

world exercises to the classes either as homework or as in-class exercises that will benefit both the participants and the evaluators. The results of this homework and in-class exercises would then feed into subsequent impact evaluations. Such activities could include the following:

- Having participant provide the square footage and major processes at the facilities that they are responsible for overseeing
- Having participants report at the end of each session on any changes that they have made at their facilities as a result of the training and any estimated savings
- Having participants report on any changes they would like to make at their facilities and how they plan to go about doing so
- Having participants obtain their annual energy consumption for their facilities and report them confidentially on their evaluation for that course.
- Having course coordinators also provide MEEA with the final project report that each of the participants do to receive the final rebate, and get the coordinators to ensure that the content of that report includes the cost savings specific to the project.

Net Impact Results

The BOC program stands to benefit from increased interaction with other EE programs. DCEO could work with other programs to track savings claimed by and rebates paid to BOC participants. If the BOC program is a strong influencer for participation in other programs, it could claim a larger portion of retrofit savings reported by participants.

4.2.2 Process Recommendations

Program Design

- **Increase Student Engagement.** MEEA should consider increasing student engagement and learning in classes by providing workbooks at least a week before class.
- **Enhance Classroom Experience.** DCEO, MEEA, instructors and BOC should consider the potential to implement student and instructor feedback regarding improvements in content (shorter Level I lessons, more hands-on activities) and approach (on-line course components, colored workbooks) provided.
- **Consider An Alternate Schedule.** Many students surveyed commented that the classes in each Level are too spread apart. MEEA should consider holding class sessions for each series more frequently – weekly at best – to keep students engaged and active.
- **Consider An Alternate Chicago Facility.** Multiple participants preferred not to drive into the city during rush hour and drive long distances to get to classes at the Chicago Center for Green Technology. Instructors also commented that the amenities at the Center were not as good as those in the community college classrooms. DCEO should consider providing a facility that may reduce commute and have better amenities in the city of Chicago.

Program Administration

- **Enhance Data Collected in Application.** MEEA should consider asking participants to provide employer and facility type in their application so that marketing efforts can be better channeled to increase participation.
- **Standardize Final Course Evaluations.** Currently, MEEA's final course evaluation for students is not standardized. MEEA should consider standardizing feedback forms so that data from all courses can be aggregated and analyzed to provide a full picture of student opinions. Navigant can work with MEEA to create standardized forms so that immediate feedback can be better mined and Navigant's future process surveys can provide more robust conclusions.

Program Resources

- **Leverage Utilities (ComEd and Ameren).** ComEd's and Ameren's account executives have relationships with many of the companies and facilities managers whose building operators are potential BOC participants. DCEO and MEEA should determine whether these avenues have been fully utilized in marketing the BOC program.
- **Investigate requiring participants in retro-commissioning programs to participate in BOC as a retro-commissioning program requirement.** ComEd currently requires participants in their retro-commissioning program to do so.

Appendix A. BOC Participant Survey Interview Guide

Interview guide for the participant survey conducted via telephone.

NAVIGANT

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1 INTRODUCTION

Hello, may I please speak to [FIRST LAST FROM SAMPLE]? My name is _____ and I am calling from Opinion Dynamics Corporation on behalf of the state of Illinois Department of Commerce and Economic Opportunity (or DCEO). According to our records, you participated in the Building Operator [LEVEL FROM SAMPLE] Certification Training Program in [CLASS CITY FROM SAMPLE]. We are conducting an evaluation of the program and would like to ask you some questions regarding your experience. The survey will focus on your building operations practices and will take about 20 minutes. Is now a good time?

[If not a good time, schedule call back.]

If [Respondent no longer works with company], then I-1.

I-1. "Can you tell me where [FIRST LAST FROM SAMPLE] is working now?"

1. Yes, skip to I-2
2. No, then [Thank and Terminate]

I-2. [Open End with fields for company name, city, state, phone number] [DO NOT REQUIRE ANSWERS FOR ALL FIELDS]

2 SCREENER

S-1. Do you recall participating in the BOC training program on [INSERT CLASS DATES FROM SAMPLE] ? (To help recall, mention "Either in the 100 series or 200 series, do you recall taking classes such as 'Building Systems Overview,' 'Efficient Lighting Fundamentals,' 'Indoor Air Quality,' 'HVAC Systems, Controls & Buildings,' 'Mastering Electric Control Circuits,' or 'Enhanced Automation for Building Operators'?")

1. Yes
2. No [THANK AND TERMINATE]
8. (Don't know) [THANK AND TERMINATE]
9. (Refused) [THANK AND TERMINATE]

3 PROCESS QUESTIONS

P-1. How did you first hear about the course? [OPEN END; 98=DK, 99=Ref]

P-2. Why did you originally decide to enroll in the course? [OPEN END; 98=DK, 99=Ref]

P-3. Did you find the training useful given your reason for taking it?

1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASKIF P3=1]

P-4a. Why was the training useful? [OPEN END; 98=DK, 99=Ref]

[ASKIF P3=2]

P-4b. Why was the training not useful? [OPEN END; 98=DK, 99=Ref]

P-5. On a scale of 0-10, where 0 is "not knowledgeable at all" and 10 is "very knowledgeable", how would you rate your knowledge of energy efficient building operations prior to beginning the BOC courses?

0	1	2	3	4	5	6	7	8	9	10	DK	Ref
Not knowledgeable at all											Very knowledgeable	

P-6. How important was the tuition rebate from DCEO in your ability to take the course? Was it...**(READ LIST)**

1. Very important
2. Somewhat important
3. Not very important
4. Not at all important
5. (Not aware of rebate)
8. (Don't know)
9. (Refused)

P-7. How satisfied were you with the course overall? Were you... **(READ LIST)**

1. Very satisfied
2. Somewhat satisfied
3. Not very satisfied
4. Not at all satisfied
8. (Don't know)
9. (Refused)

P-8. How satisfied were you with the course content? Were you... **(READ LIST)**

NAVIGANT

1. Very satisfied
2. Somewhat satisfied
3. Not very satisfied
4. Not at all satisfied
8. (Don't know)
9. (Refused)

P-9. How satisfied were you with the course schedule – timing between classes, class length and the like? Were you... **(READ LIST6)**

1. Very satisfied
2. Somewhat satisfied
3. Not very satisfied
4. Not at all satisfied
8. (Don't know)
9. (Refused)

P-10. How satisfied were you with the course instructors? Were you... **(READ LIST)**

1. Very satisfied
2. Somewhat satisfied
3. Not very satisfied
4. Not at all satisfied
8. (Don't know)
9. (Refused)

P-11. How satisfied were you with the course facilities? Were you... **(READ LIST)**

1. Very satisfied
2. Somewhat satisfied
3. Not very satisfied
4. Not at all satisfied
8. (Don't know)
9. (Refused)

P-12. What did you like best about the course? [OPEN END; 98=DK, 99=Ref]

P-13. What did you like least about the course? [OPEN END; 98=DK, 99=Ref]

P-14. Do you have any suggestions for improving the course? [OPEN END; 96 No, 98=DK, 99=Ref]

4 FACILITY INFORMATION

F-1. Do you conduct or manage operations or maintenance activities at your facility?

1. Yes
2. No [THANK AND TERMINATE]
8. (Don't know) [THANK AND TERMINATE]
9. (Refused) [THANK AND TERMINATE]

F-2. Have you conducted or managed operations or maintenance activities at this facility since beginning the BOC training?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF F-2 = 2, ELSE SKIP TO F-5a]

F-3 Did you start conducting or managing operations or maintenance activities at this facility before completing the BOC training?

1. Yes
2. No [THANK AND TERMINATE]
8. (Don't Know)
9. (Refuse)

F-5a. What is the primary business activity that occurs at your facility?

- Business Type**
1. (School/University)
 2. (Office)
 3. (Retail)
 4. (Restaurant)
 5. (Hospital/Medical)
 6. (Grocery)
 7. (Warehouse)
 8. (Process Industrial)
 9. (Other Industrial)
 10. (Residential/Apartment Building)
 11. (Hotel/Motel)
 12. (Mixed Use)
 13. (Government)
 14. (Real estate/property management)
 15. (Corrections/Jail)
 16. (Waste water treatment)

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- 00. (Other, specify)
- 98. (Don't know)
- 99. (Refused)

F-5b. What percentage of your facility is involved in this business activity? [NUMERIC OPEN END]

[ASK IF F-5b < 100%, ELSE TO F-8]

F-6a. What other business activities occur at this facility? (Choose 1) [IF RESPONDENT PROVIDES TWO ACTIVITIES, ENTER THE FIRST HERE AND THE SECOND IN F-7A]

- Business Type**
- 1. (School/University)
 - 2. (Office)
 - 3. (Retail)
 - 4. (Restaurant)
 - 5. (Hospital/Medical)
 - 6. (Grocery)
 - 7. (Warehouse)
 - 8. (Process Industrial)
 - 9. (Other Industrial)
 - 10. (Residential/Apartment Building)
 - 11. (Hotel/Motel)
 - 12. (Mixed Use)
 - 13. (Government)
 - 14. (Real estate/property management)
 - 15. (Corrections/Jail)
 - 16. (Waste water treatment)
 - 00. (Other, specify)
 - 98. (Don't know)
 - 99. (Refused)

F-6b. What percentage of your facility is involved in this second business activity? [NUMERIC OPEN END]

[SKIP TO F-8 IF F5B AND F6B ADD TO 100%]

F-7a. What other business activities occur at this facility? (Choose 1)

- Business Type**
- 1. (School/University)
 - 2. (Office)
 - 3. (Retail)
 - 4. (Restaurant)
 - 5. (Hospital/Medical)
 - 6. (Grocery)

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7. (Warehouse)
8. (Process Industrial)
9. (Other Industrial)
10. (Residential/Apartment Building)
11. (Hotel/Motel)
12. (Mixed Use)
13. (Government)
14. (Real estate/property management)
15. (Corrections/Jail)
16. (Waste water treatment)
00. (Other, specify)
98. (Don't know)
99. (Refused)

F-7b. What percentage of your facility is involved in this third business activity? [NUMERIC OPEN END]

F-8. What is the approximate size, in square feet, of the building or buildings that comprise this facility? [NUMERIC OPEN END, UP TO 9,999,999; DK, Ref]

F-9. What percentage of your facility are you responsible for the operations of [NUMERIC OPEN END, UP TO 100%; DK, Ref]

F-10. How many other full-time equivalent personnel are responsible for operations for the same space that you are responsible for? [NUMERIC OPEN END up to 3 digits, DK, Ref]

[ASK if F-10 > 0]

F-11. How many of those personnel also completed BOC training through DCEO? [NUMERIC OPEN END up to 3 digits, DK, Ref]

F-12. What is the primary heating fuel used in your facility? **(DO NOT READ LIST)**

1. (Gas)
2. (Oil)
3. (Electric)
4. (Purchased steam)
00. (Other, specify)
98. (Don't know)
99. (Refused)

F-13. What is the primary heating system type?

1. Hot air furnace
2. Wall or floorboard radiator (steam, Hot Water or electric resistance)
3. Steam, hot water or electric resistance coils in ventilation system.
4. Space heaters
5. Heat pump, air source

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- 6. Heat pump, ground source
- 7. Heat pump, water loop
- 00. (Other, specify)
- 98. (Don't know)
- 99. (Refused)

F-14. What is the primary cooling system type at your facility? **(DO NOT READ LIST)**

- 1. (Direct Expansion – air-cooled packaged or split system cooling or like a heat pump)
- 2. (Chiller – air-cooled)
- 3. (Chiller – water or evaporative cooled)
- 4. (Evaporative cooler)
- 5. (Geothermal heat pump)
- 6. (Window units)
- 7. (Fans)
- 00. (Other, specify)
- 98. (Don't know)
- 99. (Refused)

F-15. What is the primary fuel used for water heating at your facility? **(DO NOT READ LIST)**

- 1. (Gas)
- 2. (Electric)
- 3. (Oil)
- 4. (Solar)
- 5. (Steam)
- 00. (Other, specify)
- 98. (Don't know)
- 99. (Refused)

5 IMPACT QUESTIONS

5.1 Maintenance Activities

Now I'd like to ask you some questions about your maintenance activities at your facility. I will focus on several building systems areas, and the questions will be similar for each of them. I will focus on changes in maintenance activities you may have implemented at your facility SINCE BEGINNING THE BOC TRAINING. Later I will ask about equipment installations.

General Energy Management

The following series of questions will be focused on general energy management at your facility.

EM-1. Since beginning participation in the BOC program, have you made any changes to any general energy management activities in your facility?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-1 = 1, else SKIP TO NEXT SECTION]

EM-2a. Have you changed the way you adjust cooling start/stop time?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-2a =1, else SKIP to EM-3a]

EM-2b. Did you make changes to your existing cooling start/stop procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-2c. Are you adjusting your cooling start/stop procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

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EM-3a. Have you changed the way you adjust heating start/stop time?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-3a =1, else SKIP to EM-4a]

EM-3b. Did you make changes to your existing heating start/stop procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-3c. Are you adjusting your heating start/stop procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

4. More frequently
5. Less frequently
6. Haven't made a change
8. (Don't know)
9. (Refused)

EM-4a. Have you changed the way you adjust ventilation start/stop time?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-4a =1, else SKIP to EM-5a]

EM-4b. Did you make changes to your existing ventilation start/stop procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-4c. Are you adjusting your ventilation start/stop procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

7. More frequently
8. Less frequently
9. Haven't made a change
8. (Don't know)

NAVIGANT

9. (Refused)

EM-5a. Have you changed the way you adjust lighting start/stop time?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-5a =1, else SKIP to EM-6a]

EM-5b. Did you make changes to your existing lighting start/stop procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-5c. Are you adjusting your lighting start/stop procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-6a. Have you changed the way you conduct Night Walk-Throughs?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-6a =1, else SKIP to EM-7a]

EM-6b. Did you make changes to your existing Night Walk Through procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-6c. Are you adjusting your Night Walk Through procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently

NAVIGANT

3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-7a. Have you changed the way you adjust building lighting and HVAC schedules to occupied hours?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-7a =1, else SKIP to EM-8a]

EM-7b. Did you make changes to your building lighting and HVAC schedule procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-7c. Are you adjusting your building lighting and HVAC schedule procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-8a. Have you changed the way you adjust building lighting and HVAC schedules on holidays?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-8a =1, else SKIP to EM-9a]

EM-8b. Did you make changes to your existing building lighting and HVAC holiday schedule procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

NAVIGANT

EM-8c. Are you adjusting your building lighting and HVAC holiday schedule procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-9a. Have you changed the way you keep equipment maintenance logs?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-9a =1, else SKIP to EM-10a]

EM-9b. Did you make changes to your existing equipment maintenance log procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-9c. Are you adjusting your equipment maintenance log procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-10a. Have you changed the way you clean light fixtures?

3. Yes
4. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-10a =1, else SKIP to EM-11a]

EM-10b. Did you make changes to your existing light fixture cleaning procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)

NAVIGANT

8. (Don't know)
9. (Refused)

EM-10c. Are you adjusting your light fixture cleaning procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-11a. Have you changed the way you harvest daylight on the building perimeter?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-11a =1, else SKIP to EM-12a]

EM-11b. Did you make changes to your existing daylight harvesting procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-11c. Are you adjusting your daylight harvesting procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-12a. Have you changed the way you adjust light levels according to IEEE recommendations?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-12a =1, else SKIP to EM-13a]

EM-12b. Did you make changes to your existing light level procedures or are you using new procedures that you were not doing before the BOC program?

NAVIGANT

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-12c. Are you adjusting your light level procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-13a. Have you changed the way you take light level measurements?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-13a =1, else SKIP to EM-14a]

EM-13b. Did you make changes to your existing light level measurement procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-13c. Are you adjusting your light level measurement procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-14a. Have you changed the way you update the O&M Manual?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

NAVIGANT

[ASK IF EM-14a =1, else SKIP to EM-15a]

EM-14b. Did you make changes to your existing O&M Manual updating procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-14c. Are you adjusting your O&M Manual updating procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-15a. Have you changed the way you track energy use trends?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-15a =1, else SKIP to EM-16a]

EM-15b. Did you make changes to your existing energy usage tracking procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-15c. Are you adjusting your energy usage tracking procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-16a. Have you made changed the way you report energy performance to management?

1. Yes

NAVIGANT

2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-16a =1, else SKIP to EM-17a]

EM-16b. Did you make changes to your existing management reporting procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-16c. Are you adjusting your management reporting procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-17a. Have you changed the way you suggest energy efficiency improvements to management?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-17a =1, else SKIP to EM-18a]

EM-17b. Did you make changes to your existing energy efficiency suggestion procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-17c. Are you adjusting your energy efficiency suggestion procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

NAVIGANT

EM-18a. Have you changed the way you use diagnostic equipment to troubleshoot?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-18a =1, else SKIP to EM-19a]

EM-18b. Did you make changes to your existing diagnostic equipment related troubleshooting procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-18c. Are you adjusting your diagnostic equipment related troubleshooting procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

EM-19a. Have you changed the way you review building system controls?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF EM-19a =1, else SKIP to EM-20a]

EM-19b. Did you make changes to your existing building system control review procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

EM-19c. Are you adjusting your building system control review procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change

NAVIGANT

8. Don't know
9. Refused

Building Shell

The following series of questions will be focused on the Building Shell at your facility.

BS-1. Since beginning participation in the BOC program, have you made any changes to maintenance on the building shell in your facility?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF BS-1 = 1, else SKIP TO NEXT SECTION]

BS-2a. Have you changed the way you perform air sealing measures at the entrance of the facility?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF BS-2a =1, else SKIP to BS-3a]

BS-2b. Did you make changes to your existing air sealing measures or are you using new measures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

BS-2c. Are you adjusting your air sealing measures more frequently, less frequently, or haven't you made a change to how often you adjust these measures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

BS-3a. Have you changed window-blind management in your facility?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

NAVIGANT

[ASK IF BS-3a =1, else SKIP to BS-4a]

BS-3b. Did you make changes to your existing window blind management procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

BS-3c. Are you adjusting your window blind management procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

BS-4a. Have you changed the roof-reflectivity at your facility?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF BS-4a =1, else SKIP to BS-5a]

BS-4b. Did you make changes to your existing roof reflectivity procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

BS-4c. Are you adjusting your roof reflectivity procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

BS-5a. Have you made any other air sealing changes in your facility?

3. Yes
4. No

NAVIGANT

8. (Don't Know)
9. (Refuse)

[ASK IF BS-5a =1, else SKIP to BS-6a]

BS-5b. What air sealing change did you make? [OPEN ENDED]

BS-5c. Did you make changes to your existing air sealing procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

BS-5d. Are you adjusting your air sealing procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

BS-6a. Have you made any other changes in your facility with regards to the building shell?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF BS-6a =1, else SKIP to BS-7]

BS-6b. What change did you make? [OPEN ENDED]

BS-6c. Did you make changes to your existing building shell procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

BS-6d. Are you adjusting your building shell procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change

NAVIGANT

2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

CS-2c. Are you adjusting your water treatment procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

9. (Refuse)

CS-3a. Have you changed the way you service the cooling tower?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF CS-3a =1, else SKIP to CS-4a]

CS-3b. Did you make changes to your existing cooling tower procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

CS-3c. Are you adjusting your cooling tower procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

CS-4a. Have you changed how you clean the chiller evaporator?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF CS-4a =1, else SKIP to CS-5a]

NAVIGANT

CS-4b. Did you make changes to your existing chiller evaporator cleaning procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

CS-4c. Are you adjusting your chiller evaporator cleaning procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

CS-5a. Have you changed how you clean the condenser?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF CS-5a =1, else SKIP to CS-6a]

CS-5b. Did you make changes to your existing condenser cleaning procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

CS-5c. Are you adjusting your condenser cleaning procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

CS-6a. Have you changed the way you adjust and/or charge the refrigerant?

1. Yes
2. No
8. (Don't Know)

NAVIGANT

9. (Refuse)

[ASK IF CS-6a =1, else SKIP to CS-7a]

CS-6b. Did you make changes to your existing refrigerant charging procedures or are you using new procedures that you were not doing before the BOC program?

4. Improvements to existing procedures
5. New procedures
6. (Both)
8. (Don't know)
9. (Refused)

CS-6c. Are you adjusting your refrigerant charging procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

CS-7a. Have you changed how you calibrate the sensor?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF CS-7a =1, else SKIP to CS-8a]

CS-7b. Did you make changes to your existing sensor calibration procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

CS-7c. Are you adjusting your sensor calibration procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

CS-8a. Have you changed how you perform system diagnostics on your cooling system?

NAVIGANT

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF CS-8a =1, else SKIP to CS-9a]

CS-8b. Did you make changes to your existing cooling system diagnostic procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

CS-8c. Are you adjusting your cooling system diagnostic procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

CS-9a. Have you changed how you service the cooling coil?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF CS-9a =1, else SKIP to CS-10a]

CS-9b. Did you make changes to your existing cooling coil service procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

CS-9c. Are you adjusting your cooling coil service procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

NAVIGANT

CS-10a. Have you changed how you service the valve?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF CS-10a =1, else SKIP to CS-11a]

CS-10b. Did you make changes to your existing valve servicing procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

CS-10c. Are you adjusting your valve servicing procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

CS-11a. Have you changed how you insulate the pipe?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF CS-11a =1, else SKIP to CS-12a]

CS-11b. Did you make changes to your existing pipe insulation procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

CS-11c. Are you adjusting your pipe insulation procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change

NAVIGANT

8. Don't know
9. Refused

Heating System

The following series of questions will be focused on the heating system at your facility.

HS-1. Since beginning participation in the BOC program, have you made any changes to maintenance on the heating system in your facility?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF HS-1 = 1, else SKIP TO NEXT SECTION]

HS-2a. Have you changed how you perform combustion testing?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF HS-2a =1, else SKIP to HS-3a]

HS-2b. Did you make changes to your existing combustion testing procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

HS-2c. Are you adjusting your combustion testing procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

HS-3a. Have you changed how you service the steam trap?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

NAVIGANT

[ASK IF HS-3a =1, else SKIP to HS-4a]

HS-3b. Did you make changes to your existing steam trap servicing procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

HS-3c. Are you adjusting your steam trap servicing procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

HS-4a. Have you changed how you clean the heat exchanger?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF HS-4a =1, else SKIP to HS-5a]

HS-4b. Did you make changes to your existing heat exchanger cleaning procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

HS-4c. Are you adjusting your heat exchange cleaning procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

HS-5a. Have you changed how you adjust the blowdown frequency?

3. Yes

NAVIGANT

4. No
8. (Don't Know)
9. (Refuse)

[ASK IF HS-5a =1, else SKIP to HS-6a]

HS-5b. Did you make changes to your existing blowdown adjustment procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

HS-5c. Are you adjusting your blowdown adjustment procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

1. More frequently
2. Less frequently
3. Haven't made a change
8. (Don't know)
9. (Refused)

HS-6a. Have you changed how you reset steam pressure or water temperature?

3. Yes
4. No
8. (Don't Know)
9. (Refuse)

[ASK IF HS-6a =1, else SKIP to HS-7a]

HS-6b. Did you make changes to your existing steam pressure and temperature procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

HS-6c. Are you adjusting your steam pressure and temperature procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

10. More frequently
11. Less frequently
12. Haven't made a change
8. (Don't know)
9. (Refused)

NAVIGANT

HS-7a. Have you changed how you calibrate the sensor?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF HS-7a =1, else SKIP to HS-8a]

HS-7b. Did you make changes to your existing sensor calibration procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

HS-7c. Are you adjusting your sensor calibration procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

13. More frequently
14. Less frequently
15. Haven't made a change
8. (Don't know)
9. (Refused)

HS-8a. Have you changed how you perform system diagnostics?

1. Yes
2. No
8. (Don't Know)
9. (Refuse)

[ASK IF HS-8a =1, else SKIP to HS-9a]

HS-8b. Did you make changes to your existing cooling start/stop procedures or are you using new procedures that you were not doing before the BOC program?

1. Improvements to existing procedures
2. New procedures
3. (Both)
8. (Don't know)
9. (Refused)

HS-8c. Are you adjusting your cooling start/stop procedures more frequently, less frequently, or haven't you made a change to how often you adjust these procedures?

16. More frequently
17. Less frequently
18. Haven't made a change
8. (Don't know)