

2016 Vermont Business Sector Market Characterization and Assessment Study

APPENDIX A

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Montpelier, VT 05620**

The Cadmus Group, Inc.

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Introduction

The 2016 Vermont Business Sector Market Characterization and Assessment study provides baseline energy efficiency data for Vermont's business sector facilities as of 2016, largely through primary data collection. This appendix provides the recruiting and survey script used for existing buildings and new construction, as well as the market actor survey instrument.



Vermont Business Sector Market Characterization and Assessment Study

Recruiting and Survey Script

[RED TEXT] – Instructions for programmer

[GREEN TEXT] – Instructions for interviewer

A. Introduction

- A1. Hello, my name is [INSERT NAME] and I’m calling on behalf of the Vermont Department of Public Service, may I speak with [CONTACT NAME]? [OR IF NO NAME] May I speak with the person who is responsible for facilities and energy-related decisions? [IF THAT PERSON IS NOT AT THIS PHONE NUMBER, ASK FOR THEIR NAME AND PHONE NUMBER AND START AGAIN]
1. Yes [CONTINUE TO A2]
 2. No or not a convenient time [ASK IF RESPONDENT WOULD LIKE TO ARRANGE A MORE CONVENIENT TIME OR IF YOU CAN LEAVE A MESSAGE FOR A MORE APPROPRIATE PERSON]
 98. (Don’t know) [ASK TO SPEAK WITH SOMEONE WHO KNOWS AND BEGIN AGAIN]
 99. (Refused) [THANK AND TERMINATE]
- A2. Hi, we’re conducting an extensive energy efficiency research study sponsored by the Vermont Department of Public Service. One critical element of this study involves collecting data from a random sample of commercial buildings. Your facility is one of a select few that have been chosen for a free comprehensive building energy survey. With your permission, we would like to conduct a whole-building energy survey at your facility. Using data collected in this study, we will identify areas of opportunity for improving energy efficiency in Vermont businesses. The visit will take approximately [INSERT APPROXIMATE VISIT LENGTH] hours and we are providing a \$100 VISA gift card as a thank you to participating locations. We will be collecting data on lighting, building envelope, types of window, insulation, HVAC systems and appliances installed in your facility. Would it be possible to schedule a time for one of our technicians to visit your facility?
1. Yes [CONTINUE TO B1]
 2. No [SKIP TO E2]
 3. NOT SURE [REFERENCE FAQ AND ANSWERS BELOW]

FAQ and Answers

WHY ARE YOU DOING THIS? WHY ARE YOU CALLING ME? This is part of the Vermont Department of Public Service’s energy-efficiency program evaluation. It will help us learn more about energy usage of commercial buildings in Vermont and to plan effective energy-efficiency programs offered to commercial customers in upcoming years.

WHO ARE YOU?

The Cadmus Group has been hired by the Vermont Department of Public Service to conduct this study of commercial buildings in Vermont. Experienced technicians from The Cadmus Group and

Steven Winter Associates will complete the site visits. **[IF NEEDED]** We can email you a letter from the Vermont Department of Public Service verifying the details of this study. **[RECORD RELEVANT CONTACT INFORMATION] [OKAY TO EMAIL LETTER AS NEEDED, BUT PROVIDE INFORMATION TO CADMUS (BRADLEY JONES) ABOUT WHO WAS SENT THE LETTER].**

WHAT WILL YOU BE DOING DURING THE VISIT? Our technician will gather data on some key parameters of your facility. Data they are gathering include: building dimensions, lighting details, building envelope, types of window, insulation, HVAC systems, and appliances installed in your facility. All data gathered during the visit will be kept strictly confidential, and we will only report the overall aggregated findings of this study.

HOW LONG WILL THIS TAKE? HOW MUCH OF MY TIME DO YOU NEED? The visit lengths vary by business type and building size, but they will generally take approximately **[INSERT APPROXIMATE VISIT LENGTH]**. Our technicians are normally able to work independently during a significant portion of their visit if you would prefer not to accompany them the entire time. They will also endeavor to adjust their visit as needed if you have limited availability.

QUESTIONS ABOUT GIFT CARD:

Our technician will leave a \$100 pre-paid VISA gift card at the time of their visit. These can be used anywhere you would normally use a credit card.

DO THEY NEED ACCESS TO OUR ENTIRE FACILITY? If possible, our technician will normally want to visit the entire facility, but if there are certain areas that are unavailable they can adjust their visit as needed. They will need access to your HVAC equipment and therefore would need to access your boiler room/mechanical room/rooftop depending on where that equipment is located. For larger sites the technician will want to see all room *types* and can often use building plans to avoid needing to visit every room in facility. For sites with multiple tenants we would like access to count lighting fixtures in each space, but will endeavor to be as unobtrusive as possible.

HOW CAN I VERIFY THAT THIS IS A LEGITIMATE STUDY? We can email you a letter from the Vermont Department of Public Service verifying our involvement with this study. **[IF NEEDED]** We can also have one of our contacts with the Vermont Department of Public Service contact you to verify the details of this study. Would you prefer to receive a phone call or an email? **[RECORD RELEVANT CONTACT INFORMATION] [OKAY TO EMAIL LETTER AS NEEDED, BUT PROVIDE INFORMATION TO CADMUS (BRADLEY JONES) ABOUT WHO WAS SENT THE LETTER. CONTACT CADMUS [BRADLEY JONES] IF FOLLOW UP WITH VT DEPT OF PUBLIC SERVICE CONTACT IS REQUIRED].**



B. Eligibility Screening

- B1. What type of facility is this location? [PROMPT WITH POSSIBLE CATEGORIES AS NEEDED: FOOD SERVICE, HEALTH CARE, RETAIL, OFFICE, ETC.]
 - 1. _____ [RECORD ANSWER AND UPDATE BUILDING TYPE AS NEEDED. IF WE HAVE ALREADY REACHED QUOTA FOR THE REVISED BUILDING TYPE THEN SAY “I’M SORRY, WE HAVE REACHED OUR QUOTA FOR THAT BUILDING TYPE AND CANNOT SCHEDULE A SITE VISIT AT THIS TIME.] [SKIP TO E2]
- B2. [IF BUILDING TYPE IS IDENTIFIED AS “MULTIFAMILY” THEN ASK B2, OTHERWISE SKIP TO B3] How many floors does your building have?
 - 1. 1-3 [SAY: “I’M SORRY, FOR THE PURPOSES OF OUR STUDY THIS BUILDING WOULD BE CLASSIFIED AS RESIDENTIAL, OUR PARTNERS AT NMR ARE CONDUCTING THE RESIDENTIAL PORTION OF THIS STUDY AND MAY FOLLOW UP WITH YOU REGARDING THEIR STUDY.” THANK AND TERMINATE THEN RECORD SITE DETAILS/CONTACT INFO AND PROVIDE TO CADMUS (BRADLEY JONES)]
 - 2. 4 OR MORE [RECORD ANSWER AND CONTINUE TO B3]
- B3. Our technician will need to access most spaces of your building during their visit including where your HVAC equipment is located [PROMPT WITH BOILER ROOM, MECHANICAL ROOM, ROOFTOP AS POSSIBLE LOCATIONS OF HVAC EQUIPMENT AS NEEDED], will that be possible?
 - 1. Yes [CONTINUE TO C1]
 - 2. No [REFER TO FAQs IF RESPONDENT IS UNSURE, OTHERWISE THANK AND TERMINATE]
- B4. Is your company a customer of Vermont Gas?
 - 1. Yes
 - 2. No

C. Scheduling

NOTE: AS MUCH AS POSSIBLE TRY TO ARRANGE FOR A WINDOW OF AVAILABLE TIME AS OPPOSED TO A FIXED ARRIVAL TIME.

- C1. Just to confirm, you’re located at [INSERT ADDRESS]?
 - 1. Yes
 - 2. No [CONFIRM CORRECT ADDRESS. IF ADDRESS IS NOT WITHIN SAMPLE THEN APOLOGIZE AND SAY WE CANNOT PERFORM SITE VISIT] [SKIP TO E2]
- C2. We will be in your area on [SUGGEST DATE(S)] would you be available that day?
 - 1. Yes
 - 2. No [REPEAT QUESTION WITH DIFFERENT DATE OR, IF NEEDED, ASK WHAT DAYS THEY ARE AVAILABLE]
- C3. Would [SUGGEST TIME] be okay?
 - 1. Yes
 - 2. No [REPEAT QUESTION WITH DIFFERENT TIME OR, IF NEEDED, ASK WHAT TIME THEY ARE AVAILABLE]

- C4. Okay, so [REPEAT DATE] arriving at [REPEAT WINDOW OF TIME OR SPECIFIC TIME IF REQUESTED] is that correct?
1. Yes [RECORD DATE AND TIME]
 2. No [REPEAT QUESTION WITH DIFFERENT DATE/TIME AS NEEDED]

D. Site Details

- D1. Will our technician meet you on site or someone else?
1. [RECORD DETAILS]
- D2. What is the best contact phone number for you [OR FOR SUGGESTED CONTACT ON SITE]?
1. [RECORD DETAILS]
- D3. Would you provide your email address so I can send you a confirmation email?
1. [RECORD DETAILS]
- D4. Is there an obvious main entrance the technician should use when they arrive, or are there any special instructions for where they should go when they arrive
1. [RECORD DETAILS]

E. Confirmation and Survey Introduction

- E1. [REPEAT THE DATE AND TIME OF THE VISIT AGAIN FOR FINAL CONFIRMATION]. If anything comes up you can contact our site visit coordinator to reschedule this visit. Contact Bradley Jones at 503-467-7190.
- E2. We also have a brief survey related to energy-efficiency in Vermont businesses, do you have a few minutes to complete the survey now?
1. Yes [CONTINUE TO SURVEY QUESTIONS BEGINNING WITH EE0]
 2. No [MAKE A NOTE THAT FIELD TECHNICIAN WILL NEED TO COMPLETE SURVEY DURING THEIR VISIT]

F. Energy Efficiency Screening Questions

[IF SURVEY RESPONDENT ANSWERED ANY QUESTIONS IN RECRUITMENT SCRIPT THEN SKIP TO QUESTION EE0]



F1. Hi, I'm calling on behalf of the Vermont Department of Public Service. Are you the person who is responsible for making financial decisions about the cooling, heating, lighting equipment and processes at this facility?

[CLARIFY, IF NEEDED] We are conducting a study that will inform decisions related to energy efficiency in Vermont businesses. The information you provide will help Vermont improve its energy efficiency programs and services which will, in turn, help keep energy costs as low as possible. The interview will take about 5 minutes.

- 1. Yes **[SKIP TO F3]**
- 2. No **[SKIP TO F2]**
- 98. (Don't know) **[SKIP TO F2]**
- 99. (Refused) **[SKIP TO F2]**

F2. **[IF F1 = 1 SKIP TO F3]** May I please speak to the person who is responsible for making financial decisions about the cooling, heating, lighting equipment and processes at this facility?

- 1. Given contact's name and transferred to contact **[RESUME FROM F1]**
- 2. No **[THANK AND TERMINATE]**
- 3. Given contact's name and phone number **[REDIAL CONTACT AND RESUME FROM F1]**
- 98. (Don't know) **[THANK AND TERMINATE]**
- 99. (Refused) **[THANK AND TERMINATE]**

F3. We're conducting an energy efficiency research study of commercial businesses in Vermont. We have a brief survey related to energy-efficiency in Vermont businesses, we are hoping that you could take a few minutes to complete the survey, would that be possible?

- 1. Yes **[CONTINUE TO EE0]**
- 2. No **[THANK AND TERMINATE]**
- 3. Given other contact's name and phone number **[REDIAL CONTACT AND RESUME FROM F1]**
- 98. (Don't know) **[THANK AND TERMINATE]**
- 99. (Refused) **[THANK AND TERMINATE]**

EE. Energy Efficiency Program Awareness and Participation Questions

[READ TO ALL RESPONDENTS] Now I'd like to ask you a few questions about your energy use, energy efficiency services and program offers you may have received.

EE0. **[IF RESPONDENT ANSWERED "YES" OR "NO" TO QUESTION B4 IN RECRUITMENT SCRIPT, ENTER THE ANSWER FROM B3 HERE FOR EE0 AND SKIP TO EE1].** First, is your company a customer of Vermont Gas?

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

- EE1. **[ASK OF ALL RESPONDENTS]** About what percent of your company's total operating costs are spent on energy?
1. 5% or less
 2. 6-10%
 3. 11-25%
 4. 26% or more
 98. (Don't Know)
 99. (Refused)

- EE2. **[ASK OF ALL RESPONDENTS]** Which of these descriptions most closely matches your organization's approach to managing energy use and costs?
1. Energy management is a daily part of our operations. We actively monitor and control our usage and costs.
 2. We review our energy use and costs at least quarterly and consider energy efficiency when we need to purchase new equipment.
 3. We are concerned about energy costs but we don't have a systematic approach to managing them.
 4. We pay the bills but don't actively manage energy use or costs
 5. Other **[SPECIFY]**
 98. (Don't Know)
 99. (Refused)

[NOTE TO PROGRAMMER FOR QUESTION EE3A TO EE3C: EE3A, EE3B, AND EE3C SHOULD BE ASKED IN RANDOM ORDER.]

[NOTE TO PROGRAMMER FOR QUESTION EE3A TO EE3C: THE SAMPLE WILL INDICATE WHETHER THE CUSTOMER HAS ELECTRIC EFFICIENCY SERVICES PROVIDED BY BURLINGTON ELECTRIC DEPARTMENT (BED) OR EFFICIENCY VERMONT.]

[NOTE TO PROGRAMMER FOR EE3A TO EE3C: AFTER CYCLING THROUGH ALL RELEVANT EE3A TO EE3C, IF AT LEAST ONE OF EE3A TO EE3C = 1, ASK EE4; IF ALL RELEVANT EE3A TO EE3C = 2, 98, OR 99, GO TO END.]

- EE3a. **[ASK OF ALL RESPONDENTS IN BED SERVICE AREA]** Are you aware that Burlington Electric Department offers energy efficiency services for businesses and institutions like yours?
1. Yes
 2. No
 98. (Don't Know)
 99. (Refused)

- EE3b. **[ASK OF ALL RESPONDENTS IN EFFICIENCY VT SERVICE AREA]** Are you aware that Efficiency Vermont offers energy efficiency services for businesses and institutions like yours?



- 1. Yes
- 2. No
- 98. (Don't Know)
- 99. (Refused)

EE3c. **[ASK OF ALL RESPONDENTS IN VERMONT GAS SERVICE AREA]** Are you aware that Vermont Gas offers energy efficiency services for businesses and institutions like yours?

- 1. Yes
- 2. No
- 98. (Don't Know)
- 99. (Refused)

[NOTE TO PROGRAMMER FOR QUESTION EE4: THE SAMPLE WILL INDICATE WHETHER THE CUSTOMER HAS ELECTRIC EFFICIENCY SERVICES PROVIDED BY BURLINGTON ELECTRIC DEPARTMENT OR EFFICIENCY VERMONT. IF QUESTION EE0=1, THEN RESPONDENT IS A VERMONT GAS CUSTOMER.]

EE4. **[ASK IF AT LEAST ONE OF EE3A TO EE3C=1]** In the past 4 years, has your organization participated in any energy efficiency programs offered by **[EFFICIENCY VERMONT OR BURLINGTON ELECTRIC DEPARTMENT] [AND VERMONT GAS]**? By 'participated', I mean received any of the following from these programs— audits, rebates, technical advice or other types of energy efficiency services. Please tell me which organizations' programs you participated in. **[TAKE MULTIPLES]**

- 1. Efficiency Vermont
- 2. Burlington Electric Department
- 3. Vermont Gas
- 4. Other (Specify)
- 5. No—have not participated in last 4 years **[GO TO END]**
- 98. (Don't Know) **[GO TO END]**
- 99. (Refused) **[GO TO END]**

EE6. **[FOR EACH RESPONSE IN EE4]** What energy efficiency improvements have you made to your facility for which you received technical assistance and/or an incentive from **[EFFICIENCY VERMONT] [BURLINGTON ELECTRIC], [FROM VERMONT GAS]**?

- 1. **[RECORD VERBATIM]**
- 98. (Don't Know)
- 99. (Refused)

- EE8. Thinking about the services offered by **[GO THROUGH THE LIST BELOW FOR EACH ORGANIZATION NAMED IN EE4]**, how satisfied were you with each of the following aspects of the energy efficiency programs you participated in, on a scale of 0 to 10, where 0 is not at all satisfied and 10 is completely satisfied? **[INTERVIEWER NOTE: IF SOME PROGRAM ASPECT DIDN'T APPLY USE NA.]**
1. Quality of the measures or equipment installed through the program
 2. Quality of the technical support or services provided through the program
 3. Time it took from application through receipt of incentive
 4. Level of incentive for the equipment you installed
 5. Overall Satisfaction
- EE9. **[ASK SEPARATELY FOR EACH RESPONSE IN EE8 THAT IS = 0, 1, 2, OR 3]** Why do you say that about the **[READ IN EACH RESPONSE OPTION FROM EE8 IF 0, 1, 2, OR 3]**?
1. **[RECORD VERBATIM]**
 98. (Don't Know)
 99. (Refused)



Market Actor Interview Guides

Below are the interview guides used to conduct the in-depth interviews with the three sets of market actors interviewed as part of the Vermont Commercial Market Characterization study.

Commercial Building-level Decision-Makers In-Depth Interview Guide

Date _____ Interviewer _____

Name _____ Organization _____

Title _____

Phone _____ Email _____

[NOTE: THE QUESTIONS IN THIS INTERVIEW GUIDE WILL NOT NECESSARILY BE READ VERBATIM BUT MAY BE MODIFIED TO SUIT THE INTERVIEW. IN ADDITION, THE INTERVIEWERS MAY SKIP QUESTIONS THAT ARE LESS RELEVANT TO A PARTICULAR INTERVIEW]

Introduction

IN1. [USE THIS INTRO IF INTERVIEW WAS SET UP BY EMAIL PRIOR TO CALILNG] Hello, may I speak to [_____]? This is [_____] calling from NMR Group about the commercial building energy management study we are conducting for on behalf of the Vermont Department of Public Service. Does this time still work for you? [IF NO, RESCHEDULE] [IF YES, CONTINUE].

IN2. [USE THIS INTRO IF CALLING WITHOUT INTERVIEW SET UP BEFOREHAND] Hello, may I speak to [_____]? This is [_____] calling from NMR Group on behalf of the Vermont Department of Public Service. We are conducting a study to better understand how Vermont businesses make their energy management decisions. Would you be willing to answer some questions about how your organization manages its energy needs? Our questions should take between 20-30 minutes. [IF NO, TRY TO SCHEDULE FOR ANOTHER TIME] [IF YES, CONTINUE].

[IF RESPONDENTS ASK FOR CONTACT ABOUT THE EVALUATION:

- VT DPS contact information:
 - Barry Murphy, Energy Efficiency Program Specialist, Barry.Murphy@vermont.gov or 802-828-3183
- EEU contact information
 - BED: Chris Burns, cburns@burlingtonelectric.com or 802-865-7337

[IF NEEDED: The information you provide will be combined with observations from others and reported in aggregate, and your responses will be kept confidential.]

Screener

- S1. Are you the person who is most familiar with the energy management practices at your building located at [BUILDING ADDRESS]? [Probes: This might be your building manager, or energy manager] [IF YES, CONTINUE] [IF NO, ASK NEXT QUESTION, THEN REFER TO INSTRUCTIONS FOLLOWING IT].
- S2. Are you the person who is most familiar with the experiences your organization may have had participating in any of [UTILITY]'s energy efficiency programs in the last four years? [IF NEEDED: For example, your organization may have received rebates or incentives from [UTILITY] for efficient lighting, heating, or cooling equipment upgrades].

INTERVIEWER INSTRUCTION:

- IF S1=YES, AND S2=YES, CONTINUE
- IF NO TO BOTH, REQUEST CONTACT INFORMATION FOR APPROPRIATE PERSON(S)
- IF NO TO EITHER S1 OR S2 (BUT NOT BOTH), REQUEST CONTACT INFORMATION FOR APPROPRIATE PERSON, AND ASK THEM TO COMPLETE THE QUESTIONS THEY HAVE EXPERIENCE WITH

- S3. [ASK ALL] I understand your organization owns this property. [CONFIRM]
- a. Does your organization lease out any part of this property? [IF YES] What percentage?
- b. Does your organization manage this property?

[THIS INSTRUMENT IS DESIGNED FOR ORGANIZATIONS THAT MANAGE THEIR OWN PROPERTY. IF THEY DON'T, NOT QUALIFIED. THANK AND END.]

Firmographics

[ASK ALL]

- F1. How many buildings does your organization own, occupy, or manage in Vermont?
- F2. What is the approximate square footage of heated and cooled floor area of your building(s) in Vermont? [IF MULTIPLE BUILDINGS] You can give me either the total square footage for all buildings or an average square footage per building. Your best guess is fine.

Total amount _____ square feet

OR

Average per building _____ square feet



- F3. What are the primary activities conducted at *this* building in the space your organization occupies? What about in the space your organization leases to others?
- F4. [IF MULTIPLE BUILDINGS] Are all of your organization’s buildings in Vermont served by [UTILITY]?
- F5. [IF F4=NO] Besides [UTILITY], what other utilities serve these buildings?

Program Experience

- PE1. [PARTICIPANTS, AS IDENTIFIED THROUGH PREVIOUS TELEPHONE SURVEY] I understand from the conversation you had with the person who first talked with you about including your building in this study that, in the past four years, you’ve made some energy efficiency improvements in this building for which you received technical assistance or an incentive from [Efficiency Vermont] [Burlington Electric] [Vermont Gas]. These were [SUMMARIZE].
 - a. Is this correct?
 - b. Is there anything I missed from that list? [GET DETAILS]
- PE2. What was the main reason your organization decided to participate in the program for [BUILDING]?
- PE3. [IF MENTIONED PARTICIPATING IN AN EE PROGRAM IN PE1] How helpful were the services and support the [UTILITY] provided (if any?) to convincing upper management to approve the work?
- PE4. [IF MENTIONED PARTICIPATING IN AN EE PROGRAM IN PE1] What *other* services or support could [UTILITY] have provided that would have helped your organization in the decision-making process?
- PE5. How satisfied were you with your experience with the program overall? Please explain.
- PE6. [NONPARTICIPANTS AWARE OF PROGRAMS, AS IDENTIFIED THROUGH PREVIOUS TELEPHONE SURVEY] I understand from the conversation you had with the person who first talked with you about including your building in this study that, in the last four years, you have *not* made any energy efficiency improvements in this building for which you received technical assistance or an incentive from [Efficiency Vermont] [Burlington Electric] [Vermont Gas]. Is this correct?

[IF NO: GET DETAILS AND ASK PROGRAM EXPERIENCE QUESTIONS]

[IF YES] What is the main reason your organization has not participated in a program for [PROPERTY]? [If they have multiple properties, probe for possibility that they might have participated for another property]

Management Approval

[ASK ALL] We are trying to identify ways that [EEU] could support organizations like yours as you make decisions that affect building energy use. To do that, we need to understand how these decisions are made at your organization.

- MA1. When you or someone else at your organization has identified an opportunity to save on utility bills, such as through a change to equipment or building energy management practices, what is the process to receive management approval to make the change? [Probe for description]
- MA2. [IF DID NOT MENTION PARTICIPATING IN AN EE PROGRAM IN PE1] What services or support could [UTILITY] provide that could help your organization in the decision-making process?
- MA3. We understand that it can sometimes be difficult to get upper management to allow staff like yourself to spend time focusing on saving energy in the building(s). Is there anything that [UTILITY] could do to help change this? What would that be? [Probe for details]

Tools and Management Strategies

- TM1. Are you familiar with the term “Building Benchmarking”? [IF NO OR DK, READ DESCRIPTION BELOW. IF STILL NO/DK, SKIP BENCHMARKING SECTIONS].

[IF NEEDED: Buildings are benchmarked using energy management software that allows customers to track and assess energy consumption. Typically, benchmarking provides metrics that assess the energy use intensity and energy performance of the whole building by comparing it to the energy usage of similar buildings. Have you heard of this practice of “Building Benchmarking”?]

- a. [IF YES] Has your organization had any experience with benchmarking this building or another building in the past four years? [IF YES] Which of these statements best describes your organization’s experience?

- 01 We have benchmarked at least one building
- 02 We are in the process of benchmarking a building for the first time
- 03 We have not benchmarked a building in the past four years [GO TO *No Experience Benchmarking* SECTION]

- TM2. Do you feel you can answer questions about your organization’s use of its benchmarking data?
[IF YES, CONTINUE, IF NO, SKIP BENCHMARKING SECTIONS]

Benchmarking Experience



Next we have some questions about tools and management strategies your organization uses to manage its energy use and needs.

- BE1. How does your organization use the scores from operational benchmarking? [IF NEEDED, READ THE STATEMENTS AS PROBES]
- A. You or someone else in your organization routinely monitors your buildings’ benchmark scores or EUIs. [IF NEEDED: EUI=energy use intensity].
 - B. When you make a change to a building or to equipment that could affect its energy use, you or someone else in your organization usually checks the benchmark score or re-benchmarks after making the change.
 - C. You re-benchmark or check your buildings’ benchmark scores when there is a change in building tenancy.
 - D. You do not re-benchmark or check your buildings’ benchmark scores.
- BE2. What tools does your organization use to identify opportunities to improve building performance?
- [If NEEDED: “For example, operational benchmarking tools such as ENERGY STAR Portfolio Manager or ASHRAE’s Building Energy Quotient (BEQ), energy accounting software such as Metrix or Fraser, asset rating or benchmarking tools like DOE’s Building Energy Asset Rating System, energy audits, or utility bills.”]
- BE3. [IF NO OPERATIONAL OR ASSET RATING TOOL MENTIONED IN BE2] What, if any, tools would you like to see your organization start using to identify opportunities to improve building performance? [Probe for both operational and asset rating tools].
- BE4. [IF NO OPERATION OR ASSEST RATING TOOL MENTIONED IN BE2] What could [UTILITY] do that could help your organization start using these tools? [Probe for what keeps the organization from using either asset or operational rating tools].

No Experience Benchmarking

[ASK IF FAMILIAR WITH BENCHMARKING BUT NO EXPERIENCE]

- NB1. Has your organization considered benchmarking any of its buildings in Vermont?
- NB2. [IF NB1=NO] Why hasn’t your organization considered benchmarking any of these buildings?
- NB3. What challenges or barriers do you think might prevent your organization from benchmarking its buildings?

NB4. What assistance or services would make your organization more likely to benchmark its buildings?

Leased Space Energy Management Strategies

[IF LEASES AT LEAST SOME SPACE (QS3)]

You mentioned earlier that you lease at least some space at this building.

- LS1. What is the primary activity of the tenants in the space you lease?
- LS2. Do you pay the utilities in these tenant spaces, or do the tenants?
- LS3. Have you made any energy-efficient upgrades to reduce the energy used in the tenant spaces in this building in the last four years? [IF NEEDED: This could include installing energy-efficient lighting fixtures, motion sensors, installing more efficient heating or cooling equipment, etc.]
- LS4. [IF HAS NOT MADE ANY UPGRADES TO TENANT SPACES] What has kept your organization from making energy-efficient upgrades to tenant spaces?
- LS5. [IF DESCRIBED PROGRAM WORK IN THIS PROPERTY AND IF MADE UPGRADES TO TENANT SPACES] Was this related to the program work you told me about earlier? [If no, probe for brief description of upgrades made].
- LS6. [IF MADE UPGRADES TO TENANT SPACES] What motivated you to make these energy-efficient upgrades in your tenant spaces?
- LS7. Did you encounter any challenges or barriers when making these upgrades in your tenant spaces? [Probe for challenges with factors such as upfront cost, return on investment, etc.].
- LS8. [SKIP IF NEEDED – LOWER PRIORITY IF SHORT ON TIME] When purchasing or replacing energy-using equipment in your common areas or tenant units, what sources of information do you use to help you make a decision?
- LS9. [SKIP IF NEEDED – LOWER PRIORITY IF SHORT ON TIME] In general, how important is it to your tenants that you have high efficiency in your buildings and units?

Closing

[ASK ALL]

- CL1. Do you have anything else to share with me on these topics or other topics that I have not addressed?



END. Those are all of the questions that we have for you today. Thank you for your time.

Lighting Design Professionals and Electrical Distributors In-Depth Interview Guide

Date _____ Interviewer _____

Name _____ Organization _____

Title _____

Phone _____ Email _____

[NOTE: THE QUESTIONS IN THIS INTERVIEW GUIDE WILL NOT NECESSARILY BE READ VERBATIM BUT MAY BE MODIFIED TO SUIT THE INTERVIEW. IN ADDITION, THE INTERVIEWERS MAY SKIP QUESTIONS THAT ARE LESS RELEVANT TO A PARTICULAR INTERVIEW]

Introduction

IN1. [USE THIS INTRO IF SET UP INTERVIEW BY EMAIL PRIOR TO CALLING] Hello, may I speak to [_____] ? This is [_____] calling from NMR Group about the commercial lighting market characterization study we are conducting for the Vermont Department of Public Service. Does this time still work for you? [IF NO, RESCHEDULE] [IF YES, CONTINUE]. Please note that all of your responses will be kept confidential and insights will be aggregated.

IN1a. [IF YES TO IN1] Are you the person who [If distributor: “is most knowledgeable about your organization’s efficient lighting product offerings? Many of our questions will focus on stocking patterns and sales of lighting control products and LED fixtures.”; If designer: “makes decisions or recommendations about efficient lighting products?”]

[IF NO, ASK TO BE TRANSFERRED TO APPROPRIATE RESPONDENT OR GET CONTACT INFORMATION] [IF YES, CONTINUE]

IN2. [USE THIS INTRO IF CALLING A DESIGNATED RESPONDENT WITHOUT INTERVIEW SET UP BEFOREHAND] Hello, may I speak to [_____] ? This is [_____] calling from NMR Group. We are conducting a study for the Vermont Department of Public Service about the market for efficient commercial lighting in Vermont. Are you the person who [If distributor: “is most knowledgeable about your organization’s efficient lighting product offerings. Many of our questions will focus on stocking patterns and sales of lighting control products and LED fixtures.”; If designer: “makes decisions or recommendations about efficient lighting products?”]

[IF NO, ASK TO BE TRANSFERRED TO APPROPRIATE RESPONDENT OR GET CONTACT INFORMATION] [IF YES] I would like to ask you questions about your experience with and views on the market for commercial lighting in Vermont. Please note that all of your responses will be kept confidential and insights will be aggregated. In appreciation for your time, we will send you \$50. It will probably take about 10 to 20 minutes. Would you be willing to answer some questions about your experience with this market in Vermont?

[IF NO, TRY TO SCHEDULE FOR ANOTHER TIME] [IF YES, CONTINUE].

[IF RESPONDENTS ASK FOR CONTACT ABOUT THE EVALUATION:]

- VT DPS contact information:
 - Barry Murphy, Energy Efficiency Program Specialist, Barry.Murphy@vermont.gov or 802-828-3183
- EEU contact information:
 - Steve Casey, Efficiency Vermont Account Manager, scasey@veic.org or 802-658-6060 X7685.

[IF NEEDED: “The information you provide will be combined with observations from others and reported in aggregate, and your responses will be kept confidential.”]

Screener

S1. Our records indicate that [ORGANIZATION NAME] [IF DISTRIBUTOR “is primarily a distributor of”, IF DESIGNER “primarily provides design assistance for”] lighting products? Is that correct? [IF OTHER WORK IN ADDITION ASK TO DESCRIBE]

[IF ASKED HOW WE RECEIVED THEIR CONTACT INFORMATION: “Your contact information was provided to us by Efficiency Vermont Program staff members.”]

S2. What is your role and what are your responsibilities at [ORGANIZATION NAME]?

S3. How many employees does your company have in Vermont, including yourself?

Lighting Control Trends

First we would like to ask you about lighting control product trends.

LC1. What types of lighting control products do you most commonly [If distributor: “stock”; if designer “specify”]? [Do not immediately read response options, but use as probes if respondent only reports one or two lighting control products].



- 01 Integrated (factory mounted) lighting sensors
 - 02 Touch or slide dimmers
 - 03 Sun/shade controls to adjust sunlight levels
 - 04 Occupancy Sensors (Fixture Mounted, Switch Mounted, Ceiling and Wall Remote Mounted)
 - 05 Daylight Sensors (Fixture Mounted, Switch Mounted, Ceiling and Wall Remote Mounted)
 - 05 Exterior Motion sensor controls
 - 06 Programmable timer controls
 - 07 Other
- LC2. [ASK DISTRIBUTORS] Have you experienced any challenges stocking any lighting control products on your shelves? (Probe for which type, if any; probe if lead times are an issue).
- LC3. [ASK DESIGNERS] Thinking about the commercial projects you provided design assistance for over the last year, what percentage included lighting control products?
- a. Compared to 2014, did the number of commercial projects that included lighting control products in 2015 increase, decrease, or stay about the same? (Probe for percent share in 2014).
 - b. [If increased or decreased] What do you think has caused this change?
 - c. How do you expect this to change in the next year? Two years? (Probe for a percentage increase or decrease).
- LC4. [ASK DISTRIBUTORS] Thinking about sales of lighting products that you know were included in commercial buildings over the last year, what percentage of sales included lighting control products?
- a. Compared to 2014, did sales of lighting control products in 2015 increase, decrease, or stay about the same? (Probe for percent share in 2014).
 - b. [If increased or decreased] What do you think has caused this change?
 - c. How do you expect sales of lighting control products to change in the next year? Two years? (Probe for a percentage increase or decrease).

- LC5. [ASK ALL] When you market energy efficiency to your customers, do you actively encourage the (purchase/specification) of lighting control products? (If not, probe for reasons why not).
- LC6. [ASK ALL] Are some commercial customers more receptive to purchasing lighting control products than others? Are some contractors more likely to use controls than others? [IF YES TO EITHER QUESTION ASK:] Why is that? (Probe for differences in lighting control types, customer categories).
- LC7. [ASK ALL] What barriers, if any, do you face when (selling/specifying) lighting control products? (Probe for barriers of price, long lead times, customer/contractor unfamiliarity with product, performance issues, installation challenges, customer disinterest).
- LC8. [ASK ALL] What kinds of feedback have you received, if any, from customers about lighting control products? Any feedback from contractors? (Probe for the kinds of lighting control types that they are hearing back about).
- LC9. [ASK ALL] What support, if any, is needed to encourage the market adoption of lighting control products in Vermont? (Probe on whether this support should come from Efficiency Vermont program or elsewhere).

LED Trends

Next we would like to ask you about LED fixture trends.

- LED1. [ASK ALL] How frequently do you (stock/specify)... [READ LIST].
- a) LED High-Bay Fixtures?
 - b) LED High-Bay Fixtures with Integrated Lighting Sensors?
 - c) LED Surface and Suspended Linear Fixtures?
 - d) LED Troffer Fixtures?
 - e) LED Troffer, Surface, and Suspended and Low-Bay Fixtures with Integrated Lighting Sensors?
- LED1a. [IF THEY SAY THEY INFREQUENTLY OR NEVER STOCK OR SPECIFY ONE OR MORE OF THESE FIXTURE TYPES] You said you don't frequently (stock/specify) [Read back list of fixtures they rarely or never stock/specify]. Why is that?
- LED2. [ASK DISTRIBUTORS] Have you experienced any challenges stocking any ["OTHER", if asked LED1a about any specific fixture types] LED fixtures on your shelves? (Probe for which type, if any; probe if lead times are an issue).
- LED3. [ASK DESIGNERS] Thinking about the commercial projects you provided design assistance for over the last year, what percentage included LED fixtures?



- a. Compared to 2014, did the number of commercial projects that included LED fixtures in 2015 increase, decrease, or stay about the same? (Probe for percent share in 2014).
 - b. [If increased or decreased] What do you think has caused this change?
 - c. How do you expect this to change in the next year? Two years? (Probe for a percentage increase or decrease).
- LED4. [ASK DISTRIBUTORS] Thinking about sales of lighting products that you know were included in commercial buildings over the last year, what percentage did LED fixtures account for?
- a. Compared to 2014, did sales of LED fixtures in 2015 increase, decrease, or stay about the same? (Probe for percent share in 2014).
 - b. [If increased or decreased] What do you think has caused this change?
 - c. How do you expect sales of LED fixtures to change in the next year? Two years? (Probe for a percentage increase or decrease).
- LED5. [ASK ALL] When you market energy efficiency to your customers, do you actively encourage the (purchase/specification) of LED fixtures? (If not, probe for reasons why not).
- LED6. [ASK ALL] Are some commercial customers more receptive to the LED fixtures you (sell/specify)? Are some contractors more likely to install LED fixtures than others? [IF YES TO EITHER QUESTION ASK:] Why is that? (Probe for differences in LED fixture types, customer categories).
- LED7. [ASK ALL] What barriers, if any, do you currently face when (selling/specifying) LED fixtures compared to other lighting technologies? (Probe for barriers of price, long lead time, customer unfamiliarity with product, performance issues, customer disinterest, customer concerns about color, aesthetics, or light output).
- LED8. [ASK ALL] What kinds of feedback have you received, if any, from customers about LED fixtures? Any feedback from contractors? (Probe for the kinds of LED fixtures that they are hearing back about, especially those with integrated controls).
- LED9. [ASK ALL] What support, if any, is needed to encourage the market adoption of LED fixtures in Vermont? (Probe on whether this support should come from the Efficiency Vermont program or elsewhere).

Company Trends

We have just one more question before we wrap up the call.

- CT1. [ASK DESIGNERS] Approximately how many commercial projects did your organization provide lighting design assistance and/or specifications for in Vermont in 2015? (Probe for percentage new construction vs. retrofit).
- CT2. [ASK DISTRIBUTORS] Roughly what percentage of the total Vermont commercial lighting market would you say your company's sales represent? [IF ASKED WHY WE WANT TO KNOW THIS: "We'll keep this information confidential too, of course. We're just trying to get an idea of your company's size in relation to the Vermont commercial lighting market."]

Contact Information

Thank you again for taking the time to talk with us. The check I mentioned should arrive within two to three weeks.

- II1. Would you like the check made out in your name? [Confirm spelling of name on check]
- II2. What mailing address would you like your check mailed to?

Closing

- CL1. Do you have anything else to share with me on these topics or other topics that I have not addressed?
- END. Those are all of the questions that we have for you today. Thank you for your time.

HVAC Designers and Specifiers In-Depth Interview Guide

Date _____ Interviewer _____

Name _____ Organization _____

Title _____

Phone _____ Email _____

[NOTE: THE QUESTIONS IN THIS INTERVIEW GUIDE WILL NOT NECESSARILY BE READ VERBATIM BUT MAY BE MODIFIED TO SUIT THE INTERVIEW. IN ADDITION, THE INTERVIEWERS MAY SKIP QUESTIONS THAT ARE LESS RELEVANT TO A PARTICULAR INTERVIEW]

Introduction

- IN1. [USE THIS INTRO IF INTERVIEW WAS SET UP PRIOR TO CALLING] Hello, may I speak to [_____]?
- This is [_____] calling from NMR Group about the HVAC study we are conducting for the Vermont Department of Public Service. Does this time still work for you? [IF NO, RESCHEDULE] [IF YES, CONTINUE].



IN1a. [IF YES TO IN1] Are you the person who is most knowledgeable your organization’s work designing or specifying HVAC systems in commercial or institutional buildings in Vermont?

[IF NO, ASK TO BE TRANSFERRED TO APPROPRIATE RESPONDENT OR GET CONTACT INFORMATION] [IF YES, CONTINUE]

IN2. [USE THIS INTRO IF CALLING WITHOUT INTERVIEW SET UP BEFOREHAND AND NO DESIGNATED RESPONDENT] Hello, This is [_____] calling from NMR Group. We are conducting a study for the Vermont Department of Public Service about the market for HVAC systems for new and existing commercial or institutional buildings in Vermont. May I speak with someone who is knowledgeable about your organization’s work designing or specifying HVAC systems in commercial or institutional buildings? [IF THEY TELL US FIRM DOES NOT DESIGN OR SPECIFY HVAC SYSTEMS, TERMINATE. WE WILL NOT INTERVIEW INSTALLATION-ONLY FIRMS. ONCE CONNECTED WITH BEST CONTACT, READ FIRST SENTENCE AGAIN THEN ASK:] I would like to ask you questions about your experience with and views on the market for HVAC systems for new and existing commercial or institutional buildings in Vermont. In appreciation for your time, we will send you \$80. It will probably take about 30 to 45 minutes. Would you be willing to answer some questions about your experience with this market in Vermont? [IF NO, TRY TO SCHEDULE FOR ANOTHER TIME] [IF YES, CONTINUE].

IN3. [USE THIS INTRO IF CALLING A DESIGNATED RESPONDENT WITHOUT INTERVIEW SET UP BEFOREHAND] Hello, may I speak to [_____] ? This is [_____] calling from NMR Group. We are conducting a study for the Vermont Department of Public Service about the market for HVAC systems for new and existing commercial or institutional buildings in Vermont. Are you the person who is who is knowledgeable about your organization’s work designing or specifying HVAC systems in commercial or institutional buildings? [IF NO, ASK TO BE TRANSFERRED TO APPROPRIATE RESPONDENT OR GET CONTACT INFORMATION. IF THEY TELL US FIRM DOES NOT DESIGN OR SPECIFY HVAC SYSTEMS, TERMINATE. WE WILL NOT INTERVIEW INSTALLATION-ONLY FIRMS.] [IF YES] I would like to ask you questions about your experience with and views on the market for HVAC systems for new and existing commercial or institutional buildings in Vermont. In appreciation for your time, we will send you \$80. It will probably take about 30 to 45 minutes. Would you be willing to answer some questions about your experience with this market in Vermont? [IF NO, TRY TO SCHEDULE FOR ANOTHER TIME] [IF YES, CONTINUE].

[IF RESPONDENTS ASK FOR CONTACT ABOUT THE EVALUATION:

- VT DPS contact information:
 - Barry Murphy, Energy Efficiency Program Specialist, Barry.Murphy@vermont.gov or 802-828-3183
- EEU contact information

- Jake Marin, HVAC Program Manager, Efficiency Vermont, (802) 540-7700 or jmarin@veic.org
- Chris Burns, Burlington Electric Department, cburns@burlingtonelectric.com or 802-865-7337

[IF NEEDED: “The information you provide will be combined with observations from others and reported in aggregate, and your responses will be kept confidential.”]

Background

- B1. What is [ORGANIZATION NAME]’s primary business?
- B2. What is your role and what are your responsibilities at [ORGANIZATION NAME]?
- B3. How many employees does your organization have in Vermont, including yourself?
- B4. Does your organization work on new construction projects? Renovations or replacements? Gut rehab projects?
- B4a. Do you think of gut rehab projects as something separate from new construction or renovation projects? [If mentioned gut rehab not separate category] Do you consider gut rehab to be a part of your new construction projects, or part of your renovation projects?
- B5. About what percentage of your organization’s Vermont non-residential work (in gross revenue) is for new construction, [If said gut rehab separate category] what percentage is for gut rehab, and what percentage is for renovation or replacement in existing buildings?

Percent of Non-residential Work

- a. _____ New Construction
- b. _____ [If mentioned gut rehab separate category] Gut rehab
- c. _____ Renovation or replacement

Sum = 100%

- B6. What percentage of your projects involve a commissioning component or agent that is involved throughout the design and construction process? This would be a service beyond the typical functional testing that takes place at the building turn over.

Design Process



- DP1. When energy efficiency considerations are included in a project, is it typically the client who asks for those considerations, or is it the engineer who drives their inclusion?
- a. On what percentage of your projects do clients ask for energy efficiency considerations to be included?
 - b. What percentage of your projects exceed minimum CBES requirements?
- DP2. I understand that HVAC system designs (or the equipment that is specified) are not always what ends up in a building. How do you go about making sure that what you or your firm designs or specifies actually ends up in a building? (Probe on factors that may influence what is specified, such as budget constraints, cost-benefit analysis, the installation contractor, interest from clients).
- DP3. How often is the design or the specification your firm develops for a particular installation altered in a way that makes it less energy efficient? Who usually alters it? Why?
- DP4. In what percentage of projects do you have the freedom to apply the most appropriate HVAC equipment, instead of a pre-determined HVAC system?
- DP5. About how often do you encounter a project with Owners Project Requirements (OPR)? When you do, does the OPR affect the HVAC design or specification task? How?
- DP6. Do you ever take on projects for which your firm is replacing existing HVAC equipment? [IF YES:] I understand it can be hard to get owners, managers, or others who make decisions about replacement HVAC equipment for existing buildings to take energy efficiency into consideration, especially when it means replacing equipment with something different from what was there before. What could the Vermont utilities or the State of Vermont do to help change this?
- DP7. What could the Vermont utilities or the State of Vermont do to encourage building owners/ owner’s representatives or construction managers to incorporate energy efficiency into HVAC design or specification sooner in the process, or more frequently?
- a. How does this vary for existing buildings versus new construction or gut rehab?

Technologies Specified and Installed

- T1. How frequently does your firm design or specify [INSERT ITEM FROM LIST BELOW] for non-residential applications? [REPEAT QUESTION UNTIL LIST IS COMPLETED].
- Water Source Heat Pumps (WSHP) with a boiler and/or cooling tower
 - Water Source Chiller
 - Air Source Chiller

- Commercial Air Cooled Rooftop Units (RTUs) [IF ASKED: greater than 20 Tons and at least 240,000 BTUs per hour]
- Ground Source Heat Pumps (GSHP)
- Biomass
- Ice Storage
- Variable Refrigerant Flow

T2. What HVAC equipment do you most commonly specify or include in system designs for non-residential applications? [LIKELY OPTIONS LISTED BELOW—DO NOT READ]

- Water Source Heat Pumps (WSHP) with a boiler and/or cooling tower
- Commercial Air Cooled Rooftop Units (RTUs) [IF ASKED: greater than 20 Tons and at least 240,000 BTUs per hour]
- Ground Source Heat Pump Systems (GSHP)
- Air Source Heat Pump Systems
- Ductless Mini-Split Heat Pumps
- Boilers

- a. How does this differ by
- a. Building size?
 - b. Intended building use?

T3. Now I'm going to read you a list of some types of HVAC equipment and topics. What market trends are you seeing with any of these?

- Water Source Heat Pumps (WSHP) with a boiler and/or cooling tower
- Water source chiller
- Air source chiller
- Ventilation Strategies

[ASK IF TIME ALLOWS; COME BACK TO AT END IF NEEDED] And now I'm going to read you a list of some other types of HVAC equipment. What market trends are you seeing with any of these technologies?

- Commercial Air Cooled Rooftop Units (RTUs) (if asked: greater than 20 Tons and 240,000 BTUs per hour)
- Ground Source Heat Pump Systems (GSHP)



- Biomass
- Ice Storage
- Variable Refrigerant Flow

T4. What challenges have you encountered with any of these technologies or system types?

Code Changes

- CC1. In what ways, if any, have recent code changes in Vermont affected your organization’s projects or the selection of systems that you design or specify?
- CC2. I understand that recent code changes have increased the requirements for certain HVAC equipment controls. How, if at all, has this change affected the efficiency of the systems you are designing for your customers?
- CC3. What are the primary reasons that you design high efficiency HVAC systems in your commercial or institutional projects? (Probe: “Is it because it is specified by code? Or is that influence due to something else, such as utility efficiency program offerings, customer preferences, or a mix of all of the above?”)

Program Experience

We’re almost done. I have just a few more questions.

- PE1. Some of the energy efficiency programs offered by Efficiency Vermont, Burlington Electric, and Vermont Gas include design support or incentives for efficient HVAC equipment and systems. Have you had any interactions with any of these programs in the last three years?
- PE2. Please tell us about your experience. [PROBE FOR THE UTILITY AND TYPE OF PROJECT AND PARTICIPATION. IF NEEDED: “For example, your organization may have installed program-qualifying energy-efficient equipment and/or helped customers apply for rebates or incentives from [UTILITY].”]
- PE3. What aspects of the program(s) worked well from your perspective?
- PE4. What aspects of the program(s) would you change or improve on if you could?

Check Information

Please expect your \$80 check to arrive within two to three weeks.

- II1. Would you like the check made out in your name? [Confirm spelling of name on check]
- II2. What mailing address would you like your check mailed to?

Closing

- CL1. Do you have anything else to share with me on these topics or other topics that we have not addressed?
- END. Those are all of the questions that we have for you today. Thank you for your time.