost incurred in all or only in specific CHP?
4. [IF Q24.3 = Specific Projects] What types of CHP projects incur [INSERT COMPONENT] costs?

CHP Cost Categories and Descriptions Table

Category	Component	Description
Engineering	Engineering and Architecture	Cost of designing the system and integrating it with electrical and mechanical systems
Construction	Site preparation	Cost to prepare the site where CHP system will be installed (e.g. concrete flooring)
	Installation labor/materials	Labor cost for the civil, mechanical, and electrical work and cost of materials such as ductwork, piping, and wiring
	Rigging and coordination	Cost of items such as crane rental and use, insurance etc. associated with moving large CHP systems
	Project and construction management	General contractor mark-up and bonding, and performance guarantees
Permits	Permitting fees	Fees related to procuring required permits
	Permitting labor	Labor related to procuring required permits
Interconnection	Interconnection Fees	Cost of interconnection and paralleling. For larger systems, this reflects the cost of paralleling a synchronous generator. For smaller systems, this may be included in the cost of equipment
	Interconnection Labor	Labor associated with interconnection
Contingency	Project contingency	Reserve for unexpected expenses
Financing	Project financing	Cost, interest, and other charges involved in borrowing the money to purchase the system

CHP Cost Category Answers Table

Balance-of-System Cost Components	1. [ASKALL] Track cost component?	2. [IF Q20.1 = NO] Why not track component?	3. [IF Q20.1 = YES] Cost incurred in ~all or only specific CHP projects?	4. [IF Q20.3 = Specific Projects] What types of projects?
A. Engineering and Architecture	1. Yes 2. No 98. DK	[OPEN ENDED]	1. ~All projects 2. Specific projects 98. DK	[OPEN ENDED]
B. Site preparation	1. Yes 2. No 98. DK	[OPEN ENDED]	1. ~All projects 2. Specific projects 98. DK	[OPEN ENDED]
C. Installation labor/ materials	1. Yes 2. No 98. DK	[OPEN ENDED]	1. ~All projects 2. Specific projects 98. DK	[OPEN ENDED]
D. Rigging and coordination	1. Yes 2. No 98. DK	[OPEN ENDED]	1. ~All projects 2. Specific projects 98. DK	[OPEN ENDED]
E. Project and construction management	1. Yes 2. No 98. DK	[OPEN ENDED]	1. ~All projects 2. Specific projects 98. DK	[OPEN ENDED]
F. Permitting fees	1. Yes 2. No 98. DK	[OPEN ENDED]	1. ~All projects 2. Specific projects 98. DK	[OPEN ENDED]
G. Permitting labor	1. Yes 2. No 98. DK	[OPEN ENDED]	1. ~All projects 2. Specific projects 98. DK	[OPEN ENDED]
H. Inter-connection fees	1. Yes 2. No 98. DK	[OPEN ENDED]	1. ~All projects 2. Specific projects 98. DK	[OPEN ENDED]
I. Interconnection labor	1. Yes 2. No 98. DK	[OPEN ENDED]	1. ~All projects 2. Specific projects 98. DK	[OPEN ENDED]
J. Project contingency	1. Yes 2. No 98. DK	[OPEN ENDED]	1. ~All projects 2. Specific projects 98. DK	[OPEN ENDED]
K. Project financing	1. Yes 2. No 97. NA 98. DK	[OPEN ENDED]	1. ~All projects 2. Specific projects 98. DK	[OPEN ENDED]

[ASK ALL]

Q25. What, if any, CHP project balance-of-system cost components would you add to the list?

1. Cost components to add: [OPEN ENDED]
2. None

[Do not read:]

98. Don't know
99. Refused

B.9.3 2018 NYS CHP Balance-of-System Cost Estimates

Next, I have some questions about the balance-of-system costs of your company's CHP projects became operational in New York State in 2018.

[ASK IF Q5 > 0]

Q26. What would you consider to be a typical NYSERDA Catalog CHP system your company completed in New York State in 2018, in terms of the system type and the kilowatt capacity?

1. System type: [OPEN END]
2. Kilowatt capacity: [OPEN END]
98. Don't know
99. Refused

[ASK IF Q10 > 0]

Q27. What would you consider to be a typical non-NYSERDA Catalog CHP system your company completed in New York State in 2018 in terms of the system type and the kilowatt capacity?

1. System type: [OPEN END???
2. Kilowatt capacity: [OPEN END???
98. Don't know
99. Refused

Combined Heat and Power and Onsite Resilient Power Market Assessment

Q28. About what percentage of the total project costs would you estimate were balance-of-system costs for a typical CHP system your company installed in New York State in 2018 that was...

1. [IF Q5 > 0] Included in the NYSERDA CHP System Catalog: [0-100] % of total costs
2. [IF Q10 > 0] Not included in the NYSERDA CHP System Catalog: [0-100] % of total costs

Q29. Now, thinking about just the total balance-of-system costs for a typical CHP system your company installed in New York State in 2018, about what percentage do each of the balance-of-system cost components contribute to the total? [IF Q5 > 0 AND Q10 > 0: Please indicate the percentages for a typical NYSERDA catalog CHP system and a typical non-NYSERDA Catalog CHP system.] Your best estimates are fine.

Balance-of-System Cost Components	[DISPLAY IF Q5 > 0] Typical NYSERDA Catalog CHP System Completed in 2018		[DISPLAY IF Q10 > 0] Typical Non-NYSERDA Catalog CHP System Completed in 2018	
	1. % of Total Balance-of-System Costs	98. Don't know	1. % of Total Balance-of-System Costs	98. Don't know
[DISPLAY IF Q24A.1 = 1] A. Engineering and Architecture				
[DISPLAY IF Q24B.1 = 1] B. Site preparation				
[DISPLAY IF Q24C.1 = 1] C. Installation labor/ materials				
[DISPLAY IF Q24D.1 = 1] D. Rigging and coordination				
[DISPLAY IF Q24E.1 = 1] E. Project and construction management				
[DISPLAY IF Q24F.1 = 1] F. Permitting fees				
[DISPLAY IF Q24G.1 = 1] G. Permitting labor				
[DISPLAY IF Q24H.1 = 1] H. Inter-connection fees				
[DISPLAY IF Q24I.1 = 1] I. Interconnection labor				

Combined Heat and Power and Onsite Resilient Power Market Assessment

Balance-of-System Cost Components	[DISPLAY IF Q5 > 0] Typical NYSERDA Catalog CHP System Completed in 2018		[DISPLAY IF Q10 > 0] Typical Non-NYSERDA Catalog CHP System Completed in 2018	
	1. % of Total Balance-of-System Costs	98. Don't know	1. % of Total Balance-of-System Costs	98. Don't know
[DISPLAY IF Q24J.1 = 1] J. Project contingency				
[DISPLAY IF Q24K.1 = 1] K. Project financing				

Q30. NYSERDA is interested in understanding CHP permitting costs specifically.? I'm going to ask you about the average permit-related costs for a variety of system types and locations. Your best estimates are fine. So, what are the average....?

	1. Average Cost	97. Not Applicable	98. Don't know
[DISPLAY IF Q5 > 0 AND Q20.1 > 0] A. Permitting fees for typical NYSERDA CHP catalog system in New York City or Westchester County			
[DISPLAY IF Q5 > 0 AND Q20.1 > 0] B. Permitting and inspection labor for typical NYSERDA CHP catalog system in New York City or Westchester County			
[DISPLAY IF Q5 > 0 AND Q20.2 > 0] C. Permitting fees for typical NYSERDA CHP catalog system in the rest of New York State (excluding New York City and Westchester County)			
[DISPLAY IF Q5 > 0 AND Q20.2 > 0] D. Permitting and inspection labor for typical NYSERDA CHP catalog system in the rest of New York State (excluding New York City and Westchester County)			
[DISPLAY IF Q10 > 0 AND Q21.1 > 0] E. Permitting fees for typical non-NYSERDA CHP catalog system in New York City or Westchester County			
[DISPLAY IF Q10 > 0 AND Q21.1 > 0] F. Permitting and inspection labor for typical non-NYSERDA CHP catalog system in New York City or Westchester County			
[DISPLAY IF Q10 > 0 AND Q21.2 > 0] G. Permitting fees for typical non-NYSERDA CHP catalog system in the rest of New York State (excluding New York City and Westchester County)			
[DISPLAY IF Q10 > 0 AND Q21.2 > 0] H. Permitting and inspection labor for typical non-NYSERDA CHP catalog system in the rest of New York State (excluding New York City and Westchester County)			

Combined Heat and Power and Onsite Resilient Power Market Assessment

Q31. What about the wait-time for permit approval? For each of the following types of CHP systems your company completed in New York State in 2018, how many days did you spend, on average, waiting for permit approval, such that you were unable to perform other work on the project?

	1. Average Number of Days Waiting for Permit Approval and Unable to Work on Project	97. Not Applicable	98. Don't know
[DISPLAY IF Q5 > 0 AND Q20.1 > 0] A. Typical NYSERDA CHP catalog system in New York City or Westchester County			
[DISPLAY IF Q5 > 0 AND Q20.2 > 0] B. Typical NYSERDA CHP catalog system in the rest of New York State (excluding New York City and Westchester County)			
[DISPLAY IF Q10 > 0 AND Q21.1 > 0] C. Typical non-NYSERDA CHP catalog system in New York City or Westchester County			
[DISPLAY IF Q10 > 0 AND Q21.2 > 0] D. Typical non-NYSERDA CHP catalog system in the rest of New York State (excluding New York City and Westchester County)			

[ASK IF Q5 > 0]

Q32. NYSERDA requires that vendors offer a five-year warranty on CHP systems in order to receive an incentive payment. For a typical NYSERDA CHP catalog system your company installed in New York State in 2018, what percentage of the total project costs did you set aside or expect to incur for warranty/maintenance over this five-year period?

1. [% of CHP system cost set aside for warranty/maintenance]
2. Your company does not perform warranty/maintenance services
98. Don't know
99. Refused

[ASK IF Q10 > 0]

Q33. Did your company include a warranty on the non-NYSERDA CHP catalog systems you completed in New York State in 2018?

1. Yes → What kind of warranty? [Probe: parts, labor, everything...]
2. No → SKIP TO Q36
98. Don't know → SKIP TO Q36

99. Refused

[ASK IF Q33 = 1]

Q34. How many years is the warranty good for?

1. Number of years of warranty: [YEARS]

98. Don't know

99. Refused

[ASK IF Q33 = 1]

Q35. For a typical non-NYSERDA CHP catalog system your company installed in New York State in 2018, what percentage of the total project costs did you set aside or expect to incur for the warranty and maintenance?

1. [% of CHP system cost set aside for warranty/maintenance]

98. Don't know

99. Refused

B.10 DOE CHP eCatalog

[ASK ALL]

Q36. For the past couple of years, the Department of Energy has been developing a CHP eCatalog, similar to the NYSEERDA's CHP catalog. The intent is to have a national catalog of packaged CHP systems available on the web. The Catalog became available in April 2019. Are you aware of the DOE's CHP eCatalog?

1. Yes

2. No → SKIP TO Q54

98. Don't know

99. Refused

[ASK IF Q36 = YES]

Q37. Did you or anyone in your company participate in research by or provide feedback to the DOE to assist in their efforts to develop their CHP eCatalog?

1. Yes → What did you/your company do? [OPEN-END RESPONSE]

2. No

98. Don't know

99. Refused

[ASK IF Q36 = YES]

Q38. Has your company already submitted documentation or have plans to submit documentation to get admitted or enrolled in the DOE CHP eCatalog?

1. Yes, already submitted documentation
2. Yes, plan to submit documentation
3. No, have not and do not plan to submit documentation
98. Don't know
99. Refused

[ASK IF Q38 = YES]

Q39. Why is your company enrolling or planning to enroll in the DOE CHP eCatalog? [*Probe: Expand business in NYS or elsewhere; lower costs; something else.*]

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q38 = NO]

Q40. Why is your company NOT enrolling in the DOE CHP eCatalog? [*Probe: Not sure how to participate, something else.*]

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

B.11 On-Site Resilient Power Systems

We are getting near the end, there are just a few more questions about the next generation of CHP systems coming on the market – that is CHP systems that are integrated with solar energy and/or storage to create on-site resilient power (ORP).

[ASK ALL]

Q41. Do you have any experience attempting to sell ORP systems – that is CHP systems bundled together with...

[SINGLE RESPONSE]

1. On-site solar energy? [YES/NO/DK/REF]
2. On-site battery storage? [YES/NO/DK/REF]
3. Combination of solar and storage [YES/NO/DK/REF]

[ASK ALL]

Q42. Do you have any experience installing ORP systems - CHP systems bundled together with...

[SINGLE RESPONSE]

1. On-site solar energy? [YES/NO/DK/REF]
2. On-site battery storage? [YES/NO/DK/REF]
3. Combination of solar and storage [YES/NO/DK/REF]

[ASK IF Q42_1= YES AND Q42_2 = YES]

Q43. Were these systems sold as a package or as separate systems?

1. Packaged system – that is the CHP, on-site solar, and on-site storage were sold as one item
2. Each item was bid and sold separately
98. Don't know
99. Refused

[INSTRUMENT WILL HAVE TEXT BOX HERE TO CAPTURE ADDITIONAL CONVERSATION WITH RESPONDENT THAT MAY OCCUR HERE]

Combined Heat and Power and Onsite Resilient Power Market Assessment

[ASK IF Q42_1= YES AND Q42_2 = YES]

Q43. So you mentioned you have experience with the installation of an ORP system. How was your firm involved in the design of the ORP project? [If needed: Were you involved with the CHP system, solar system, or battery storage? Were you involved in all three or a combination? Did you design each element, identify subcontractors for designing each element?]

- 1. [OPEN END RESPONSE]
- 98. Don't know
- 99. Refused

[ASK IF Q42_1= YES AND Q42_2 = YES]

Q44. How was your firm involved the installation of the ORP system? [*If needed: Were you involved with the CHP system, solar system, or battery storage? Were you involved in all three or a combination?*] [*Probes: Did you install each element, identify subcontractors for installing each element*]

- 1. [OPEN END RESPONSE]
- 98. Don't know
- 99. Refused

[ASK IF Q42_1= YES AND Q42_2 = YES]

Q45. The next few questions are about the number, size, and cost of ORP projects by building type.

	Q45a. How many ORP systems have you installed since January 2017?	Q45b. What was the total aggregate kW Capacity of these systems?	Q45c. What was the average cost of these systems?
Multifamily buildings			
K-12 Schools			
Colleges or Universities			
Hotels			
Hospitals			
Assisted Living or Nursing Homes			
Offices			
All other types			
Total across all buildings			

[INSTRUMENT WILL HAVE TEXT BOX HERE TO CAPTURE ADDITIONAL CONVERSATION WITH RESPONDENT THAT MAY OCCUR HERE]

[ASK IF Q42_1= YES AND Q42_2 = YES]

Q46. Where in New York have you installed ORP systems?

1. New York City and Westchester
2. Long Island
3. Upstate – any place north of Westchester
98. Don't know
99. Refused

[ASK IF Q42_1= YES AND Q42_2 = YES]

Q47. What drives customers to select ORP? [*Probes: Were they motivated by interest in renewable energy? Motivated by need for reliable power? Something else?*]

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q42_1= YES AND Q42_2 = YES]

Q48. Other than cost, what keeps customers from choosing to install an ORP system? [*Probes: Are they concerned with interruption to their business during installation, unproven technology, siting issues (i.e. not enough roof space to support solar)?*]

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q42_1= YES AND Q42_2 = YES]

Q49. Why did your firm choose to start selling ORP systems? [*Probe: Were customers asking for this type of solution?*]

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q42_1= YES AND Q42_2 = YES]

Q50. What can NYSERDA do to support the ORP market?

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK IF Q41_1= YES AND Q41_2 = YES AND Q42_1= NO AND Q42_2 = NO, TRIED TO SELL ORP BUT HAS NOT INSTALLED ORP]

Q51. You indicated that you have tried to sell ORP systems but have not installed any yet. Why do you think you have been unsuccessful in selling these systems?

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

B.12 Closing

[ASK ALL]

Q52. Based on your experience, what suggestions do you have about how NYSERDA could facilitate more widespread adoption of CHP systems in New York State? [*Probe: What are the market adoption barriers? Any differences across building types, system types, geography, or other characteristics? How can NYSERDA help?*]

1. [OPEN END RESPONSE]
98. Don't know
99. Refused

[ASK ALL]

Q53. Can we contact you again if we need clarification on any of the questions we asked today?

1. Yes → Collect contact info if needed [OPEN END]
2. No

Have a great rest of your day/evening and thanks so much for taking the time to answer our questions. Your feedback will be very helpful.

Appendix C Professionals Web Survey

C.1 Introduction

C.1.1 Request to Complete Survey for Those We Did Not Reach Earlier in Year

Hello,

I am contacting you on behalf of the New York State Energy Research and Development Authority (NYSERDA). I work for a company called Opinion Dynamics and I am working with NYSERDA to understand the market for combined heat and power (CHP) systems in New York State. I understand that your firm had experience selling and installing CHP systems in New York State in 2018.

I have about 5 minutes of questions for you about your firms' CHP work in New York State. It is very important that we get feedback from you in the next two weeks so that NYSERDA will better understand how they can best support the market for CHP.

We only need 5 minutes of your time to go through the few questions we have. Specifically, we would like to discuss:

- The number of NYSERDA catalog CHP projects you completed in 2018 that were supported by NYSERDA
- The number of NYSERDA catalog CHP projects you completed in 2018 that were NOT supported by NYSERDA
- Your awareness of other CHP Professionals operating in New York that do projects unsupported by NYSERDA

Are you available now or can I call you back at a more convenient time?

C.1.2 Email Request to Complete Survey for Those We Surveyed Earlier in Year

Subject: Your assistance still needed to understand the CHP market in New York

Hello,

Thank you for speaking with us earlier this year regarding our project with the New York State Energy Research and Development Authority (NYSERDA) about combined heat and power systems (CHP). As you may recall, I work for a company called Opinion Dynamics and I am working with NYSERDA to understand the market for CHP systems in New York State. After

collecting data in the summer, we realized we have about five more minutes of questions. Specifically, we would like to discuss:

- The number of NYSERDA catalog CHP projects you completed in 2018 that were supported by NYSERDA
- The number of NYSERDA catalog CHP projects you completed in 2018 that were NOT supported by NYSERDA
- Your awareness of other CHP Professionals operating in New York that do projects unsupported by NYSERDA

Are you available now or can I call you back at a more convenient time?

C.2 Screening [ASK ALL]

S1. Did your company install or assist in installing CHP systems in New York State in the past?

1. Yes
2. No → [THANK AND TERMINATE]

[Do not read:]

98. Don't know → [THANK AND TERMINATE]

[ASK IF S1 = 1, YES]

S2. Are you familiar with the type of funding used for those CHP systems and whether any received funds from NYSERDA?

1. Yes
2. No → [THANK AND TERMINATE]

[Do not read:]

98. Don't know → [THANK AND TERMINATE]

[IF S2 = 2 OR 98]

S3. Can you provide contact information for someone at your company who would be more familiar with the type of funding used when installing CHP systems in New York and whether any receive funds from NYSERDA?

1. Yes → [COLLECT CONTACT INFO, THANK AND TERMINATE]
2. No → [THANK AND TERMINATE]

[Do not read:]

- 98. Don't know → [THANK AND TERMINATE]
- 99. Refused → [THANK AND TERMINATE]

[IF S2 = 1, PROCEED WITH SCHEDULING/CONDUCTING INTERVIEW]

Great. It looks like you are the person we would like to speak with. We would like to ask you some general questions about the CHP market and some specific questions about the number and size of CHP systems by building type. If there are some questions you can't answer over the phone, I will follow up with an email questionnaire that you can complete at your convenience. Do you have availability in the next two weeks when we can talk?

[SCHEDULE TIME OR BEGIN INTERVIEW]

C.3 Company Projects

[ASK ALL]

Q1. Approximately how many CHP installations that your company was involved in became operational during 2018 in New York State?

- 1. Number of systems operational in 2018 [OPEN-ENDED RESPONSE]

[ASK ALL]

Q2. Of those systems that became operational in 2018, how many were systems listed in the NYSERDA CHP catalog that received NYSERA support?

- 1. [OPEN-ENDED RESPONSE]

[ASK ALL]

Q3. Of those systems that became operational in 2018, how many were NOT listed in the NYSERDA CHP catalog that received NYSERA support? [If needed: These could be custom CHP projects, very small, or very large CHP projects]

- 1. [OPEN-ENDED RESPONSE]

[ASK ALL]

Q4. Of those systems that became operational in 2018, how many were systems....

- 1. ...listed in the NYSERDA CHP catalog that DID NOT receive NYSERA support?
[OPEN-ENDED RESPONSE]

[ASK IF Q4 >0]

Q5. Why did these catalog-listed systems not receive NYSERDA support?

1. [OPEN-ENDED RESPONSE]

[ASK IF Q4 >0]

Q6. What was the total aggregate capacity of these catalog-listed systems that DID NOT receive NYSERA support?

1. [OPEN-ENDED RESPONSE]

[ASK ALL]

Q7. Of those systems that became operational in 2018, how many were systems NOT listed in the NYSERDA CHP catalog that DID NOT receive NYSERA support?

1. [OPEN-ENDED RESPONSE]

[ASK IF Q7 >0]

Q8. Why did these systems not receive NYSERDA support? [Probe: Were there concerns about the time needed to apply for NYSERDA support? Was there a reluctance on the part of the customer? If so, what was that reluctance?]

1. [OPEN-ENDED RESPONSE]

[ASK IF Q7 >0]

Q9. Was the reason a customer elected not to pursue NYSERDA support different in 2018 than in previous years]

1. [OPEN-ENDED RESPONSE]

[ASK IF Q7 >0]

Q10. What was the total aggregate capacity of these systems that DID NOT receive NYSERA support?

1. [OPEN-ENDED RESPONSE]

That is all the questions I have for you. Thanks for your help today.

Appendix D Soft Cost Component Descriptions

Table 1. Soft Cost Component Descriptions

Category	Soft Cost Component	Description
Engineering	Engineering	Cost of designing the system and integrating it with electrical and mechanical systems
Construction	Site preparation	Cost to prepare the site where CHP system will be installed (e.g. concrete flooring)
	Installation labor/materials	Labor cost for the civil, mechanical, and electrical work and cost of materials such as ductwork, piping, and wiring
	Rigging and coordination	Cost of items such as crane rental and use, insurance etc. associated with moving large CHP systems
	Project and construction management	General contractor mark-up and bonding, and performance guarantees
Permitting	Permitting fees	Fees related to procuring required permits
	Permitting labor	Labor related to procuring required permits
Interconnection	Interconnection fees	Cost of interconnection and paralleling. For larger systems, this reflects the cost of paralleling a synchronous generator. For smaller systems, this may be included in the cost of equipment
	Interconnection labor	Labor associated with interconnection
Financing	Financing	Cost, interest, and other charges involved in borrowing the money to purchase the system
Contingency	Project Contingency	Reserve for unexpected expenses