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Market Characterization and Establishing the Market Baseline for the Commercial Real Estate Initiative

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Executive Summary

The Northwest Energy Efficiency Alliance (NEEA) engaged Cadmus in April 2013 to conduct research on the commercial real estate (CRE) market of leased office space and NEEA's CRE Initiative in the Northwest region of Idaho, Montana, Oregon, and Washington.

The CRE Initiative, offered since 2007, engages the Northwest's commercial office real estate market to adopt strategic energy management (SEM) practices to reduce energy use in this sector. SEM is a system of continuous management practices for existing and new buildings. This system of management practices is different from ad-hoc energy management projects. The CRE Initiative SEM requires (at minimum) the following five components:

1. Adoption of management-approved energy performance improvement goal at the firm, portfolio, and/or building level;
2. Documentation of planned activities to achieve the goal;
3. Allocation of resources (staff and training or capital) towards the goal;
4. Implementation of planned activities;
5. Regular management review of progress achieved toward energy performance goal and effectiveness of SEM practices.

The NEEA CRE Initiative uses a variety of formats to promote SEM practices including:

- The Market Partners Program, which employs an organizational coaching process to make SEM an integral part of the way the target market does business.
- Commercial office efficiency competitions, which engage the target market to adopt SEM practices.
- Industry education and training, which builds analytic skills and operating knowledge of the competitive advantage of energy efficiency through professional seminars and workshops delivered by market allies.
- Additional marketing communications that provide case studies, analytic tools, and templates that equip building owners and managers to achieve increased market value through energy efficiency.

Research Objectives

NEEA defines the target market for the CRE Initiative as large leased commercial office buildings, not occupied by owners. This definition assumes a minimum 50,000-square-foot building for Washington and Oregon and a 20,000-square-foot building for Idaho and Montana. The three research objectives for this project were:

Characterize the market. Cadmus researched the market in two ways. First, a review of secondary sources provided a profile of the physical attributes[1] of the market in terms of number and location of buildings, square footage, and engagement with the CRE Initiative. Second, interviews with market experts and surveys of building staff provided information about the market's qualitative aspects. These included industry awareness of SEM, business drivers, barriers to energy efficiency and SEM, and trends related to energy-efficiency.

Measure SEM adoption. Cadmus interviewed a representative sample of individuals responsible for energy management decisions at CRE office buildings across Idaho, Montana, Oregon, and Washington to measure the market penetration of full SEM. In addition, the survey provided additional information used to support the market characterization.

Establish the market baseline. Cadmus recruited a subset of the market experts to estimate the baseline level of SEM between the years 2000 and 2033 under the assumption that NEEA, the BPA, the Energy Trust of Oregon, and local utilities had not intervened in this market.

Key Findings

Market Characterization: Physical attributes. In 2013, the CRE office market in the NEEA region consists of 1,677 buildings that include 166.8 million square feet of leasable space. Seventy percent of these buildings and 85 percent of the square footage are located in Oregon and Washington.

The MPP and Competition cohorts engage with 16 percent of the buildings representing 37 percent of the market square footage. The cohort members are concentrated in Washington and Oregon.

Market Characterization: Combined results from interviews with market experts and SEM surveys with decision makers.

- Awareness. Forty-one percent of SEM survey respondents and 56 percent of expert interview respondents were aware of SEM. In response to a separate question specifically regarding awareness of the NEEA Initiative, Cadmus found awareness in both groups was about 12 percent lower than their awareness of SEM.
- Business Drivers. Financial considerations are the top business drivers for all respondents when they are planning energy-efficiency goals and practices. Specifically, project cost, company cash flow, and property cash flow are the top concerns.
- Barriers. Respondents identify high initial cost, competition for funding with other company priorities, and lack of staff time as the most significant challenges to energy-efficiency efforts and SEM adoption.
- Information NEEA could provide. Respondents identified the need for a clear definition of SEM, training, success stories, financial payback, and explanation of staff requirements as information that NEEA could provide that would help businesses adopt SEM.

[1] Data on physical attributes of buildings in the market obtained from the CoStar Group in August 2013. Building square footage values use the "Rentable Building Area" field in CoStar reports.

SEM adoption. Cadmus' survey found that 8 percent of respondents have implemented full SEM in the buildings they manage. Full SEM requires building managers to practice all five of the components listed above (adoption of goals, documentation of activities, etc.).

- Implementation of the individual components ranged from 38 percent to 68 percent.
- Nearly half the respondents (19 of 40) implement three, four, or all five components of SEM with twelve of these buildings in Washington and six in Oregon.

SEM market baseline. Experts provided a wide range of estimates of SEM market baseline using the Cadmus market adoption tool even after considering the SEM adoption survey results. For all experts the average of these estimates was 25 percent in 2013 and 47 percent in 2030. After review of each respondent's estimate, Cadmus selected five experts to keep and four experts to remove from the final analysis of baseline. Cadmus removed experts if their comments indicated that their estimate did not follow the instructions regarding the definition of SEM or the assumption that the CRE Initiative did not intervene in the market. Based on the estimates of the selected experts, Cadmus found the market baseline for SEM adoption to be 5% in 2013 and 33% in 2030.

Conclusions and Recommendations

Cadmus concludes:

- More than half of the people responsible for energy decisions in the target market are not aware of SEM (as defined by NEEA) nor were they aware of the NEEA CRE Initiative. This suggests that NEEA could increase efforts to inform this target market about SEM and the Initiative.
- Financial concerns are the primary barriers to full SEM adoption. According to the interview and survey respondents, financial performance is the main business driver behind energy-efficiency decisions. Cadmus found that financial concerns are among the top barriers to major energy-efficiency efforts and to adopting SEM. In addition to the financial concerns, Cadmus found that respondents see the perceived demands that participating in NEEA's initiative and adopting full SEM places on staff time to be a barrier to adoption.
- Although many businesses are not aware of SEM or the initiative, 80 percent are adopting between one and four components of SEM, but few are adopting full SEM (all five components defined by NEEA).

Cadmus recommends:

- Cadmus overall recommendation is for NEEA to consider actions to increase awareness of SEM and its value. Cadmus identifies three distinct parts of this recommendation.
    - First, Cadmus recommends that NEEA take steps to communicate their vision of full SEM (defining the five components) and the associated benefits of implementing SEM components. Communicating success stories is one of the best ways to accomplish this goal.
    - Second, Cadmus recommends that NEEA consider providing examples illustrating best practices to implement full SEM. Success stories can communicate NEEA's vision and provide examples of best practices.
    - Third, Cadmus recommends that NEEA communicate the financial benefits of SEM and show a clear payback strategy. Cadmus identified financial performance as the top business driver behind energy-efficiency decisions. For SEM, financial considerations were a top barrier to implementing SEM practices. NEEA should consider ways to provide a financial summary with real-world examples.

Secondary conclusions and recommendations

- Cadmus **concludes** the absence of information about the energy benefits of SEM may limit the success of SEM advocacy and implementation. Cadmus **recommends** that NEEA continue to study the energy benefits realized by the MPP cohort and the Competition cohort.
- Cadmus **concludes** that SEM adoption—three, four or all five components—is concentrated in Washington and Oregon in buildings larger than 50,000 square feet. All three full SEM buildings are larger than 100,000 square feet. Cadmus **recommends** that NEEA consider conducting focused research on the small building segment, especially in Idaho and Montana, to determine why respondents in these areas are not as aware of strategic energy management as their counterparts in Washington and Oregon.

1 Introduction

The Northwest Energy Efficiency Alliance (NEEA) engaged Cadmus in April 2013 to conduct research on the commercial real estate (CRE) market of leased office space and NEEA's CRE Initiative in the four Northwest states.

The CRE Initiative, offered since 2007, engages the Northwest's commercial office real estate market to adopt strategic energy management (SEM) practices to reduce energy use in this sector. SEM is a system of continuous management practices for existing and new buildings. This system of management practices is different from ad-hoc energy management projects. NEEA's definition of full SEM has been evolving. At present, the CRE Initiative SEM requires (at minimum) the following:

1. Adoption of management-approved energy performance improvement goal at the firm, portfolio, and/or building level;

2. Documentation of planned activities to achieve the goal;

3. Allocation of resources (staff and training or capital) towards the goal;

4. Implementation of planned activities;

5. Regular management review of progress achieved toward energy performance goal and effectiveness of SEM practices.

The NEEA CRE Initiative uses a variety of formats to promote SEM practices. These include:

- The Market Partners Program (MPP). NEEA engages leading Northwest real estate firms to adopt SEM practices through an organizational coaching process, with the goal of making SEM an integral part of how the target market does business. NEEA describes this group as the MPP cohort.

- Commercial office efficiency competitions. Office competitions engage firms, managers and operators of buildings in the target market to adopt components of SEM. These practices include operations and maintenance best practices, benchmarking, goal setting, energy management action planning, and reporting on results. Competitions, delivered in partnership with market allies such as Building Owners and Managers Association (BOMA), result in significant energy savings for the region. Past competitions include Portland's Office Energy Showdown, Carbon4Square and Seattle's Kilowatt Crackdown. Current competitions include Portland and Boise's Kilowatt Crackdown. NEEA describes this group as the Competition cohort.

- Industry education and training. The Initiative builds analytic skills and operating knowledge of the competitive advantage of energy efficiency through professional seminars and workshops delivered by market allies.

- Additional marketing communications that provide case studies, analytic tools, and templates that equip building owners and managers to achieve increased market value through energy efficiency.

Note that the MPP is primarily an organizational (firm) level adoption, while the office competitions engage (with staff) at the building level. In cases where MPP firms manage buildings, there is some overlap between the two cohorts.

For the CRE Initiative, NEEA defined the target market as large leased commercial office buildings, not occupied by owners. This definition assumes a minimum 50,000-square-foot building for Washington and Oregon and a 20,000-square-foot building for Idaho and Montana.

1.1 Research Objectives

There are three key research objectives for this project – conducting a market characterization to update NEEA's understanding of the market, establishing the market baseline for the CRE Initiative, and measuring market penetration due to the CRE Initiative and the resulting SEM adoption.

1.1.1 Characterize the Market

Cadmus conducted two activities to gather data to meet NEAA's market characterization objective: a review of secondary sources and interviews with market actors.

- **Review of secondary sources:** This research compiled quantitative information, such as the size of the commercial office market (leased space), the number of owners, the number of property managers, the level of engagement with the CRE Initiative, and energy use intensity.[2]

- **Interviews with a variety of market actors:** This research collected information about the market's qualitative aspects, such as the business drivers that guide decision making for building managers, building owners, and other key players in the market. This research also focused on industry awareness of SEM, barriers to energy efficiency and SEM, and long-term trends related to energy-efficiency.

Cadmus used data collected to develop a description of the commercial office market (leased space) in the quantitative and qualitative areas identified above.

[2] Data on physical attributes of buildings in the market obtained from the CoStar Group in August 2013. Building square footage values use the "Rentable Building Area" field in CoStar reports.

1.1.2 Measure SEM Adoption

The second major objective was to measure the market penetration from the CRE Initiative and any resulting SEM adoption. Cadmus interviewed a representative sample of 40 people across the four Northwest states served by NEEA to collect data on building operations. Interviewees were responsible for making energy related decisions and were either property managers or people with direct knowledge of building operations.

The surveys resulted in an estimate for market penetration of SEM practices in 2013 and the influence of the CRE Initiative and similar programs. The survey-based estimates of market penetration met the 90 percent confidence interval with 13 percent precision.

1.1.3 Establish the Market Baseline for the CRE Initiative

A third major objective established the market baseline for the CRE Initiative. Cadmus collected data from market experts using its market adoption tool, a unique online interface, with which experts can provide individual estimates of market adoption and market penetration.

Cadmus originally developed the tool to collect market adoption data for a California Public Utilities Commission impact evaluation of building codes and appliance standards. The tool debuted in a 2007 pilot study and has since been enhanced and used for two impact evaluations. This tool also supports a Delphi (Linstone 1975) forecasting process, in which experts can provide input and revise their estimates after viewing other experts' inputs.

Using this tool, Cadmus produced a market share estimate for the adoption of SEM practices, assuming NEEA did not introduce the CRE Initiative in 2007, and Bonneville Power Administration (BPA), Energy Trust of Oregon, and other utilities did not introduce similar programs. Cadmus provided a timeframe to establish the baseline, beginning in 2000 and extending through 2033. The start year of 2000 allowed participating experts greater flexibility in estimating market share in 2007 and beyond. This market share estimate provides an appropriate market baseline for the adoption of SEM practices. Cadmus also asked the panel of eight experts to provide comments supporting their estimates.

1.2 Organization of this Report

The remainder of this report includes these sections:

- Methodology – This section provides a description of research methods and specific approaches taken in each of the evaluation activities.
- Findings.
- Conclusions and Recommendations.
- Appendices – These include additional detail on research methods, data collected, the interview guide, and the SEM adoption survey instrument.

2 Methodology

This section summarizes research methodologies used to meet the three major research objectives. Table 1 summarizes the primary research objectives, associated research activities, respondents, and sample frame.

Table 1: Description of Research Tasks

Research Objective	Primary Research Activity	Respondents	Sample Frame
Characterize the Market	Interviews	Market Experts	52
Measure SEM Adoption	Survey	Owners, managers, and staff responsible for making energy decisions	610
Establish the Market Baseline	Delphi Panel	Market Experts	16

Table 2 summarizes the number of completed interviews and surveys, and lists the position title or role of the respondents.

Table 2: Research Objectives and Data Collection Activities

Research Objective	Interview and Survey Respondents	Position Title or Role
Characterize the Market	18 market expert interviews	Property Manager, Facility Director or Manager, Maintenance Manager, Building Engineer Director of Engineering, Project Coordinator/ Manager /Director, President, Building Owner, Other Senior Management
Measure SEM Adoption	40 surveys, including participants and nonparticipants in CRE Initiative	Property Manager, Facility Director or Manager, Maintenance Manager, Building Engineer, Director of Engineering, Project Coordinator/Manager/Director, President, Building Owner, Other Senior Management, Asset Manager, Portfolio Manager, Developer
Establish the Market Baseline	9 market expert participants in Delphi panel	Building/Facility Manager, Energy Program Consultant, Commercial Real Estate Professional, Trade Association Manager Utility Program Manager

Note that the SEM adoption survey administered for this research collected data to measure the penetration of SEM in the broad CRE market. The survey sample included a limited number of firms engaged in the CRE initiative Market Partner Program (MPP) cohort or the CRE Initiative Competition cohort. However, data collected did not measure SEM adoption specifically in either of these populations. NEEA plans to conduct a full program evaluation through assessment of organizational practices, and interviews with executives of each firm, to determine SEM adoption across the full MPP cohort.

2.1 Research Methodology

Cadmus used a variety of methods to accomplish the research objectives. To characterize the market, Cadmus relied on secondary sources to provide information about the physical attributes of the commercial office building market in the NEEA region. To learn more about the knowledge and attitudes of industry executives with regard to energy management, Cadmus interviewed a number of senior managers from each of the states (ID/MT/OR/WA).

To measure the extent of SEM adoption, Cadmus conducted a survey designed to present significant findings with representation proportional to the state markets, the range of building sizes, and representation of the NEEA cohorts (MPP and Competition). Cadmus also leveraged the survey to gather additional information on knowledge and attitudes of people responsible for energy management. Cadmus used this information to characterize the market.

To establish the market baseline, Cadmus used its online market adoption tool to collect information from market experts in an iterative Delphi process.

The next sub-sections describe each of the research methods in detail.

2.1.1 Characterize the Market

2.1.1.1 Review of Secondary Sources

Cadmus reviewed the available data sources including prior research such as the Commercial Building Stock Assessment (CBSA) and publicly available reports. Most sources, such as those offered by commercial real estate firms, have limitations that prevented them from being useful to this project. For example, most of the commercial reports cover only a single metropolitan area or focus on properties available for lease. Cadmus concluded that the database maintained by CoStar is the best single source of information on the CRE large office segment, since it covers the entire region using uniform methods.

2.1.1.2 Average Energy Use

NEEA and Cadmus agreed not to collect energy information from building owners and property management companies contacted through the surveys and interviews for the following reasons:

- Survey respondents may not have access to accurate information regarding a building's energy use.
- Building owners and property management companies consider energy use as sensitive information.
- Cadmus could not validate self-reported data from surveys and interviews.

To support future collection of such data, Cadmus asked survey respondents for permission to obtain energy consumption data from their utility.

Because consumption data were not available from survey respondents, Cadmus conducted an analysis of aggregate 2007 CBSA data to calculate normalized energy use intensities (EUIs) for electric and gas use to characterize the CRE Initiative's target population. The analysis included the subset of commercial office buildings in the size (square feet) ranges specified in this study. The CBSA has data for nine buildings in Idaho, 62 in Oregon, and 72 in Washington. (There were no buildings in the CBSA data that met the criteria in Montana.)

2.1.1.3 Market Expert Interviews

Market characterization research included interviews with a variety of experts who could bring multiple perspectives and intelligence about the commercial real estate market and the CRE Initiative. In this research, Cadmus defined an "expert" as an individual who has gained relevant expertise through a number of different roles in the commercial real estate market segment. Experts included, for example, engineers, directors, and property managers.

Interviews investigated the respondents' awareness of the CRE Initiative and SEM, barriers to participating in SEM, strategies to encourage participation in SEM, business goals and drivers related to energy consumption, current energy management strategies, and related industry trends.

NEEA provided a list of 28 qualified experts based on its experience in the CRE market. Cadmus developed a list of 15 additional experts from the CoStar data, identified based on their position or title. They included real estate brokers at prominent firms, senior members of the Building Owners and Managers Association (BOMA), and editors of industry publications. Cadmus attempted to interview all of these individuals. Researchers asked all individuals interviewed if they could provide referrals to other qualified experts. In this way, Cadmus obtained contact information for nine additional individuals. With referrals, the total candidate list consisted of 52 individuals.

Cadmus recommended a sample number of expert interviews that corresponded roughly to the size of the target market in each of the NEEA states and NEEA agreed with this approach. Table 3 shows the target number of interviews as a range with a minimum and maximum.

Table 3: Sample Plan for Expert Interviews

Number of Expert Interviews	OR	WA	ID	MT	Total
Targeted Range	6-8	6-8	2-4	2-4	16-24
Completed	8	7	2	1	18

Cadmus completed the interviews between July 18, 2013, and September 12, 2013. Eighteen respondents completed the interview, but not every table or figure here reflects the total number of completes because some respondents did not want to answer the question or did not know how to answer the question. Of the 18 completed interviews, 17 were from the NEEA list or referrals and one was from the Cadmus list.

2.1.2 Establish the Market Baseline for the CRE Initiative

2.1.2.1 Description

Cadmus asked market experts to estimate the market penetration of NEEA-defined SEM practices in the absence of SEM promotion efforts by NEEA, the Bonneville Power Administration, the Energy Trust of Oregon, or other regional utilities. Cadmus relied on the expert participants' own awareness of existing and prior market conditions to assess the current level of market penetration. Cadmus used its online market adoption tool because it provides an easy, visual way for participating experts to estimate the market trend over time. Cadmus' tool

also supports an iterative Delphi process where experts are able to view the estimates and comments of other experts anonymously after each round of estimates are complete.

2.1.2.2 Sample Plan

Cadmus recruited 13 market experts from the 18 individuals interviewed as part of the market characterization study. These 13 were willing to participate in the market baseline study. With NEEA's assistance, Cadmus expanded this group to include three utility program managers for a pool of 16 candidates. Nine of the candidates completed the market adoption assessment. They included northwest commercial office building experts: five building or facility managers, one energy program consultant, one commercial real estate professional, one manager of a trade association, and one utility program manager. In terms of their office locations, five of the experts are located in Oregon, three are located in Washington, and one is located in Virginia.

2.1.2.3 Market Adoption Tool

The market adoption tool is web-based. Cadmus provided participating experts with confidential login access. Using a mouse to click on a user-adjustable set of three graphical curve-building sliders, participants constructed a market penetration curve over the 2000-2033 period that estimated three important characteristics of market adoption (Rogers 2003). These characteristics are:

- **Maximum market penetration** participants thought SEM practices would have in the absence of market intervention by NEEA, the BPA, the Energy Trust of Oregon, or local utilities

- Extent to which **leading behavior**, or the behavior of early adopters, influenced market penetration

- Extent to which **following behavior**, or the behavior of those influenced by early adopters and the increasing market presence of SEM practices, influenced market penetration

Participants were also required to provide comments to support their estimates.

After submitting and locking the first round of responses, Cadmus asked participants to go back to the tool after all experts had submitted their estimates, generally within a few days of the first round. Once logged in for the second round, each participant could see all of the market penetration estimates made by the other experts, along with comments explaining each expert's decision-making process. All comments and estimates were anonymous; no participants were identifiable in either round. Given this additional information, participants had three options: (1) make a change in their original estimate by using the sliders to re-build the curve; (2) accept the average of all expert estimates (also displayed) as their own; or (3) use their original estimate with no changes.

The results of this process are included in section 3.4.

2.1.3 Measure SEM Adoption

2.1.3.1 SEM Adoption Survey Description

Cadmus conducted surveys with a representative sample of 40 people—responsible for making energy decisions for a specific building—to collect data on building operations. Respondents represented the four NEEA states: Idaho, Montana, Oregon, and Washington. Respondents were primarily property managers or people with direct knowledge of building operations. The survey-based estimates of market penetration met the 90 percent confidence interval with 13 percent precision.

The main purpose of the survey was to determine the adoption rate of SEM among qualified commercial office energy managers. The survey also asked questions about future trends, barriers to energy efficiency practices, and awareness of energy management initiatives.

Cadmus qualified interview subjects with two specific questions at the start of the survey. First, they were asked, *"Are you the person responsible for making energy decisions at the <property address>?"* Secondly, respondents provided their position title. Cadmus accepted several titles such as owner, property manager, facility manager and engineer and rejected a few, such as consultant or agent. Figure D-6 in Appendix D provides the full list of respondents' position titles.

Appendix B describes the process used to develop the SEM adoption survey sample plan.

2.1.3.2 SEM Adoption Survey Sample Plan

Cadmus worked with NEEA to determine that the survey to measure market adoption should concentrate on individual buildings consistent with the research approach that defined the market in terms of numbers of buildings and their square footage. With this in mind, the goal of the survey was to have the survey respondent focus on a specific building when they answered the survey questions.

Cadmus completed eight surveys with people who also completed in-depth (expert) interviews (for market characterization as described in Section 2.1.1.3). These respondents qualified for the SEM survey because they were responsible for energy decisions at a specific building. To draw the sample for additional surveys, Cadmus developed a sample frame of qualified buildings in the market.

To develop the building-based sample frame, Cadmus referred to the CoStar database to identify potential candidates. Although there are 1,677 building records in the CoStar database, only 584 provided usable contact information. Cadmus removed records that did not have phone numbers or were duplicates of other records within the list (same phone number or property address). Table 4 shows the attrition of sample records.

The 32 surveys completed using contact information from CoStar represents 5.5 percent of the usable CoStar records. RDD Field Services (RDD) attempted each record in the sample frame eight times before considering it final and resolved.

Table 4: Sample Attrition

Description	Total	Oregon	Washington	Idaho	Montana
Records from database	1,677	395	783	339	160
Duplicates and incorrect company types	683	162	399	97	25
Records without phone numbers	411	82	84	148	97
Usable records attempted	584	151	300	95	38

The original target of 75 completed surveys was set to produce survey results with at least 90 percent confidence and 10 percent precision for the entire population of qualifying CRE office buildings.

2.1.3.3 Completed Surveys

Cadmus and RDD completed 40 surveys between July 18, 2013, and October 15, 2013. The surveys included 32 from CoStar database and eight experts previously interviewed.

- Cadmus collected data for 18 surveys. Of the surveys Cadmus conducted, eight were with owners or managers who also participated in the expert interviews. Ten were contacted using information from the CoStar sample.
- RDD collected data for 22 surveys. All of the surveys RDD completed used contact information from the CoStar sample.

For the population of 1,677 buildings, 40 surveys produce results with 90 percent confidence and 13 percent precision.[3]

Table 5 compares the distribution of responses between states and building size categories to the planned survey targets established. The values in the "Share" column show that the percentage of surveys in each state was very near to the target mix. The values in the "Share" row confirm that the mix by building size category was nearly identical to the established target. Cadmus concludes that the completed surveys provide representation of the states and building size categories as designed.

[3] Confidence and precision are widely used parameters to describe the statistical significance of a result based on sampling of a larger population. In this case, the parameters can be applied to survey results like the allocation of staffing resources. For example the survey found that 50% of the firms have allocated staffing resources. Statistically, Cadmus has 90% confidence that the correct value for this population is within 13% of the value found (between 44% and 56%).

Table 5: Comparison of Survey Targets to Completed Surveys

State	Survey Target (building size)					Completed Surveys (building size)				
	<50K	50K-100K	>100K	Total	Share	<50K	50K-100K	>100K	Total	Share
WA	-	12	23	35	47%	-	7	13	20	50%
OR	-	7	11	18	24%	-	5	6	11	28%
ID	7	3	5	15	20%	5	1	2	8	20%
MT	4	2	1	7	10%	1	-	-	1	3%
Total	11	24	40	75	100%	6	13	21	40	100%
Share	*14%*	*32%*	*54%*	*100%*		*15%*	*33%*	*53%*	*100%*	

With regard to representation of the CRE Initiative cohort, Cadmus' analysis in Table 9 found that the cohort represents 16 percent of the building population and 38 percent of the building square footage.

Cadmus classified the completed surveys by state and by NEEA cohort. Eleven of the 40 surveyed were members of one of the NEEA cohorts. Therefore, the cohort represented 29 percent of the survey input. Cadmus regards this as appropriate representation for the cohort. Table 6 shows this classification by state.

Table 6: Survey Breakdown by State and CRE Initiative Cohort

	Total Respondents	Oregon	Washington	Idaho	Montana
Cohort	11	6	3	2	0
Non cohort	29	5	17	6	1
Total Respondents	40	11	20	8	1

2.1.3.4 Assessing SEM Adoption

Cadmus asked respondents to focus on one specific building and to answer several questions to determine the level of SEM adoption in that building. Table 7 shows the scoring matrix used to evaluate SEM implementation. The scoring based SEM adoption on respondents' answers to these questions. The scoring allows Cadmus to put each survey respondent into one of the following three categories with regard to SEM adoption.

- Full SEM Implementation. NEEA defined the specific survey responses that are required for each component. Full implementation requires implementation all five components defined by NEEA.

- Some SEM Implementation. Survey responses indicate implementation of one, two, three, or four of the SEM components in the building.

- No SEM Implementation. Survey responses indicate implementation of none of the SEM components defined by NEEA.

Table 7: SEM Definition

Item	Components of SEM Definition	REF	Survey Question(s)	Level of SEM implementation		
				Full	Some	None
1	Adoption of management-approved energy performance improvement goal at the firm, portfolio, and/or building level;	E1	Has your company established any energy reduction goals in the last five years?	1. (Yes)	**Yes** on one or more AND **No** on one or more	All other responses
		E5	Have these goals been presented to and accepted by members of the management team such as C-level executives, VP of Property or Asset Management, Senior Property Manager, Chief Engineer or some other member of the mgmt. team?	1. (Yes)		All other responses
2	Documented planned activities to achieve the goal;	F1	Have you and/or your organization identified practices to help you reduce energy use in this building?	1. (Yes)		All other responses
		F6	Have you and/or your organization documented the list of practices you identified?	1. (Yes)		All other responses
3	Allocation of resources (staff and training or capital) towards the goal;	G1	Which of these resources has your organization allocated for energy reduction? Staffing, Training, Capital, Other	G1a. Staffing (Yes)		All other responses
4	Implementation of planned activities;	F4	Have you implemented all, most, some, or none of the practices you planned as part of reducing energy use?	1. (All) 2. (Most) 3. (Some)		All other responses
5	Regular management review of progress achieved toward energy performance goal and effectiveness of SEM practices.	I1	Do you provide reviews for management indicating your company's progress toward reducing your organization's energy use?	1. (Yes)		All other responses
		I4	How frequently do you provide reviews to management about the progress your organization is making in reducing energy use?	1. (Annual) 2. (Quarter) 3. (Monthly) 5. (Other)		All other responses
		I7	Which of the following items do your management reviews include? Do they include …	I7b (Yes) I7c (Yes) I7d (Yes)		All other responses
			SEM Implementation Score	**5 components**	**1-4 components**	**0 components**

3 Findings

Cadmus summarizes findings from the research in this section, organized by the major research objectives.

To characterize the market, Cadmus first provides the physical description of the market data collected from the CoStar database and NEEA's tracking file in section 3.1.

In section 3.2, Cadmus includes findings drawn from the expert interviews. In some cases, Cadmus supplements the interview results with findings on the same topic from the SEM adoption survey. Cadmus notes SEM adoption survey findings in the subsections where these are included.

Following the market characterization findings, section 3.3 presents the results of the SEM survey including the adoption of full SEM as defined by NEEA and each of the five components.

Finally, section 3.4 summarizes the market baseline estimate determined using the market adoption tool.

3.1 Market Characterization: Physical Attributes

This section provides a summary of each of the following aspects of the market:

- The size of the target market in all four states, by building count and square footage;
- The market share of the NEEA cohorts;
- The number of owners and property managers, by state; and
- Average building energy use.

3.1.1 Market Size: Building Count and Square Footage

In 2013, Cadmus found that the market consists of 1,677 buildings and 166.8 million square feet of leasable space. The market is concentrated in Washington and Oregon, which together have 70 percent of the buildings and 85 percent of the square footage in the market. Table 8 summarizes these findings.

Table 8. Share of Target Market by State

State	Building Count		Square Footage	
	Building Count	Share of Total	Building Area (Square Feet)	Share of Total
Washington	783	47%	95,161,945	57%
Oregon	395	24%	47,205,221	28%
Idaho	339	20%	17,782,049	11%
Montana	160	10%	6,657,721	4%
NEEA Region Total	1,677	100%	166,806,936	100%

3.1.2 Market Share of the NEEA CRE Initiative Cohorts

Cadmus compared the buildings included in NEEA's CRE Initiative Master List to the buildings listed in the CoStar database. Table 9 provides the results of this comparison. The *Building Count* and the *Building Area* columns provide the total for the NEEA cohorts in each state and then for the NEEA region overall. The *Share of Total* is the ratio of the cohort part of the market to the overall market as shown in Table 8 in terms of building count or square footage as indicated by the label over the columns.

Cadmus found that through the CRE Initiative cohorts, NEEA engages with 19 percent of the buildings representing 41 percent of the building area in Washington. NEEA's level of engagement is similar for Oregon. The cohorts represent a smaller share of 11 percent of the buildings and 20 percent of the square footage in Idaho, while there are no cohort buildings identified in Montana. The bottom row in the table gives the share of building count, 16 percent, and building area, 37 percent, for the NEEA region overall.

Table 9: Market Share of the NEEA CRE Initiative Cohorts

State	Building Count		Square Footage	
	Building Count	Share of Total	Building Area (Square Feet)	Share of Total
Washington	151	19%	39,178,723	41%
Oregon	89	23%	18,406,342	39%
Idaho	36	11%	3,575,500	20%
Montana	0	0%	0	0%
NEEA Region Total	276	16%	61,160,565	37%

3.1.3 Market Size: Number of Owners and Property Managers

Cadmus determined the number of owners and property management companies in the target market from the CoStar database, as shown in Table 10. The CoStar database includes an owner entry for 96 percent of the records and a property management company entry in 44 percent of the records.

Cadmus finds that building ownership is more concentrated in Washington and Oregon since the ratio of buildings to building owners is nearly two-to-one in these two states, while it is much closer to one-to-one in Idaho and Montana.

Table 10: Owners and Property Managers in the Target Market by State

State	Building Count	Number of Owners	Number of Property Management Companies
Washington	783	435	164
Oregon	395	258	76
Idaho	339	285	32
Montana	160	132	9
NEEA Region Total	1,677	1,110	281

The count may overestimate the number of owners because the population included some buildings for which there were insufficient data to determine if they met the criterion. For

example, legal entities with similar names could represent the same owner or real estate owners could create special-purpose entities to hold legal ownership of a property or group of properties.

Cadmus treated each separately named entity as unique in the count of owners unless data clearly indicated common ownership (even though a single owner could own multiple subsidiaries or property in more than one state).

The count of property management companies also could reflect some errors, although the extent of these errors remains unclear. As with owners, the number of property managers may be overestimated because the number of buildings was overestimated or because a single property management companies could operate in more than one state. Many CoStar entries did not include information on property management so it is possible that the number of property managers could be underestimated.

3.1.4 Average Building Energy Use

Cadmus conducted an analysis of aggregate 2007 CBSA data to calculate normalized energy use intensities (EUIs) for electric and gas use to characterize the CRE Initiative's target population. The analysis included the subset of commercial office buildings in the size (square feet) ranges specified in this study. The CBSA has data for nine buildings in Idaho, 62 in Oregon, and 72 in Washington. (There were no buildings in the CBSA data that met the criteria in Montana).Table 10a on the next page shows the findings.

Table 10a: Average Building Energy Use

Group	Subset	Gas		Electric	
		Number of Buildings	EUI (Therms/SF)	Number of Buildings	EUI (kWh/SF)
Overall	Overall	81	0.161	143	19.22
Primary Heating Fuel	Electricity	19	0.044	60	24.04
	Natural Gas	59	0.202	70	15.22
	Other	3	0.041	13	17.22
Size Category (Square Feet)	20,000-50,000	5	0.246	6	8.60
	50,000-100,000	26	0.236	37	18.51
	100,000-500,000	42	0.139	80	19.55
	>500,000	8	0.120	20	20.09
Vintage	1987 or earlier	49	0.166	86	16.53
	1988-1994	15	0.137	24	26.45
	1995-2001	8	0.171	20	22.32
	2002-2007	9	0.147	13	25.81
State	ID	6	0.215	9	15.12
	OR	49	0.190	62	16.74
	WA	26	0.114	72	21.31

Source: 2007 Commercial Building Stock Assessment

3.2 Market Characterization: Findings from Expert Interviews and the SEM Survey

3.2.1 Interview Respondent Experience in the Commercial Real Estate Industry

Table lists the titles and numbers of the experts and industry actors.

Table 11: Title or Role of Interview Respondents

Title or role	Number
Engineer (director of engineering, chief engineer)	4
Director or executive director	3
Property or general manager	3
Professor	2
Facilities manager or director	2
Project director	2
Consultant	1
President	1

Notes: Results from interview questions A3: *According to our records, your title is [INSERT TITLE]. Is this correct?* and A4: *What is your title?*
Total n = 18

Five respondents were familiar with commercial real estate in Washington and Oregon; five were familiar with commercial real estate in Oregon only, five in Washington only, two in Idaho and one in Montana. All of the experts have some role or interest in energy management. Two respondents work for Building Owners and Managers Association (BOMA) and work with commercial office real estate owners and managers. One respondent edits a real estate magazine, one respondent teaches classes about commercial real estate, and one leases space to tenants. Two respondents said they were responsible for sustainability or green initiatives for their company. One respondent was in charge of new construction. One respondent was responsible for finding utility incentives for energy-efficiency projects. The other respondents have some role in managing operations, maintenance, and budgets for their company.

3.2.2 General Energy-Efficiency Program or Initiative Awareness

Sixteen out of 18 SEM survey respondents said they were aware of programs, initiatives, or incentives that encourage commercial real estate organizations to adopt energy reduction goals.

Four out of 16 respondents cited NEEA programs, with one respondent mentioning each of the answers below:

1. NEEA SEM described as an initiative to encourage companies to initiate a high performance framework. This respondent learned about the program directly from NEEA in 2006 or 2007.

2. NEEA was a sponsor of the Kilowatt Crackdown and learned about the competition in 2008 from BOMA.

3. NEEA offers workshops about how to calculate past energy use. This respondent learned about these workshops in 2005.

4. Learned about the partnership NEEA had with Idaho Power in 2004, in the integrated design lab (IDL). (This lab works with owners and managers to provide energy modeling and provide information about lighting, shades, and controls.)

Six out of 16 respondents knew of at least one utility-sponsored program, such as those offered by Seattle City Light, Puget Sound Energy, Snohomish PUD, Tacoma Power, and Idaho Power. Six out of 16 respondents cited Energy Trust of Oregon. Six respondents also cited other building certification programs such as those offered by LEED, ENERGY STAR®, and the Green Building Council.

Respondents learned about programs in general (such as LEED) through various channels, most commonly from a utility (Table).

Table 11: Communication Channels

Communication Channels	Number of Responses (n=16)
Utility	6
BOMA	2
NEEA	2
Other energy reduction programs	2
Newspaper or magazine	2
Seattle Mariners game	1
Conference	1
Property manager	1
Being an evaluator on a program	1
Idaho Design Lab	1

Notes: Results show breakdown of responses to survey question B3: *Which programs, initiatives, or incentives?*
Total n=16

3.2.3 Awareness of SEM

This section provides results from both the expert interviews and the SEM adoption survey. Table 12 summarizes awareness of SEM and NEEA's Initiative. For the experts, Cadmus found that 56 percent were aware of SEM and 44 percent were aware of the NEEA initiative. For the survey respondents, awareness of SEM and the initiative was about 15 percent lower than for the experts.

Table 12: Awareness of SEM and the NEEA Initiative

	Expert Interviews (N=18)		Survey Respondents (N=40)	
	Responses	Percent	Responses	Percent
Aware of SEM	10	56%	16	41%
Aware of NEEA's Initiative	8	44%	11	28%

Notes: Results show breakdown of responses to survey questions C1: *Are you familiar with Strategic Energy Management…?* and C2: *Are you familiar with a NEEA initiative to encourage commercial office real estate organizations to adopt components of Strategic Energy Management?*

Respondents aware of NEEA's initiative to encourage SEM learned about the initiative in different ways.

Table 13 shows a breakdown of these communication channels. Four out of the eight respondents learned of the CRE initiative prior to 2012; the other four could not remember when they learned about the program.

Table 13: NEEA SEM Communication Channels

Communication Channels	Number of Responses (n=8)
NEEA	3
Better Bricks	1
BOMA	1
Members of BOMA	1
University of Washington	1
Tenant	1

Notes: Results show breakdown of responses to survey question C3: *How and when did you learn about the NEEA initiative to adopt Strategic Energy Management?*
Total n=8

3.2.4 Barriers

Table 14 presents responses to a question about the barriers to participating in major energy efficiency efforts and a question about barriers to adopting SEM. The most frequently cited reasons are similar across both groups of respondents and questions. Specifically, respondents identify concerns with high initial cost, lack of staff time, and funding competition from other company priorities among the top three or four barriers.

Table 14: Barriers to Energy-Efficiency and SEM Adoption

Most significant challenge to participating in major energy-efficiency efforts	Survey N=37	Interview N=13	Most significant challenge to participating in NEEA's CRE Initiative and adopting SEM	Survey N=39	Interview N=13
High initial cost	8	7	Lack of staff time	7	4
Long payback period	5		Funding competition from other company priorities	4	1
Funding competition from other company priorities	4	2	High initial cost	3	2
Lack of staff time	3		Long payback period	2	
Time and reporting complexity	3		Budget limitations	1	
Budget limitations	2		Return on investment	1	2
Tenant involvement and awareness	2		Lack of technical knowledge	1	
Return on investment	1	2			
Lack of technical knowledge	1				

3.2.4.1 Barriers to Investment in Energy Efficiency

Respondents said the primary barriers to energy-efficiency investments are the upfront cost of projects, the insufficient return on investment (ROI), and competing needs in the buildings. Other minor challenges included lack of staff resources, lack of knowledge about methods for making energy upgrades, and lack of access to utility bill data for multi-tenant buildings.

In general, respondents said companies own a building for a short period and if they do not realize a return on investment within three years or less, they will not invest in improvement

projects. Finding capital to fund energy-efficiency projects may also be challenging. Taking on debt may make the property more difficult to sell.

Two respondents said that companies who replace equipment at the end of useful life do not get an incentive to replace the equipment with energy-efficient equipment. One of these respondents said that they replace equipment with equipment of the same energy efficiency. Cadmus believes that these statements indicate that it is often most expedient to replace equipment with nearly identical equipment.

A respondent in Idaho said that business owners and managers are generally resistant to making changes in the way they construct buildings or manage energy within existing buildings. The respondent said businesses have been building and managing their buildings the same way for decades and they are not willing to think about new ways of constructing buildings or managing energy within existing buildings. The respondent said this is especially the case with family-owned real estate; these owners will not make a change because the current way of building and managing is *"working fine."*

3.2.4.2 Barriers to SEM

Respondents cited the cost of SEM practices as the primary challenge to their adoption. Respondents who invested in CRE did so largely to achieve asset value. These respondents stated the focus of the Initiative should be on helping businesses reduce costs so that their asset becomes more valuable and that the lower the operating costs, the higher the building's value.

Respondents said there are sufficient resources and tools tailored to CRE. They said budgeting money is the challenge to utilizing the tools and knowing which tools produce the highest impacts.

Respondents said that they need more information to prove there can be long-term savings in order to attract the interest of decision makers. They want more studies and information to demonstrate that buildings can charge higher rents or attract new tenants at higher rates with more energy efficient buildings.

Respondents reported that the cost of acquiring skills and organizational capacity to implement SEM was a challenge. They considered the program complicated, requiring additional staff to manage the process and costs for staff training.

3.2.5 Initiative Strategies

3.2.5.1 Market Partners Program

Six respondents were not aware of the Market Partners Program and did not have an opinion about it.

Twelve of the eighteen interview respondents were aware of the MPP.

- Nine of the 12 respondents aware of MPP said the program is a good way to encourage people to share ideas and provide resources about operations and portfolio management. They commonly said the program is good as long as it does not require businesses to assume high costs of the types identified as barriers to SEM adoption above.

- Three of the 12 respondents aware of MPP thought the program was not useful because it was already being done through benchmarking or within their company or because companies are not able to demonstrate savings.

3.2.5.2 Commercial Office Efficiency Competitions

Respondents found competitions somewhat effective as a tool to encourage SEM adoption. These respondents believed competitions energized owners and managers to think about energy use and ways to reduce energy consumption but that they offer limited results because newer buildings tend to win.

3.2.5.3 Industry Education and Training

Seminars and workshops proved very helpful, though respondents said there were challenges in identifying topics most useful for this industry. Respondents said these activities should focus on ways to demonstrate payoff and should be short and not require a large time commitment or incur high costs. Contractors should be included in education efforts.

3.2.5.4 Additional Marketing Communication Tools

Case studies, analytic tools, and templates provided important tools for owners and managers. Templates and other analytic tools proved especially helpful for smaller organizations or those with insufficient budgets to create these tools. Respondents suggested that case studies should focus on successes, failures, and different building sizes. They should be no longer than one page and include only the important details.

Respondents preferred to receive information directly from a NEEA representative to other methods of delivery. Respondents suggested other delivery channels, such as peer forums, webinars, linked information through BOMA or NEEA websites, and electronic newsletters could also be effective.

3.2.5.5 Other Respondent Suggestions

The interviewers asked respondents to identify other ways to motivate owners and managers to adopt SEM components.

According to one respondent, NEEA needs to have a better understanding of commercial office real estate business practices. The respondent stated that buildings could only make improvements when tenants move out, so a long-term investment in energy efficiency may not be beneficial, and goals based on this do not prove effective. These buildings focus on taking

advantage of short-term energy upgrades. To Cadmus, these comments indicate a lack of understanding about SEM as a management system.

One respondent said NEEA should not provide solely one mandate or one program and that NEEA needs to understand all buildings differ and, therefore, management practices must differ. This person said: *"One program, one size doesn't fit every building."*

One respondent said NEEA should work with energy-savings companies to explore a financial vehicle, making the market more receptive to power purchase agreements[4].

Two respondents said that smaller buildings (less than 50,000 square feet of rentable space) should begin focusing on energy management. They said BOMA and NEEA could collaborate to provide information about methods for reducing energy use and the financial benefits of these changes.

A respondent stated that *"regulations in Seattle"* offer NEEA an opportunity to contact and work with owners to provide resources so that buildings can comply with the new laws. The respondent reported this could include contacting businesses and working with them to provide individual support.

Respondents suggested that NEEA could provide information about SEM's financial benefits through free or low-cost audits and property walk-throughs to identify upgrades businesses could undertake. They noted that NEEA should provide information about why upgrades would be useful to a building owner's finances, along with paybacks and upgrades providing the biggest paybacks.

3.2.6 Business Drivers

Table 15 presents the business drivers behind energy-efficiency decisions identified by interview respondents and survey respondents. Interviewers asked respondents the importance of various factors when planning energy-efficiency goals and practices. The importance rank reflects the percent of respondents that rated a factor as *very* or *somewhat important*.

For both groups, financial performance is the main business driver for making energy-efficiency decisions rather than marketing or brand positioning. Cadmus observed that the experts interviewed emphasize cost, ROI, and company cash flow, while the building staff surveyed rate property cash flow and asset value more highly than the experts did.

[4] A power purchase agreement is a legal contract between an electricity provider and a power purchaser.

Table 15: Importance Rank of Business Drivers

Importance Rank	In-depth Expert Interviews (N=18)	SEM Adoption Surveys (N=40)
1	Total (project) cost	Property cash flow
2	Return on investment (ROI)	Company cash flow
3	Company cash flow	Asset value
4	Property cash flow	Total (project) cost
5	Asset value	Marketing and brand positioning
6	Company profit	Company profit
7	Marketing and brand positioning	

3.2.6.1 Availability and Importance of Utility Incentives

Interview respondents told Cadmus that utility incentives remain readily available, but the applications can be complex and time consuming. The incentives offer a method to decrease the payback time on investments in energy management.

3.2.6.2 Energy Management Attitudes

Twelve out of 17 expert interview respondents said that the adoption of SEM offered a competitive advantage and that it helped maintain higher occupancy levels and filled new buildings faster. The five respondents who disagreed with the statement indicated that SEM is not an advantage if it results in increased operating cost.

3.2.6.3 Importance to Tenants

Respondents reported that tenants find energy efficiency important only if it lowers their utility bills, operating costs, or rent. A building's efficiency may attract some tenants, but it is not one of the most important factors in their decision. The importance tenants place on energy efficiency, however, does influence owners.

3.2.7 Current Energy Management Strategies and Energy Management Trends

3.2.7.1 Current Strategies for Energy Management

Commercial office real estate owners and managers reduce energy consumption and increase energy efficiency in a variety of ways, such as upgrading equipment, evaluating payback to determine value of upgrades, reviewing energy usage, utilizing incentives, entering energy reduction contests, and promoting behavioral change.

Building managers in Oregon and Washington have similar energy-efficiency practices, but some respondents said businesses in Washington had a greater awareness of energy efficiency because of public benchmarking efforts. Property owners and managers in Idaho that Cadmus interviewed did not see value in making energy upgrades.

Some interview respondents reported that companies would like to make portfolio-wide changes, but cannot use the same approach to energy management for every building or every space within a building. They said tenants present challenges because many energy upgrades take place only when one tenant moves out and another moves in.

3.2.7.2 Trends

Respondents reported many trends within the industry. Companies are beginning to integrate energy-management plans into their operations and are hiring sustainability managers. Companies also are beginning to benchmark energy use. Staff bonuses are tied to energy use. More companies will be looking at energy consumption at the portfolio level and at adopting energy management.

One respondent said that there is more interest in integrating energy management plans with operations, and businesses are developing their own maintenance plans instead of relying on information from the manufacturer. One respondent said that companies will use as little energy as possible, but added that buildings are built to make money and not as an environmental project.

One respondent said that *"communities"* of future owners would hold companies accountable. Colleges and universities will provide more educational opportunities aimed at sustainability, including more post-secondary education.

Several respondents mentioned technology trends that are helping businesses to improve efficiency. These included the following:

- More sophisticated HVAC controls that work well for retrofitting older buildings.
- More efficient lighting technologies
- Innovation for chiller plants including some with 100 percent variable frequency drives

More buildings will apply for ENERGY STAR and will use this as a marketing advantage. Companies will continue to find programs that recognize them for focusing on sustainable practices to increase operation efficiency and recognition.

Overall, Cadmus found that the reported trends reflect a shift towards energy-efficiency through energy management and better technology.

3.3 Measure SEM Adoption

3.3.1 SEM Adoption

Cadmus asked respondents several questions to determine their level of SEM adoption. Section 2.1.3.4 describes the method used for scoring SEM adoption. Survey questions used to determine SEM adoption asked respondents to consider their building, portfolio, or organization[5].

Based on the answers to these select questions and NEEA's SEM definition:

- Eight percent[6] of the respondents had fully implemented SEM (three out of 40 had implemented all five SEM components as defined by NEEA)
- Seventy-three percent had implemented between one and four components of SEM (29 out of 40)
- Forty-nine percent had implemented three, four, or five components of SEM (19 of 40)
- Twenty percent had not implemented any component of SEM (eight out of 40)

Table 16 shows SEM implementation for all the survey respondents,

Table 16. SEM Implementation

Summary	Number of Total Surveys (n=40)	Percent of Total Surveys (n=40)
Full SEM (5 components)	3	8%
Some SEM	29	72%
4 SEM components	7	18%
3 SEM components	9	23%
2 SEM components	10	25%
1 SEM component	3	8%
No SEM (0 components)	8	20%
Total	40	100%

[5] All questions except one asked respondents to answer for their company. The question about practices (Section F of the survey) asked respondents to identify practices at the specific building discussed in the survey.

[6] This percentage is based on the number of respondents where each respondent represents one building. Three out of forty equals 7.5%, which is rounded to eight percent in the report. Cadmus checked the self-reported square footage for the survey respondents' buildings and found that those reporting full SEM adoption represented 7.7% of the total building area of all survey respondents.

Table 17 shows SEM implementation based on the two subgroups: cohort and non-cohort.

Table 17. CRE Initiative Cohort SEM Implementation

Summary	Cohort (n=11)	Non-Cohort (n=29)
Full SEM (5 components)	9%	7%
Some SEM	82%	69%
4 SEM components	27%	14%
3 SEM components	36%	17%
2 SEM components	9%	31%
1 SEM component	9%	7%
No SEM (0 components)	9%	24%
Total	100%	100%

Percent may not total 100 because of rounding error.

In terms of the SEM components defined by NEEA, Cadmus found that the implementation of planned practices occurs most frequently. Sixty-eight percent of respondents indicated that they implement planned practices as part of energy management. The next most commonly adopted component of SEM was allocating staffing resources toward energy management (50 percent).[7] Thirty-eight percent of respondents said they have adopted goals, 40 percent have documented the activities planned to achieve the goals, and 38 percent said they have provided reviews[8] for management indicating their company's progress toward reducing energy use. Cadmus created a table that shows the SEM adoption level for each respondent (see Appendix D).

3.3.2 Cohort SEM Adoption

Full SEM adoption[9] among the MPP and Competition cohorts is similar to the non-cohort group. Only one of the eleven SEM cohort respondents has fully implemented SEM; one has not implemented any component of SEM; and the other nine have implemented one or more components (Table 18). Of the five components of SEM, seventy-three percent of cohort respondents said they have implemented activities, followed by sixty-four percent who said they have provided reviews to management. Fifty-five percent said they have adopted energy management goals and forty-five percent said they have documented these goals. The component adopted by the fewest companies is allocating staffing resources (45 percent).

[7] Note that respondents did spend time completing the survey or interview and could have considered their participation as an allocation of staffing resources. Cadmus did not change the response if the respondent said they did not allocate resources for staffing.

[8] The question said, *"Do you provide reviews for management indicating your company's progress toward reducing your organization's energy use?*"

[9] All questions except one asked respondents to answer for their company. The question asking about practices asked respondents to identify practices at that building discussed in the survey.

Table 18: Cohort SEM Adoption (n = 11)

ID	SEM Components							SEM Components Implemented		
	State	MPP Bldg ID	Goals Adopted	Goals Document-ed	Staffing Resources Allocated	Activities Implemented	Management Reviews	Full	Some	None
3	ID	Y	N	Y	N	N	Y		2	
11	ID	N	N	N	Y	N	N		1	
13	OR	Y	Y	Y	N	Y	Y		4	
14	WA	N	N	N	Y	Y	Y		3	
15	OR	N	Y	N	N	Y	Y		3	
16	OR	N	Y	N	Y	Y	N		3	
17	WA	N	Y	Y	N	Y	Y		4	
18	OR	N	N	Y	N	Y	Y		3	
27	OR	N	N	N	N	N	N			0
30	OR	N	Y	Y	Y	Y	N		4	
35	WA	N	Y	Y	Y	Y	Y	5		
% of cohort		18%	55%	55%	45%	73%	64%	9%	82%	9%

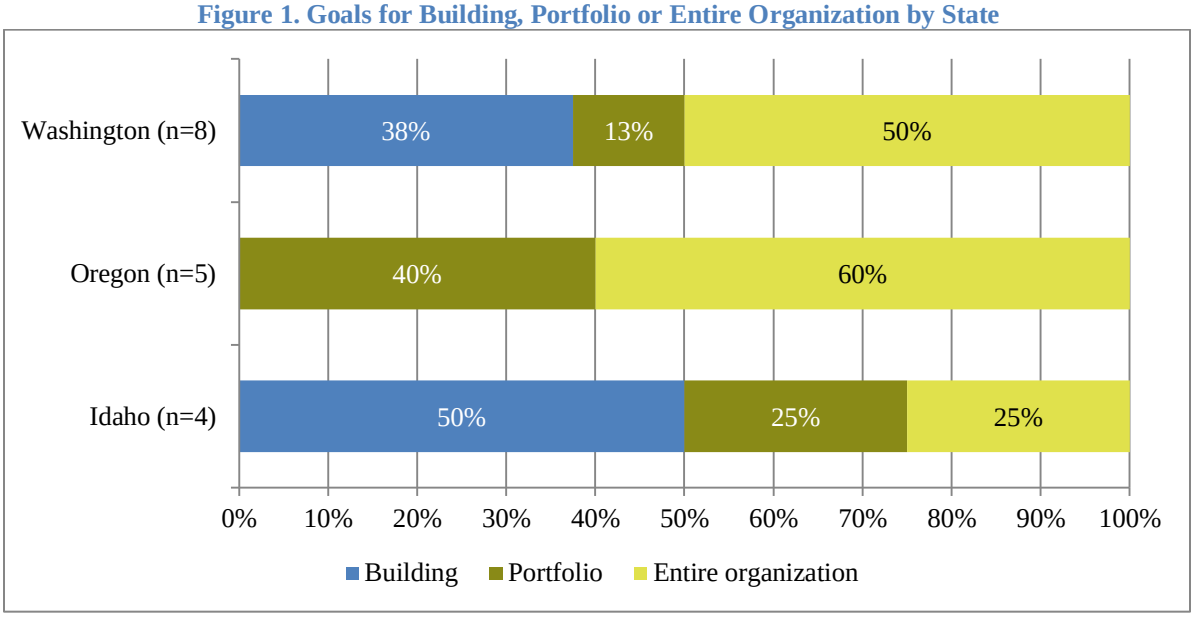
3.3.3 Goal Adoption

Cadmus asked respondents if their company had established any energy reduction goals in the last five years. Forty-five percent-said yes (17 out of 38) and 55 percent said no. Sixty-four percent of those who said yes were cohort respondents (seven out of 11). Fifty percent of respondents in both Idaho and Oregon said they had established goals, and 42 percent of Washington respondents said they had. The respondent in Montana had not established goals. Of those who had not established goals for their company, 43 percent said they would in the future (nine out of twenty-one).

Of those companies that had established goals, 41 percent established them in 2012 or 2013 (seven out of 17), 48 percent between 2001 and 2010 (eight out of 17), and 12 percent did not know when they had been established (two out of 17).

Cadmus asked respondents who had set energy reduction goals in the last five years for their company if these goals were set for the entire organization, a particular portfolio, or a single building. Forty-seven percent of respondents said they set goals for the entire organization (eight out of 17). Overall, 29 percent said the goals were for the building (five out of 17) and 24 percent of respondents (four out of 17) said the goals were for the portfolio. Figure 1 shows the breakdown of whether goals were set for the building, portfolio, or entire organization in each state.

Figure 1. Goals for Building, Portfolio or Entire Organization by State



Notes: Results show breakdown of responses to survey question E4: *Are the goals for this building only, for a particular portfolio, or the entire organizations?* N=8 in Washington, N=5 in Oregon, and N=4 in Idaho

The figure indicates Oregon sets the most comprehensive goals, with 100 percent setting goals for the portfolio and entire organization. Washington follows, where 63 percent of respondents set goals for the portfolio or the organization. Fifty percent of the respondents in Washington (four out of eight), 60 percent in Oregon (three out of five) set goals for the entire organization, while 25 percent of respondents in Idaho (one out of four).

3.3.3.1 Types of Goals

Respondents reported they had goals ranging from achieving ENERGY STAR ratings to energy reduction percentage goals to replacing lighting fixtures.

- Over one-third of respondents mentioned an ENERGY STAR related goal (35 percent)
- 35 percent mentioned an energy reduction goal
- 24 percent mentioned a goal related to LEED certification
- 24 percent mentioned other goals such as reducing kwh per square foot
- 12 percent did not set new goals or did not want to provide a response

Table 19 lists the goals and number of responses.

Table 19: Energy Reduction Goals

Answer	Number of Responses	Percent of Respondents*
ENERGY STAR Score of 90	2	35%
ENERGY STAR at 75	2	
Get ENERGY STAR every year	1	
Get all buildings ENERGY STAR-rated	1	
5% reduction goal	1	35%
10% reduction in cost of energy usage	1	
20% reduction as defined implicitly through adoption of ENERGY STAR	1	
20% reduction in 10 years	1	
20% reduction in 20 years	1	
Percentage reduction	1	
LEED SILVER	1	24%
LEED rating	3	
Better Bricks	1	24%
Spend 3 billion over 5 years on energy improvements	1	
Reduce kilowatt per square foot energy use	1	
Upgrade lighting fixtures	1	
No new ones because we built this building to LEED	1	12%
Do not want to tell	1	

Notes: Results show breakdown of responses to survey question E2: *What are the energy reduction goals?*
Total n=17
*Total percentage exceeds 100% because respondents were able to give multiple responses. The percent is based on a compilation of responses in each category.

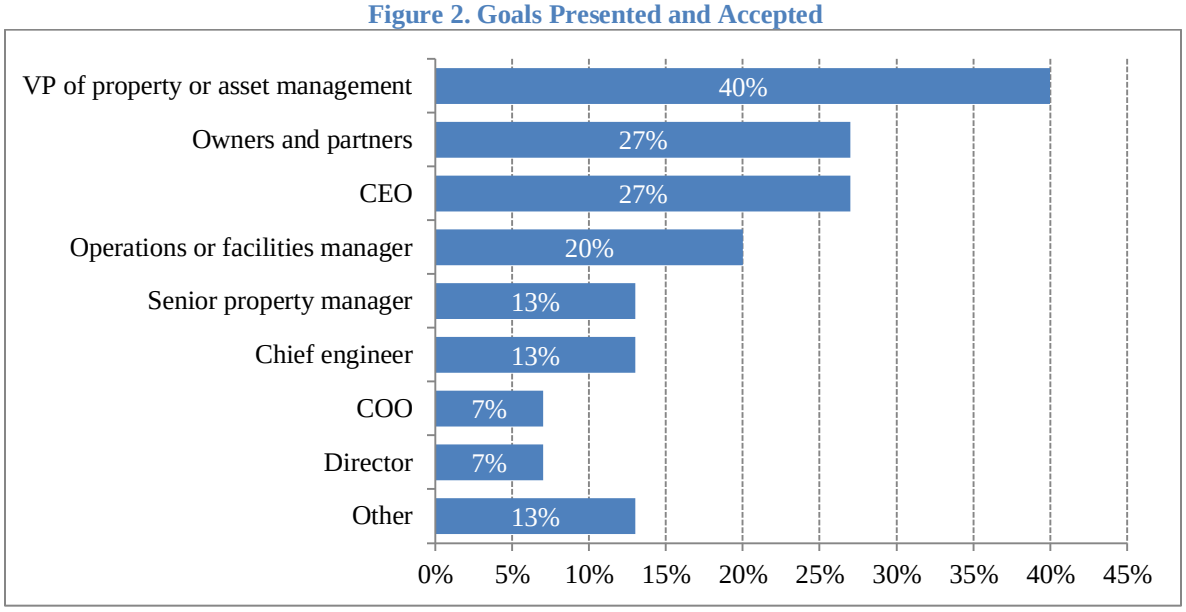
3.3.3.2 Goal Communication

Cadmus asked respondents if someone had presented the goals to senior management and management accepted the goals. Of those who set goals, 88 percent said they had been presented and accepted by management (15 out of 17), 6 percent said they had been presented but not accepted (one out of 17), and 6 percent (one out of 17) said they had not been presented or accepted.

Forty percent of respondents said that someone presented goals to the vice president of property or asset management and the vice president accepted the goals (6 out of 15). Figure 2 shows the overall breakdown by title of the person accepting goals.

Thirteen percent of respondents did not know when the goals had been presented (two out of 15) and accepted, while 40 percent said they had been presented and accepted in 2012 or 2013 (six out of 15) and the remaining 47 percent had been presented and accepted between 2003 and 2011 (7 out of 15).

Figure 2. Goals Presented and Accepted



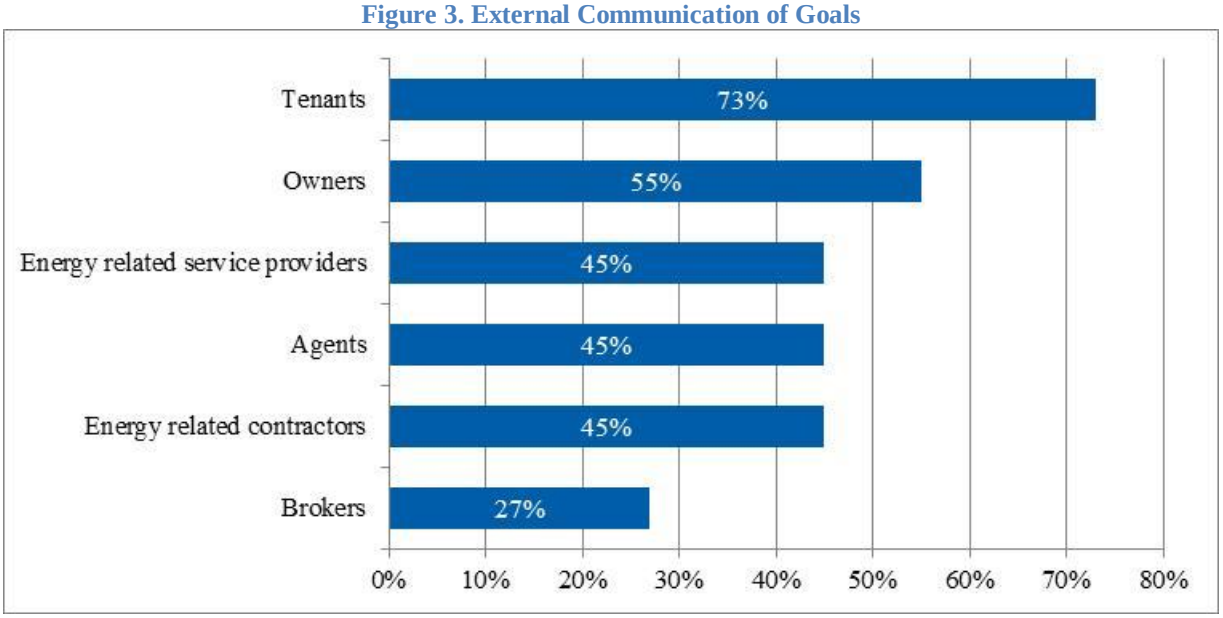
Notes: Results show breakdown of responses to survey question E6: *Who were the goals presented to and accepted by?* Total n=15; Total percentage exceeds 100 percent because respondents were able to give multiple responses.

3.3.3.3 Goal Documentation

Eighty-eight percent of respondents who set goals said they have been documented (14 out of 16). Fifty percent have documented them in 2012 or 2013 (seven out of 14) and 21 percent have documented them between 2003 and 2012 (three out of 14). The remaining 29 percent document goals yearly or several times throughout the year (four out of 14).

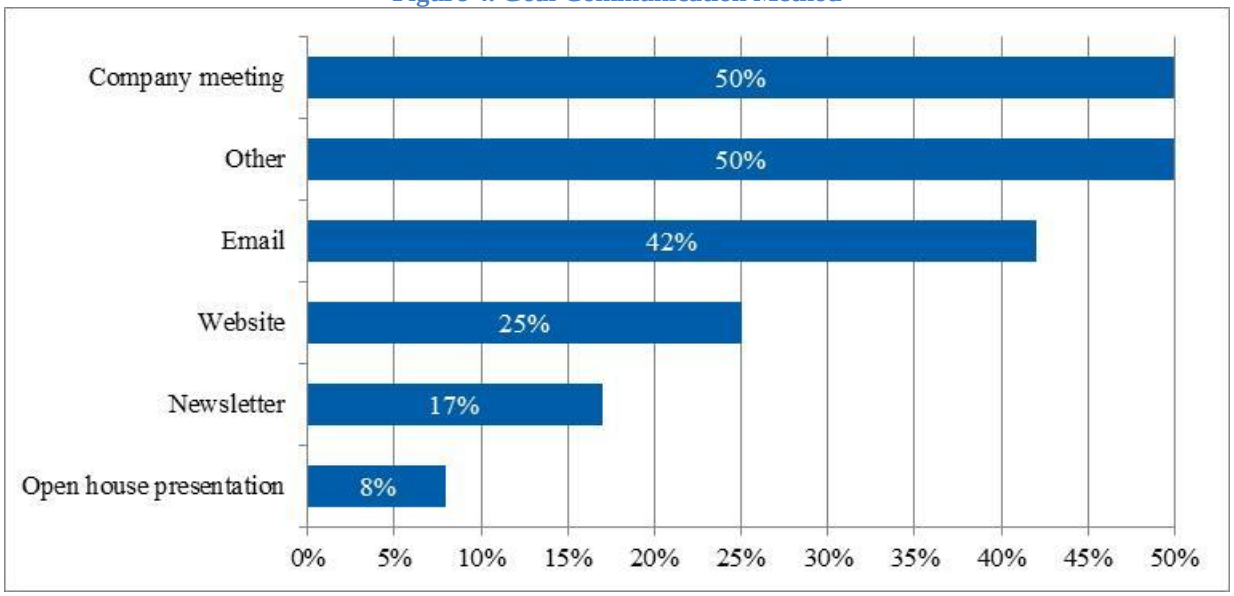
Forty-four percent have shared their goals externally, 31 percent shared internally, and 25 percent shared both internally and externally. Goals have most often been shared with tenants (73 percent) followed by owners (55 percent). Respondents said the top method for communicating energy goals was through company meetings (50 percent) followed by email (42 percent). Goals shared in other ways accounted for 50 percent of the responses. These other ways included press releases, operating plans, format specified by owner, power point presentations, company memo, or letters. Figure 3 and Figure 4 detail with whom, and how goals were communicated.

Figure 3. External Communication of Goals



Notes: Results show breakdown of responses to survey question E9: *Who were the goals shared with outside the company?* Total n=11; Total percentage exceeds 100 percent because respondents were able to give multiple responses.

Figure 4. Goal Communication Method



Notes: Results show breakdown of responses to survey question E10: *How were the goals communicated?* Total n=12; Total percentage exceeds 100 percent because respondents were able to give multiple responses.

3.3.4 Practices to Reduce Energy Use

Cadmus asked respondents if their organization had identified practices to reduce energy use, what the practices were, when they identified them, what resources they found helpful in identifying the practices, whether they documented practices, and what was included in the documentation.

A majority of respondents have identified practices (75 percent; 30 out of 40). This was slightly higher among the cohort group (82 percent cohort and 72 percent non-cohort).

3.3.4.1 Types of Practices

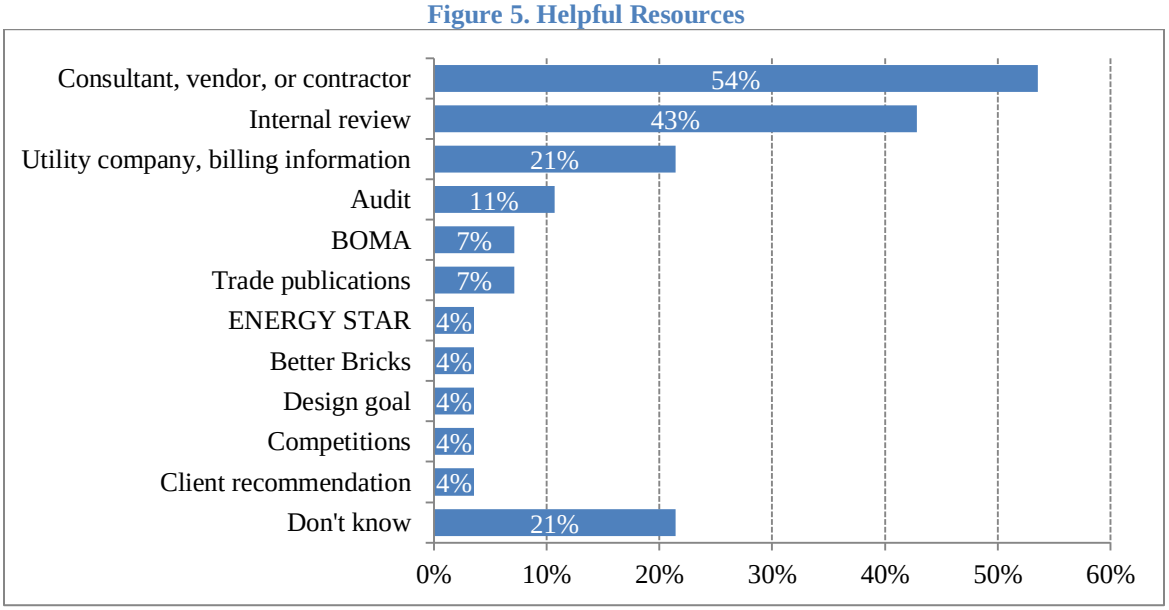
Cadmus asked respondents what practices they had identified and when they had identified them. The practices included installing new lighting equipment, utilizing an energy management tool, and working with a third party to identify ways to improve energy use. See Appendix D for a list of practice descriptions.

Twenty-six percent of the practices were identified in 2012 or 2013, 53 percent between 2000 and 2011, and 6 percent prior to 2000. The remaining practices were ongoing (five out of 31) or the respondent was unable to remember when they were identified (three out of 31).

3.3.5 Resources

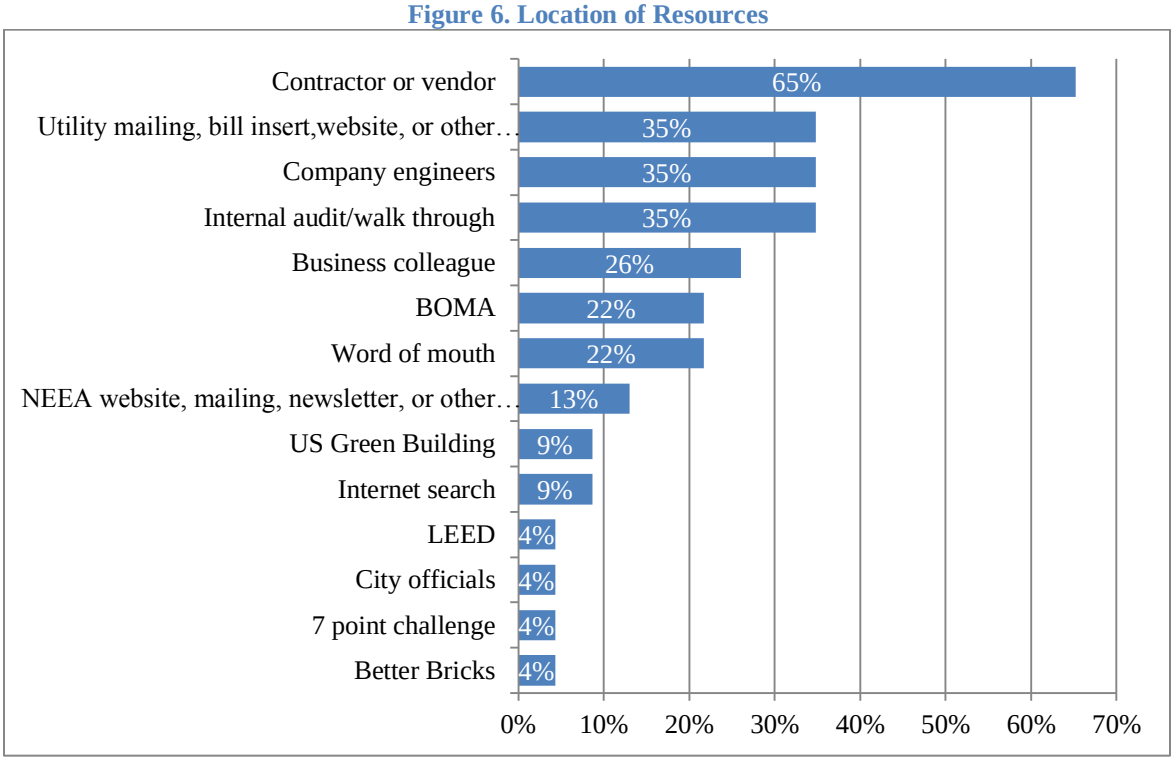
Cadmus asked respondents to list helpful resources or information they used to determine which practices to implement. Over half (54 percent; 15 out of 28) said a consultant, vendor, or contractor was helpful. Another 43 percent (12 out of 28) said they do an internal review. Cadmus asked where they found these resources and a majority said a consultant, contractor, or vendor (65 percent; 15 out of 24). Thirteen percent found these resources through NEEA (3 out of 24). Figure 5 shows the resources respondents reported and Figure 6 shows where respondents found these resources.

Figure 5. Helpful Resources



Notes: Results show breakdown of responses to survey question F3: *Please tell me what helpful resources or information your organization used to determine what practices to implement and where you found the information or resources?* Total n=28; Total percentage exceeds 100 percent because respondents were able to give multiple responses.

Figure 6. Location of Resources



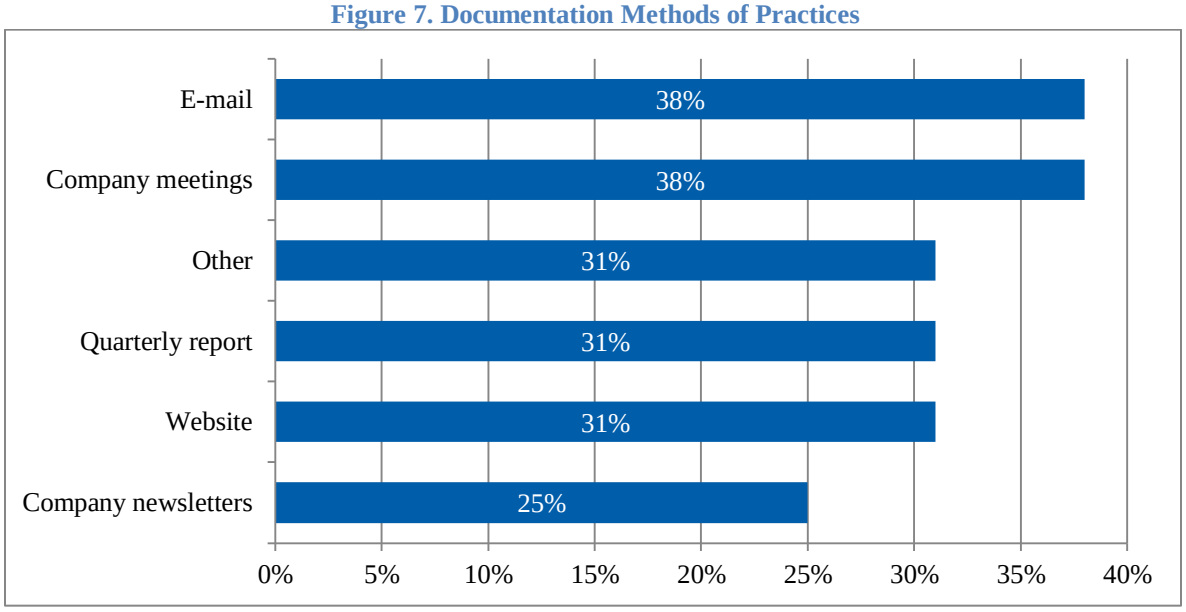
Notes: Results show breakdown of responses to survey question F3: *Please tell me what helpful resources or information your* organization used to determine what practices to implement and where you found the information or resources? Total n=28; Total percentage exceeds 100 percent because respondents were able to give multiple responses.

3.3.6 SEM Documentation

Fifty-five percent of respondents who have identified SEM practices said the practices have been documented (16 out of 29). In Idaho this was less than half (two out of five) while in Oregon (four out of eight) it was 50 percent and in Washington it was over half (10 out of 16).

Most respondents documented practices in 2012 and 2013 (67 percent). Company meetings (38 percent) and e-mail (38 percent) were the top two ways respondents documented practices. Figure 7 shows the ways respondents documented practices for their organization. Other responses accounted for 31 percent. These responses included fact sheet, LEED paperwork, operations handbook, company intranet, and file documentation.

Figure 7. Documentation Methods of Practices



Notes: Results show breakdown of responses to survey question F8: *How did you and/or organization document the practices?* Total n=16; Total percentage exceeds 100 percent because respondents were able to give multiple responses.

More than half of respondents said they have documented the SEM practice description (63 percent), impacts, and benefits (62 percent) for all of their practices. The least documented aspect was the amount of staffing resources needed followed by training resources (19 percent). Table 20 describes the amount of documentation.

Table 20. Amount of Documentation

Type (n=16)	All	Most	Some	None	Not Applicable	Don't Know
Description of energy reduction practices	63%	13%	13%	7%	0%	6%
Staffing resources needed	38%	6%	19%	31%	0%	6%
Training resources needed	31%	0%	25%	19%	6%	19%
Capital resources needed	50%	6%	12%	6%	6%	19%
Timeframe for completion	38%	19%	12%	12%	6%	12%
Expected impacts or benefits	62%	6%	12%	6%	0%	12%

Notes: Results show breakdown of survey responses to survey question F9: *Which of the following have you or your organization documented for your energy reduction practices?* Total n=16
Percentage may exceed 100% due to rounding error.

3.3.7 Implementation of Practices

Over 90 percent of respondents who identified SEM practices for their buildings have implemented all, most, or some of their practices (27 out of 29). Thirty-four percent have implemented all five SEM practices defined by NEEA, 21 percent have implemented most, and 38 percent have implemented some practices.

Only 11 percent of the CRE cohort group has implemented all of their practices (one out of nine) while 45 percent of the non-cohort group has implemented all of their practices (nine out of 20).

Almost half of the respondents from Washington have implemented all of their practices (44 percent). This number is 22 percent in Oregon and 25 percent in Idaho. Of the two people who have not implemented any practices, one is from the CRE cohort and one is from the non-cohort group.

Eleven percent of the practices were implemented between 2012 and 2013, 60 percent between 2000 and 2011, 8 percent prior to 2000, and the remaining do not know (25 percent) or say implementation is ongoing (4 percent).

3.3.8 Resources

At the onset of the survey, Cadmus asked all respondents if they were responsible for energy decisions for a commercial office building. To continue the survey, the respondent had to say *yes* to this screening question. Therefore, 100 percent of the respondents stated they were responsible for energy decisions. Later questions about resources asked if there were resources allocated to energy reduction. Here, 50 percent of respondents knew of staff resources allocated to energy reduction.

3.3.8.1 Allocation of Resources

Cadmus asked respondents if they allocated staffing, training, or capital resources for reducing energy (Table 21). Fifty percent have allocated staffing resources, 62 percent have allocated training resources, and 62 percent have allocated capital resources. Only 45 percent of the cohort group has allocated staffing resources (five out of 11) but 73 percent of the cohort group has allocated training resources and 73 percent has allocated capital resources (eight out of 11). Seventy percent of respondents in Washington have allocated staffing resources (14 out of 20). This number is 38 percent in Idaho (three out of eight) and even lower in Oregon (27 percent; three out of 11).

Table 21. Resource Allocation

Resource Type	Total	Cohort	Non-cohort	Oregon	Washington	Idaho	Montana
Staffing Resources	50%	45%	52%	27%	70%	38%	0%
Training Resources	62%	73%	59%	73%	75%	25%	0%
Capital Resources	62%	73%	59%	73%	75%	25%	0%

Notes: Results show breakdown of responses to survey question G1: *Which of these resources has your organization allocated for energy reduction?*
Total n=40

3.3.8.2 Documentation of Resources

Fewer than half of respondents have documented staffing resources (54 percent), 39 percent have not documented training resources, and nine percent have not documented capital resources. Respondents who have documented these resources have done so in a variety of ways. Respondents document staffing resources in company budgets (31 percent), asset manager reports (31 percent), and meetings (31 percent). They document training resources in company budgets (26 percent) or meetings (26 percent). Respondents use company or building budgets (55 percent) to document capital resources. Table 22 provides additional detail about resource documentation.

Table 22. Resource Documentation

Type	Staffing Resources (n=13)	Training Resources (n=23)	Capital Resources (n=22)
Building or company budget	31%	26%	55%
Asset manager report	31%	22%	27%
Quarterly report	8%	9%	18%
E-mail	23%	17%	27%
Meeting	31%	26%	23%
Other	0%	17%	18%
No documentation	54%	39%	9%

Notes: Results show breakdown of responses to question G2: *How have you documented these resources?*
Percentages may exceed 100% because respondents could enter multiple responses.

3.3.8.3 Reasons for Not Allocating Resources

Respondents said the primary reason they have not allocated resources is that they do not have a need (39 percent of staffing responses, 57 percent of training responses, and 36 percent of capital responses).

- Respondents said they do not allocate staffing resources because energy management is part of everyone's job (17 percent) and they do not have personnel allocated for energy management (6 percent), they do not have enough staff (6 percent), and because of financial reasons (12 percent).
- Training resources are not allocated because they do not have the staff to do this (14 percent) and because of financial reasons (7 percent).
- Respondents do not allocate capital resources because of financial reasons (28 percent) and they do not have enough staff or time (6 percent).
- Some respondents did not know why their company did not allocate these resources (three out of 18 for staffing resources, two out of 14 for training resources, and three out of 14 for capital resources).

3.3.9 Reviewing Progress

Cadmus asked respondents a series of questions about their process to review energy goals. Over half of all respondents said they do provide reviews for management (59 percent; 23 out of 39). The large majority of cohort respondents said they provide reviews (82 percent), while 50 percent of non-cohort respondents said they provide reviews. There was little difference among the states (68 percent in Washington, 55 percent in Oregon, and 50 percent in Idaho).

3.3.9.1 Review Process

Respondents were asked if management reviews were provided for a single building, entire organization, or the portfolio. Almost half of the respondents said that management reviews are provided for the entire organization (48 percent), over one-third of respondents said management

reviews are provided for a single building (35 percent), while 9 percent of respondents said they are provided for the portfolio.

In Oregon, the most common management review is for the entire organization (67 percent) and in Washington the most common review is for a single building (46 percent). Over two-thirds of cohort organizations provide management reviews for the entire organization (67 percent) while non-cohort organizations provide reviews most commonly for a single building (43 percent).

Almost 80 percent of respondents who provide reviews started between 2002 and 2011 (79 percent) and 15 percent started between 2012 and 2013.

3.3.9.2 Communication Frequency and Method

Cadmus asked respondents how frequently they provide reviews to management. Most provide them annually (39 percent) or monthly (39 percent). Thirteen percent provide them quarterly. One respondent says they have never provided them and one says they supply them as requested. Over half of the cohort group said they provide reviews monthly (56 percent) while most non-cohort organizations provide them annually (43 percent). Monthly communication is most common in Oregon (83 percent) while annually is most common in Idaho (50 percent) and Washington (46 percent).

Forty four percent of respondents said they share their reviews with people outside the organization while 57 percent said they share them only with internal staff. The most common manner in which reviews are communicated is by e-mail (67 percent) followed by company meetings (35 percent), reports (22 percent), company website (17 percent), and newsletters (13 percent). One person said the reviews occur during an open house presentation and one person said they shared the review in-person.

3.3.9.3 Review Content

Cadmus asked respondents what their management reviews included. Table 23 outlines the percentage of respondents who said they provide each of the items. Over two-thirds provide all of this information in their management reviews. Respondents said they provide changes to goals, metrics, practices, or resource allocation most often (83 percent) but they say that actual performance is included less often (65 percent) in management reviews.

Table 23. Content of Management Reviews

Items	Affirmative Responses
Changes to goals, metrics, practices, or resource allocation (n=23)	83%
Effectiveness of each activity on reducing energy (n=22)	73%
Whether the resources allocated were sufficient to perform the practice (n=23)	70%
Actual performance against the goal (n=17)	65%

Notes: Results show breakdown of responses to question I7. *Which of the following items do your management reviews include?*

3.3.9.4 Review Updates

Respondents were asked how often management approves updates or modifications to energy reduction goals or practices. Forty-one percent said this happens annually, 14 percent said quarterly, and nine percent said they have never done this. The updates are most commonly provided through e-mail (65 percent), website (24 percent), and in reports (18 percent).

Appendix D provides additional details about the surveys. .

3.4 Establish the Market Baseline

The goal of this research objective is to establish a market baseline for SEM adoption in the absence of market intervention by NEEA, the BPA, the Energy Trust of Oregon, or local utilities. In Cadmus' experience, providing the market experts with specific known information about the market improves the quality of the results obtained using the Cadmus market adoption tool.

For this reason, Cadmus provided findings from the SEM survey to the market experts as soon as they became available. Specifically, Cadmus informed the experts that eight percent of the market practiced full SEM (all five components) and that the adoption of the individual SEM components ranged from thirty-eight percent to sixty-eight percent. This information informed the third round of the Delphi panel.

However, Cadmus' original project work plan stipulated providing these survey findings to the experts before the start of the market baseline data collection. Due to the challenges encountered in the execution of the SEM adoption survey, Cadmus provided the survey findings to the experts after the second round of data collection was complete. Although Cadmus originally planned two rounds of data collection through the Delphi panel, Cadmus and NEEA decided to add a third round of data collection to allow the experts to provide estimates informed by the SEM adoption survey findings.[10] The data collection process is described in more detail in section 2.1.2 above.

3.4.1 Market Baseline Estimates

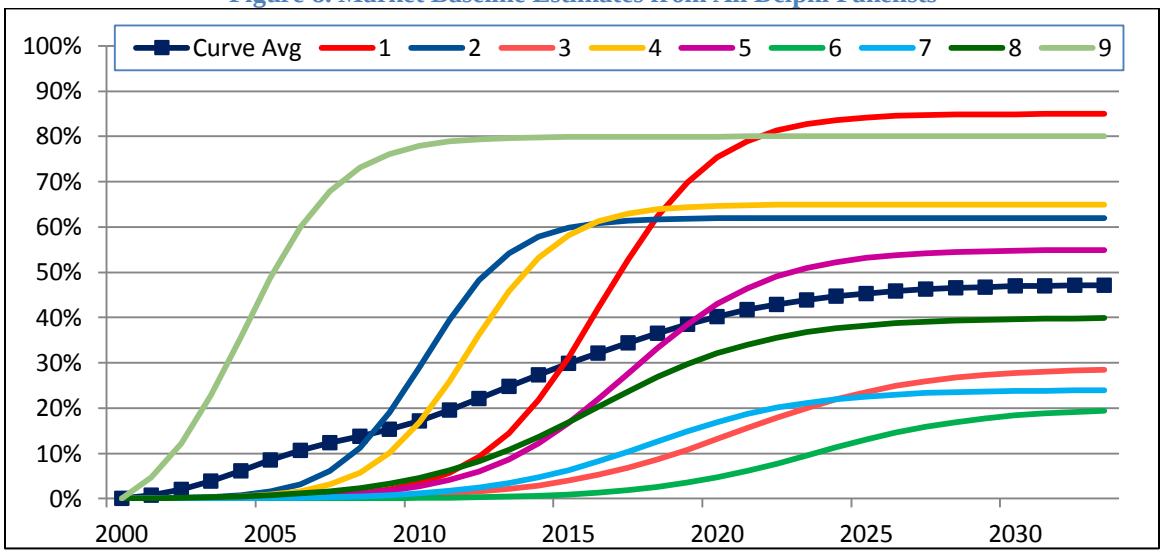
For the third round of Delphi panel data collection, Cadmus received input from all nine of the experts. Cadmus provides the estimates from all of the experts in Figure 8. Each of the numbered curves represents the third round estimate of one of the experts. Cadmus typically uses the average of the estimates of a group of experts as the result of data collected with the market

[10] The architecture of the Cadmus Market Adoption tool supports two rounds of expert estimates. The original plan was to conduct the market survey before the first Delphi round and provide the experts with results from the survey before they provided their first-round input. When it was not possible to complete the survey in time, experts had to provide their first-round inputs without information from the survey. Additionally, the Market Adoption tool configuration could not provide any of the second-round information to the experts, so their third-round inputs did not benefit from information compiled in the second round. These unanticipated constraints likely resulted in some of the conditions that led Cadmus to remove several experts' final inputs.

adoption tool. Cadmus calculated the average curve by averaging the annual values of the expert estimates shown in the figure.

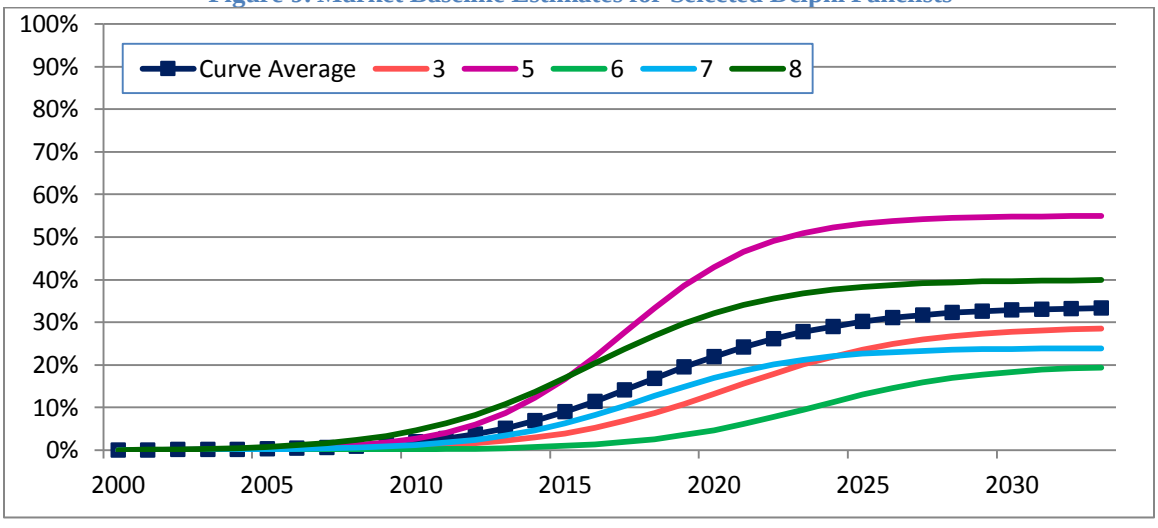
Figure 8 reveals a wide range of expert perceptions regarding SEM market penetration in the absence of the CRE Initiative. The range is wide throughout the period they estimated, that is, from 2000 through 2033.

Figure 8. Market Baseline Estimates from All Delphi Panelists



Cadmus' standard practice is to analyze the estimates and comments from each expert to determine whether to include or exclude them in the final market adoption estimate. Cadmus provides a description of this analysis in the following section. The study team determined that four of the expert inputs should be excluded from the final market baseline. In Figure 9, Cadmus shows the estimates for the experts whose estimates were retained and the resulting average, which is Cadmus' recommended market baseline.

Figure 9. Market Baseline Estimates for Selected Delphi Panelists



3.4.2 Analysis of Expert Comments

Cadmus reviewed the experts' estimates and comments to understand why they gave the values that they did after receiving the SEM adoption survey results. Table 24 summarizes the results of this analysis. Cadmus provides the full text of the experts' round 3 comments in Appendix E. The factors that Cadmus considered in the decision to keep or remove each expert from the market baseline estimate included the following:

- **Revision of estimates.** Cadmus considers revisions that reflect the input received from other panelists or in this case, from the SEM survey results, to be a sign that an expert is engaged in the process.
- **Supportive comments.** Alternatively, an expert who does not revise their estimate can provide comments that defend an earlier estimate or explain an estimate that is inconsistent with the SEM survey results provided.
- **Counterfactual assumption**. Cadmus instructed all panelists to estimate market adoption under the (counterfactual) assumption that NEEA did not launch the CRE Initiative (and that there were no associated programs from the Energy Trust, the BPA, or regional utilities). If an expert indicated in their comments that they did not reflect this assumption in their estimate, then Cadmus recommends the estimate be removed because the expert violated the basic instructions about the counterfactual.

Table 24. Selection of Experts for Market Baseline Estimate

Expert	Revised Estimate		Key factor in comments	Decision
	R1 to R2	R2 to R3		
Expert 1	No	No	Did not use counterfactual assumption	Remove
Expert 2	No	No	Did not use counterfactual assumption	Remove
Expert 3	No	Yes	Revised estimate and cited NEEA/program influence	Keep
Expert 4	Yes	Yes	Did not use NEEA SEM definition	Remove
Expert 5	No	No	Explained estimate and view of program influence	Keep
Expert 6	No	No	Cited third-party research and experience	Keep
Expert 7	No	Yes	Revised estimate and cited SEM survey	Keep
Expert 8	Yes	No	Very detailed commentary that supported original estimate. Minor revision based on other experts.	Keep
Expert 9	No	No	Very high estimate not supported by any source. Comments inconsistent with estimate	Remove

Experts removed from the market baseline estimate:

- **Expert 1**. This expert commented that their estimate for SEM adoption is based on the arrival of a *"strong leader to champion Energy Savings."* Since the counterfactual assumption is that NEEA and its allies are not intervening in the market and because the expert did not name an alternative party that could become a *"strong leader,"* Cadmus finds that this estimate is not consistent with the counterfactual assumption. Cadmus also considers the lack of any change in this expert's adoption estimate between round 1 and round 3 as an indication that this person was not very engaged in the process.
- **Expert 2**. This expert's comments indicate that projected market adoption is based on "participation in programs." Cadmus regards this input as inconsistent with the

counterfactual assumption. Cadmus also considered the lack of any supportive comments in the decision to remove this estimate.

- **Expert 4**. Although this expert revised their estimates from round to round and provided extensive commentary, Cadmus finds that the statement *"I would give consideration to market adoption if 4 out of 5 elements are implemented fully"* indicates that this person did not use the NEEA definition of SEM in their estimate as instructed. Cadmus notes that the estimate of forty-six percent SEM adoption in 2013 is above the SEM survey finding of twenty-six percent adoption of four or more SEM components, but below the SEM survey estimate of forty-nine percent adoption for three or more components.
- **Expert 9**. Cadmus identified the estimate provided by Expert 9 as an outlier due to the very high rate of market adoption indicated. Cadmus found that the estimate of eighty percent market adoption by 2013 was inconsistent with all other market data. In addition to this aspect of the estimate, this expert's comments stated that *"expecting full SEM is unrealistic,"* which is clearly inconsistent with their high market adoption estimate.

Experts retained in the market baseline estimate:

- **Expert 3.** This expert's estimate dropped substantially between round 2 and round 3. This expert commented that "*NEEA's CRE Initiative has increased awareness of SEM practices and helped identify and implement goals at portfolio level*." Cadmus believes that this view is reflected in Expert 3's baseline estimate that is lower than the survey market adoption rate in 2013.
- **Expert 5** estimated nine percent market penetration in 2013 so this was very close to the SEM adoption survey result of eight percent in 2013. This expert's comment provides useful insight into their perspective on market adoption of SEM.

  > *"Without active promotion of energy management solutions market penetration would have been limited to a very select set of operators. The 50 - 250k SF properties would have a much lower participation rate … adoption would have been concentrated more highly on assets in excess of 250k SF."*

- **Expert 6** estimated low penetration of SEM without the CRE Initiative, consistent with the SEM survey results. They cited a specific source and their comment is consistent with the survey findings for full SEM adoption.
  - *"I've not changed my round 2 estimate. I believe it to be consistent with what I've observed based on market research by the International Facility Management Association with respect to sustainability practices among their members. Most members are adopting some SEM practices, but only a small percentage are employing full SEM."*
- **Expert 7**. This expert's estimate dropped substantially between round 2 and round 3. This expert stated that they made their new estimate based on the SEM survey findings.
  - *"Adjusted based on information that only 8% of building managers had adopted full SEM. Given that information and NEEA's ongoing efforts, there are some significant barriers to full adoption."*

- **Expert 8.** Cadmus finds that this expert's estimate and comments are consistent with an understanding of SEM adoption. Cadmus also notes that this expert revised their estimate slightly upward in the third round due to the influence of the other experts' estimates.

3.4.3 Findings

As noted above, Cadmus' standard practice is to use the average of the estimates of a group of experts as the result of data collected with the market adoption tool. Cadmus provides two such averages in Table 25.

Cadmus observes that the average of all experts indicated twenty-five percent market adoption in 2013 and the average of the selected experts resulted in five percent market adoption in 2013. This lower average estimate is the result of providing the SEM adoption survey results to the participating experts and the removal of those experts whose inputs were inconsistent with the basic approach of the exercise.

Cadmus regards the market baseline, determined by averaging the responses of the selected experts (3, 5, 6, 7, and 8), as an appropriate baseline for market penetration of full SEM without the Initiative. That is, the baseline is five percent market penetration in 2013 and increases to thirty-three percent by 2030. These values are shown in the far right column of Table 25 and can be seen as the Curve Average in Figure 9 above.

Table 25. Market Baseline Findings

Year	Round 3	
	Average of All Experts	Recommended Market Baseline Selected Experts
2000	0%	0%
2005	9%	0%
2010	17%	2%
2013	25%	5%
2015	31%	9%
2020	40%	22%
2025	45%	30%
2030	47%	33%
2033	47%	33%

Using the recommended market baseline and SEM survey results, Cadmus finds that in terms of full SEM, the CRE Initiative has had an impact of between zero to three percent adoption in the market. Cadmus calculates this as eight percent, the penetration of full SEM, less five percent, the market baseline of full SEM in the absence of the CRE Initiative. (This estimate does not address the impact that the CRE Initiative has had on the adoption of the individual components of SEM although the survey did quantify adoption of each of the five components.)

4 Conclusions and Recommendations

Cadmus has developed the following conclusions and recommendations through its research and analysis on this project

4.1 Awareness of SEM and its value

4.1.1 Conclusions

Cadmus concludes that almost half of the people responsible for energy decisions in the target market are not aware of SEM as defined by NEEA and the NEEA CRE Initiative. As discussed in Table 12 above, awareness is 56 percent at most, and in most cases is less than 45 percent.

Cadmus concludes that key business drivers for energy-efficiency decisions are barriers to implementation of full SEM. Cadmus found that financial performance is the main business driver behind energy-efficiency decisions according to the interview and survey respondents. Specifically, project cost, property cash flow, and company cash flow were the top business drivers for energy-efficiency decisions. Cadmus also found that financial concerns are among the top barriers to undertaking major energy-efficiency efforts and to adopting SEM. In addition to the financial concerns, Cadmus found that respondents see the perceived demands that SEM places on staff time to be a barrier to the adoption of SEM practices (as defined by NEEA).

Cadmus concludes that many businesses are adopting components of SEM, but few are adopting full SEM as defined by NEEA. As shown in Table 16, over 60 percent of buildings surveyed implemented two, three, or four SEM components.

4.1.2 Recommendations

Cadmus' overall recommendation is for NEEA to consider actions to increase awareness of SEM and its value. Cadmus identifies three distinct parts of this recommendation.

First, Cadmus recommends that NEEA take steps to communicate their vision of full SEM, explaining each of the five components. Cadmus found through this research that respondents perceive full SEM has high cost, is complicated, and does not provide adequate return on investment. This recommendation is for NEEA to work to provide an accurate vision of full SEM in operation and the associated benefits. Cadmus identifies success stories as one of the best ways to accomplish this recommendation.

Second, Cadmus recommends that NEEA consider providing examples of best practices that illustrate how companies implement full SEM. Cadmus found that respondents asked for case studies and real-world examples of full SEM as defined by NEEA.

Third, Cadmus recommends NEEA communicate the financial benefits of SEM adoption and show a clear payback strategy. Cadmus identifies financial performance as the top business driver behind energy-efficiency decisions. For SEM, financial considerations are a top barrier to

implementation. NEEA should consider ways to provide a financial summary of the benefits of SEM adoption, with real-world examples.

4.2 Energy benefits

4.2.1 Conclusion

Cadmus concludes that the absence of information about the energy benefits of adopting SEM practices may limit the success of SEM adoption and advocacy.

4.2.2 Recommendation

Cadmus recommends that NEEA continue to study the energy benefits realized by the MPP cohort and the Competition cohort and disseminate them to key stakeholders.

4.3 SEM for smaller buildings

4.3.1 Conclusion

Cadmus concludes that SEM adoption—three, four or five components—is concentrated in Washington and Oregon in buildings larger than 50,000 square feet. One of the full SEM buildings in the 100,000-250,000 square foot range and the other two are in the 250,000-500,000 square foot range.

4.3.2 Recommendation

Cadmus recommends that NEEA consider focused research on the small building segment especially in Idaho and Montana to determine why respondents in these areas are not as aware of energy management as their counterparts in Washington and Oregon and investigate options for raising awareness.

4.4 Future research

Cadmus is aware that NEEA has research in progress to measure the energy impact of the initiative for both the MPP and Competition cohorts. Since Cadmus did not find information in any previous research about either the firm level or building level energy benefits of engagement with the initiative, NEEA's research is addressing a clear need identified during the current project. Cadmus found that 72 percent of buildings have adopted some SEM components (excluding the 8 percent full SEM buildings). However, this research was not able to determine whether the buildings with some SEM are static, or whether they are moving toward (or away from) implementing all five components of SEM. Cadmus identifies that this as a potential objective for future research studies.

5 References

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Appendix A. Market Research Analysis Methods

This appendix describes the methodology Cadmus used to generate the market size estimates in section 3.1 above.

NEEA provided Cadmus with an export from the CoStar database, dated August 15, 2013. The CoStar data extract included 2,073 buildings across four states. Cadmus eliminated 396 buildings from the target market list, per the following methodology.

Building Type/Use

CoStar's "Secondary Type" designation provided clear indications that some buildings fell outside NEEA's criteria. Thus, the analysis excluded buildings characterized as medical office buildings, telecom/data centers, industrial sites, and live/work units.

Building Owner

Cadmus removed buildings owned by federal, state, city, or county government entities, where the data clearly indicated these buildings served as an occupancy space rather than as an investment. Examples included: courthouses, schools, libraries, transit centers, and city hall/administration buildings. Data indicators used to exclude these buildings included: owner name, building name and address, percentage leased, and presence of a leasing contact. The analysis retained the building if data did not clearly provide identification.

For this estimate, Cadmus did not remove buildings owned by private companies from the target market unless data indicated buildings served as a company's headquarters. Several major companies (such as Microsoft, Amazon, Costco, Paccar, Intel, and Boeing) own large buildings in the states NEEA covers. In many cases, the companies probably used the buildings primarily as a place of business, but some could occupy a portion of a building while leasing the remainder to other tenants. Additional research would be required to determine whether these buildings should be included in the target market.

Other Market Estimates

Cadmus compared the CoStar-derived data to data collected for the Commercial Building Stock Assessment (CBSA). Table A-1 compares three sets of market data.

- The CoStar Data columns include market totals for all CRE buildings over 50,000 square feet in Oregon and Washington and over 20,000 square feet in Idaho and Montana.

- The CoStar Adjusted columns include market totals for all CRE buildings over 50,000 square feet in all states.

- The CBSA columns include CBSA market totals[11] for all CRE buildings over 50,000 square feet in all states.

Table A-1. CoStar and CBSA Data Comparison

	CoStar Data		CoStar Data Adjusted		CBSA Data	
	Building Count	Square Footage	Building Count	Square Footage	Building Count	Square Footage
Washington	783	95,161,945	783	95,161,945	826	125,235,409
Oregon	395	47,205,221	395	47,205,221	206	30,400,977
Idaho	339	17,782,049	76	9,936,128	50	4,137,632
Montana	160	2,715,591	32	2,860,235	33	4,421,857
Total	*1,677*	*162,864,806*	*1,286*	*155,163,529*	*1,115*	*164,195,875*

This comparison illustrates the challenge of accurately measuring the target market. The methods used by each study arrive at different totals for number of buildings and square footage for the target market in each state. Development of a detailed database and tracking of all buildings is very labor intensive and beyond the resources of this study. For this reason, Cadmus recommended that the study rely on the CoStar data as the best available source of information across the NEEA region. Another unfortunate aspect of the lack of uniform market data is that it limits the use of past project data to develop trend data for the market.

[11] CBSA data received via e-mail from NEEA's Christopher Frye on April 16, 2013.

Appendix B. SEM Survey Sampling Plan Detail

The goal of the survey was to measure characteristics of the market—and especially full implementation of SEM—by surveying individuals responsible for energy management in CRE office buildings. The target of 75 completed surveys was set to deliver results with 90% confidence and 10% precision.

Rather than conducting a random sample across the entire population and analyzing characteristics after completing the survey, Cadmus set targets for specific segments of the population before conducting the surveys. The population characteristics included:

- State
- Number of buildings within the state
- Square footage of buildings within the state[12]
- Status as a member of the CRE Initiative cohort or non-cohort[13].

Cadmus determined specific targets for key market segments in two stages:

- Stage 1 determined the percentage of buildings in each state to establish an overall target for number of completed surveys.
- Stage 2 set sample targets within each state using the building area.

Stage 1. Cadmus used the percentage of buildings in each state to establish an overall target for number of completed surveys. Table B-1 shows the number of buildings in the population for each state and the percentage of the total building population within each state. Cadmus used these percentages to compute the survey target for each state, targeting 75 surveys.

Table B-1. Number of CRE Initiative Buildings in NEEA Region by State

State	Number of Buildings	State Share of Total	Survey Target Based on Number of Building
Washington	783	47%	35
Oregon	395	24%	18
Idaho	339	20%	15
Montana	160	10%	7
Total	1,677	100%	75

[12] Building square footage defined as: the "Rentable Building Area" listed in the CoStar database.
[13] The study considered a building as a cohort member if it was included in the NEEA master list. Source: CRE Master Building List - 2013.xls. Available at: (https://intranet.neea.org/sites/initiatives/CommercialRealEstate/Shared%20Documents/2012%20Savings%20Documentation/CRE%20Master%20Building%20List%20%20-%202013.xlsx).

Stage 2. Cadmus used building area to set targets for the number of sample points within each state. There are three categories of building sizes, based on the rentable space of each building, as follows:

- **<50K:** Buildings with an area of at least 20,000 square feet and less than 50,000 square feet. Buildings in this range were only in Idaho and Montana.
- **50K–100K:** Buildings with an area of 50,000 square feet to less than 100,000 square feet.
- **>100K:** Buildings with an area of at least 100,000 square feet.

Cadmus calculated the total square footage of each category as the sum of the areas of individual buildings in that category for each state. Table B-2 lists the square footage values for each state.

Table B-2. Square Footage of CRE Buildings by Size Category and State

State	<50K Buildings	50K-100K Buildings	>100K Buildings	Total Sq. Ft.	Percent of Total Sq. Ft.
Washington	-	32,189,856	62,972,089	95,161,945	57%
Oregon	-	17,342,092	29,863,129	47,205,221	28%
Idaho	7,845,921	3,828,680	6,107,448	17,782,049	11%
Montana	3,797,486	1,665,706	1,194,529	6,657,721	4%
Total	*11,643,407*	*55,026,334*	*100,137,195*	*166,806,936*	*100%*

Cadmus also calculated the percentage of area in each size category by state, as shown in Table B-3.

Table B-3. Share of Square Footage by Size Category and State

State	<50K Buildings	50K-100K Buildings	>100K Buildings
Washington	NA	34%	66%
Oregon	NA	37%	63%
Idaho	44%	22%	34%
Montana	57%	25%	18%

To set appropriate targets for each size category by state, Cadmus multiplied the survey target for each state from Table B-1 by the size category percentages in Table B-3.

Table B-4 shows the final survey targets in each size category by state.

Table B-4. Survey Targets by Size Category by State

State	<50K Buildings	50K-100K Buildings	>100K Buildings	Total
Washington	-	12	23	35
Oregon	-	7	11	18
Idaho	7	3	5	15
Montana	4	2	1	7
Total	*11*	*24*	*40*	*75*

Rationale for the Sampling Methodology

Cadmus considered an alternative approach that would have relied on building square footage to set state-level targets. Based on the area percentages shown at the far right column of Table B-2, Cadmus calculated area-based targets for Idaho of 11 percent (eight surveys) and Montana of 4 percent (three surveys). However, Cadmus concluded these targets would not provide appropriate representation for the population of buildings in these two states.

Instead, Cadmus used the building count—the number of discrete sites—to determine state-level targets as this metric best represented this aspect of the population. Targets for Idaho represented 20 percent (15 surveys) and Montana represented 10 percent (seven surveys) using this method.

Cadmus then separated this population into the three size categories to match Washington and Oregon.

Appendix C. Expert Interview Detail

Interview Findings

Building Characteristics

Eight of the twelve respondents who work for companies that manage or own commercial office real estate provided building characteristics of one of their buildings. Of these eight respondents, two owned and managed property, two owned but did not manage property and four both owned and managed commercial office real estate. Respondents answered questions about the type of space the building represented, the rentable space, the year of property construction (year built), and any major upgrades completed on the building since it was built. All of the buildings had more than 100 tenants. Other details about these properties are in Table C-2.

Table C-1. Building Details

Case	Type of space	Rentable space (square feet)	Year built	Type of renovations made to building
1	Office and retail space	20,000	1960	No major upgrades
2	Office and retail space	534,000	1977	Chiller replacement, cooling tower
3	Office and retail space	1,000,000	1974	Elevator modernization, asbestos abatement, and window replacements.
4	Mostly office space	80,000	1989	No major upgrades
5	Mostly office space	250,000	Don't know	Chillers, lighting system, and HVAC upgrades
6	Mostly office space	1,100,000	1973	Boiler upgrades, rebuilt chillers, lighting controls, VFD upgrades, LEED/ ENERGY STAR re-commissioning
7	All office space	96,000	2001	Made interior changes to tenants units and exterior envelope repairs such as re-flashing the windows.
8	All office space	173,000	2006	No major upgrades

Notes: Results from interview questions A10: *How would you describe the use of space in the building?*, A11: *What is the approximate square footage of rentable space in this building?*, A12: *When was this building built?*, and A13b: *Could you describe the type of renovation?*
Total n = 8

Companies manage energy use at these buildings through a variety of methods. These methods include:

- Reviewing utility bills and using other utility energy tracking tools such as "PGE Energy Expert"
- Tracking energy use through an automated operations system
- Tracking energy use through ENERGY STAR
- Installing lighting controls and occupancy sensors
- Modifying operator sequences

- Replacing lighting fixtures with low wattage fixtures
- Educating tenants about energy efficiency with flyers
- Building design and construction

Six of the eight respondents who answered questions about their buildings said they had conducted or were considering major energy efficiency upgrades in the past five years. These upgrades include lighting, boiler upgrades, chiller upgrades, sealing vents, cooler tower replacements, window replacements, pump replacements, and installing *Meco Shades* on windows.

Energy Management Strategies

Commercial office real estate owners and managers are reducing energy consumption and increasing energy efficiency within their buildings, portfolios and organizations in a variety of ways.

Behavior

Companies are investing in staff training and working with tenants to modify their behavior. One respondent mentioned working with tenants to reduce plug loads.

Equipment Upgrades

Respondents said that businesses are focusing on *"low hanging fruit."* This includes completing energy efficiency projects such as lighting upgrades, utilizing fan controls, adding occupancy sensors, modifying HVAC controls, changing run times, and operator sequencing.

Companies are replacing HVAC systems with newer high efficiency units and upgrading to direct digital controls, which gives tighter control to existing systems. They are replacing boilers and chillers and adding insulation to buildings.

One respondent said he hoped companies were using building management systems with feedback loops so that managers could look at operations of individual mechanical systems.

Companies are trying to reduce energy through water reduction efforts and other environmental controls.

Owners and managers reported they modify their buildings to increase their ENERYG STAR rating. Some are pursuing LEED ratings. One respondent said there are companies pursuing true smart buildings.

Reviewing Energy Use

Owners and managers are reviewing utility bills and using audits to determine how efficient their buildings are. Property owners are benchmarking their energy by using ENERGY STAR Portfolio Manager or other energy usage tools. Companies are completing engineering studies and reviewing scoping studies completed by NEEA to evaluate energy use.

Evaluating Upgrade Payback

Companies are evaluating payback and capital expenses when they determine whether they will complete energy efficiency projects or replace equipment with more energy efficient equipment. Respondents said that unless payback is three years or less, most building owners would not consider energy efficiency projects. If a company is planning to own the property for seven to ten years they may consider making larger energy efficiency upgrades with a longer payback because they will own the property long enough to see the impact of the upgrades. One respondent said it was rare to base decisions about projects solely on the fact that the equipment was more energy efficient.

Using Incentive Programs

Respondents reported commercial real estate organizations are pursuing incentives for upgrades. In Oregon, they are using Energy Trust of Oregon for incentives. Some complete an energy audit and then seek incentives based on the audit while others are getting incentives for other projects such as lighting or HVAC.

Entering Contests

Companies are entering energy efficiency contests. These competitions promote green use. One respondent mentioned contests in Washington and Oregon sponsored by NEEA.

Differences Between States

Respondents familiar with the industry in Washington and Oregon did not see a difference with the way owners and managers were managing energy use. They said there were different programs in each state but owners and managers have the same goal to reduce energy consumption.

One respondent said that in Washington, most companies have an understanding of energy efficiency because of public benchmarking. Most businesses are trying to increase energy efficiency but they are not consistent in their approach.

Respondents said that most of the projects with short return-on-investment are in Washington and Oregon. It is difficult to encourage owners and managers to spend money when they do not receive an adequate rate of return.

Respondents stated that in Idaho, there is a difference between the local owners' view of energy efficiency and national owners' view. According to the respondents, national owners upgrade systems to increase efficiency and are interested in LEED retrofits. Out of state owners are more progressive in their approach to energy management. They can see the bottom line and make changes to reflect an interest in reducing expenses through energy management. Respondents stated local owners are not interested in energy efficiency. They are managing energy the way they did in the 1970s and 1980s. They do not want to invest any time or money in finding ways to become more energy efficient. One company with a large portfolio in Idaho is building LEED friendly buildings but is not taking the extra step to verify the building is LEED rated because it is too difficult and does not bring additional value.

Portfolio and Building Management Practices

Respondents stated companies are looking at their portfolios to make changes but they are finding it difficult to make changes across buildings and portfolios. They typically evaluate projects and upgrades building by building. Respondents said that they cannot use the same approach for every building. Energy management must be flexible enough to apply to each building individually.

General Energy Efficiency Program or Initiative Awareness

Respondents are aware of many programs, initiatives, or incentives that encourage commercial office real estate companies to adopt energy reduction goals.

NEEA Sponsored Initiatives

Four respondents mentioned NEEA. One respondent said they were aware of NEEA SEM. This respondent described NEEA SEM as an initiative to encourage companies to initiate a high performance framework. NEEA SEM describes the process that managers can go through to develop a long-term commitment and a plan to support it. This respondent learned about the program directly from NEEA in 2006 or 2007. One respondent talked about NEEA being a sponsor of the Kilowatt Crackdown. This respondent learned about the competition in 2008 from Building Owners and Managers Association (BOMA.) One respondent stated that NEEA offers workshops about how to calculate past energy use. This respondent learned about these workshops in 2005. In 2004, one respondent learned about the partnership NEEA has with Idaho Power in the integrated design lab (IDL). This lab works with owners and managers to provide energy modeling and provide information about lighting, shades, and controls.

Utility Sponsored Programs or Initiatives

Four respondents mentioned Seattle City Lights. Seattle City Lights offers incentives for replacing lights. Three of four respondents first learned about the program from their utility over ten years ago.

Three respondents mentioned Puget Sound Energy. Puget Sound Energy offers building tune-ups and standard rebates on components for replacements of lighting and HVAC equipment. Two

respondents learned about the program in 1994 but could not remember where they heard about it. One respondent learned about it in 2011 through a pilot program they participated in but were unable to name the pilot program or the details of the upgrade.

One respondent mentioned an energy challenge from Snohomish PUD. The challenge is to reduce energy use by ten percent over three years. The respondent learned about the program a few years ago at a Seattle Mariners game.

One respondent learned about Tacoma Power rebate programs fifteen years ago from their utility.

Idaho Power has several energy efficiency programs. They have a peak load-reducing program. They have a program for commercial buildings that offers twelve cents per annual kilowatt-hour saved through design over the baseline. Idaho Power offers this incentive for energy efficiency upgrades during renovation. The respondent learned about this program in 2004 because they participated in a lighting program. They received enough money in incentives for replacing parking lot lights that they did not pay anything for fixtures and only had to pay the cost to install them.

Energy Trust of Oregon

Six out of 18 respondents said the Energy Trust of Oregon. They say it has a custom and prescriptive program for incentives. Kilowatt savings are the basis for the incentives. One respondent said they offer a tax credit and this offers forty percent of the cost of installation of different equipment if they make changes within five years. Two respondents said the program offers incentives for lighting and HVAC upgrades. One respondent remembered learning about the program in 2002 from a newspaper article talking about SB11 funding. Another respondent remembers hearing about Energy Trust of Oregon as early as 2004. Two others remember learning about it in 2006. One learned about the program from BOMA and the other from their utility.

Building Certification

One respondent is aware of ENERGY STAR and LEED certification. The respondent said that companies that participate get recognition for their involvement along with a press release. The respondent learned about the ENERGY STAR program from NEEA in 2008. The respondent heard about LEED certification from an e-mail in the mid-1990s.

One respondent mentioned the Green Building Council. This program encourages practices similar to those included in LEED buildings. The respondent learned about it three years ago from their property manager.

Other Programs and Initiatives

One respondent mentioned the Business Energy Tax Credit, which is a tradable tax credit. Businesses can apply for the credit and then receive a percentage of their energy expenditure if

they meet a minimum energy savings goal. If the business is a non-profit or government organization, they can sale their credits on the open market for a reduced price. This respondent learned about it in 2006 because he was an evaluator for the program.

The Seattle program, 2030 District, is a way to promote energy savings as a city. One respondent said they are encouraging architects to embed the ideas from the 2030 district into facilities they design.

One respondent said he was aware of a BOMA project called BEEP (BOMA Energy Efficiency Program). This respondent learned about the BEEP program from Conservation for Energy Efficiency in 2005. This program raises awareness for important energy projects. It is a classroom and webinar based program.

One respondent attended a conference on solar power in Denver in 2005 about being carbon neutral by 2030. Another respondent learned about car charging stations for their business from a magazine, *Ecotality*, in 2011.

Awareness of Strategic Energy Management

Five respondents said they are not aware of SEM or a NEEA initiative to encourage SEM.

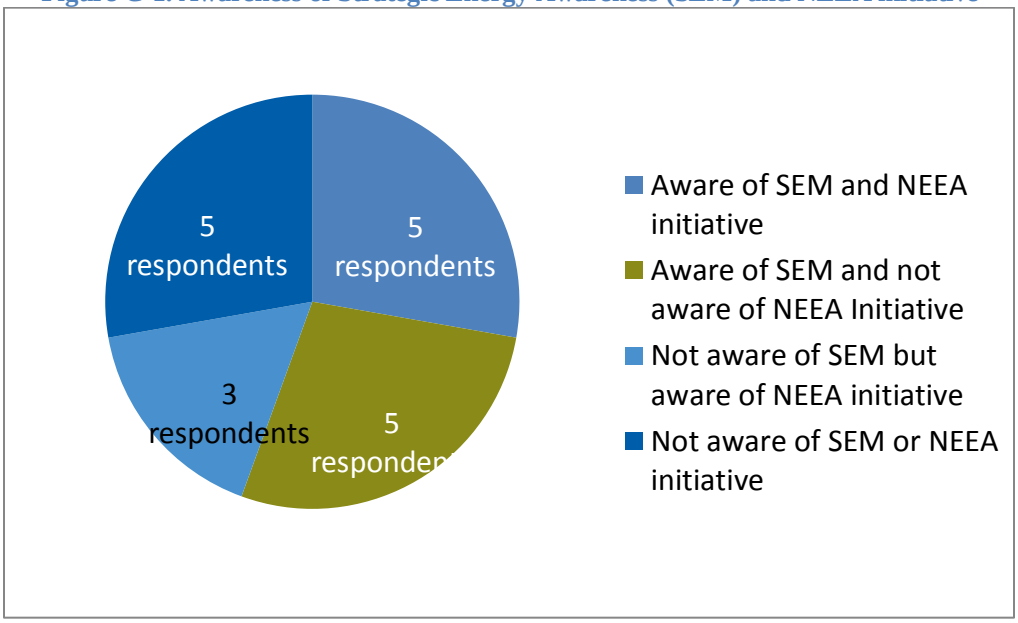
Ten out of 18 respondents are aware of SEM.

- Five respondents are both aware of SEM and of the NEEA initiative to encourage SEM.
- Five respondents are aware of SEM but not aware of a NEEA initiative to encourage components of SEM

Three respondents initially said they were not aware of SEM but when asked about the NEEA initiative to encourage implementation of SEM components, they said they were aware of SEM.

- Two of the respondents who were not aware of SEM but were aware of the NEEA SEM initiative said they were not aware of the program by name but were aware of the components of SEM.

Figure C-1. Awareness of Strategic Energy Awareness (SEM) and NEEA initiative



Notes: Results from interview questions C1: *Are you familiar with Strategic Energy Management?* and C2: *Are you familiar with a NEEA initiative to encourage commercial office real estate organizations to adopt components of Strategic Energy Management?*
Total n = 18

Five of the respondents who are aware of the NEEA initiative learned about it from NEEA.

- One of these four learned about it through other work their organization was doing with NEEA,
- one from a building survey NEEA conducted,
- one from the Better Bricks program,
- and NEEA contacted two directly.

One respondent learned about the program from their tenant, one from an association member, and one learned about it from the University of Washington.

Three respondents could not remember when they learned about the initiative. One respondent learned about it in 2012. The remaining four learned about it prior to 2012.

Barriers

Respondents answered questions about the main challenges to energy efficiency and challenges to participating in SEM.

Barriers to Undertaking Energy Efficiency Projects

Respondents said the largest challenges are the upfront cost of projects, the return on investment, and competing needs in the buildings. Projects are dependent on the initial cost, whether there is

available capital, and the return on investment. Companies own the building for a short period so return on investment is a challenge. It can be difficult to sell a property if there is too much debt so businesses will not take on projects with a long return on investment. Businesses will not consider an energy efficiency project unless there is a return on investment of less than three years. Businesses do not have enough cash for energy efficiency upgrades. It is difficult to find the capital needed to fund energy efficiency projects. They will retrofit equipment when it reaches the end of useful life but there are typically no incentives so they will replace the equipment with equipment of the same energy efficiency so there is no meaningful upgrade in energy efficiency.

One respondent said businesses have been building and managing their buildings the same way for decades and they are not willing to think about new ways of constructing buildings or managing energy within existing buildings. The respondent stated this is the case with family controlled real estate in his state.

Respondents stated other challenges include staff resources, staff knowledge, getting utility data for multi-tenant buildings, and information clutter. Respondents say they do not have enough personnel or time to make a meaningful investment in looking for ways to improve energy efficiency or educate staff and tenants about the benefits of energy efficiency. One respondent expressed a challenge getting utility data for office space occupied by tenants and one respondent said there is too much clutter regarding energy efficiency and being *"green."* This respondent said the amount of e-mail and information is overwhelming and because of this, people end up deleting messages without reading them and deciding if the information is useful.

Barriers to SEM Adoption

Respondents described challenges to adopting components of SEM. They include cost to adopt SEM, getting corporate approval, and identifying benefits for adopting SEM.

Cost is a dominant concern to adopting SEM. The cost to develop the goals, practices, and reporting tools is a challenge. This requires additional staff time devoted to the management of this process. Respondents stated there is a cost associated with training staff so that they are knowledgeable enough to manage energy through this initiative. Respondents would like NEEA to demonstrate that SEM reduces energy consumption and saves money because, according to this respondent, it sounds like they would need to hire someone to run the program and this would be costly.

One respondent stated SEM was not simple enough. He said it sounded like a *"hassle"* and *"a lot of work."*

One challenge is getting large organizations to begin including components of SEM in their long-term strategic plans. Unless there is proof of long-term savings, it can be difficult to get principal decision makers interested in carrying out SEM.

Another challenge is to show that the initiative is beneficial to owners and to tenants. Respondents stated there are not enough studies demonstrating buildings can charge higher rents

or attract new tenants at a higher rate because of savings due to energy efficiency. According to a respondent, NEEA should develop ways to prove that there are savings.

Tenant comfort and happiness is a concern. A building owner or manager can set energy reduction goals but unless tenants understand how their behavior and actions affect energy use and their bottom line tenants are not willing to make changes. Tenants are not excited about energy efficiency. It is not one of the top ten reasons they select space in a building.

One respondent said the goal of SEM is wrong. He stated it should not focus on showing that SEM offers a competitive advantage. According to this respondent, this is a nice idea but is not the driving factor to energy efficiency among commercial real estate professionals. The goal should be to help businesses reduce energy costs so the value of the real estate asset is increased and enhanced. The lower the operating costs the higher the value of the building. Building value is the dominant reason people invest in commercial real estate. Some tenants look for energy efficiency but for most, this is not one of their top ten requirements when choosing space. The focus of the initiative should be on helping business reduce costs so that their asset is more valuable.

Interview questions asked for respondents opinions about specific challenges to SEM including access to resources, whole building tracking data, and knowledge about SEM.

Access to Resources and Tools

Respondents said there are enough resources and tools but the challenge can be to have enough money to utilize them. They said that utilizing resources is challenging because of competing needs. One respondent suggested that regions set up a central location to loan tools to businesses (like the Pacific Energy Center in San Francisco). One respondent said tools are available but building owners and managers may not be aware of them. One respondent said that there are tools that can provide whole building data but what is missing is an inexpensive and simple way to meter specific places in a building. One respondent said there could be too much energy usage data and people need a way to utilize the data in an actionable manner.

Track and Manage Whole Building Data

Respondents agree that there are systems available to track and manage whole building data. This is not a challenge.

Knowledge of SEM

Respondents said that knowledge is an important factor when discussing SEM. They said that businesses would never have too much information. Respondents said the main challenge with information is delivering it to people in the correct format. One respondent suggested that more education surrounding plug load would be a useful topic for tenants. One respondent said that some building owners are not interested in sharing details about their building energy efficiency methods because it can be a way to maintain a competitive edge.

Information Delivery Channels

Respondents answered an unaided question about how NEEA encourages companies to adopt SEM. One respondent mentioned newsletters, one mentioned trainings, and two mentioned that they sponsor competitions.

Respondents answered questions about specific formats NEEA deploys as a way to overcome barriers to the program.

Market Partners Program

Respondents said the MPP approach is a good way to encourage people to share ideas and provide resources based on operations and portfolio management (9 of 18). The program is good as long as it does not require businesses to assume high costs. Five of 18 respondents were not aware of the program and did not have an opinion about it. One respondent thought the program was redundant because it sounded like the benchmarking Seattle is already doing. In addition, one respondent said his company is already doing this so they do not need the NEEA program. One respondent thought the idea was not effective because no one is able to demonstrate that these programs pay for themselves.

Commercial Office Efficiency Competitions

Respondents said commercial office efficiency competitions are somewhat effective as a tool to encourage SEM adoption. Competitions are a way to energize owners and managers to start thinking about energy use and ways to reduce energy consumption. One respondent described them as *"igniters"* and went on to explain that they ignite activities that give people an occasion to make changes. Typically, there is a building audit, which is useful even if the building decides not to participate in the competition. The competitions have limited results because newer buildings tend to win and they do not focus on long-term changes to reduce energy use. Competitions need to identify ways to reward older buildings. One person said that competitions are *"silly"* because businesses are always trying to maximize shareholder returns and the competitions do not help with this. One challenge with competitions is the frequency of them. One respondent said that they are happening too frequently throughout the year. They should not be too close together; once per year.

Industry Education and Training

Respondents stated seminars and workshops are helpful. The challenge is identifying topics that are most useful for this industry. Respondents requested workshops focus on the financial benefits of adopting SEM for property owners and managers. Technical workshops are useful for engineers but not as useful for building owners and managers. One important idea is to focus on ways to demonstrate payoff. Seminars could focus on how companies have saved money and demonstrate the savings. NEEA needs to continue to educate managers and owners to research new technologies and find ways new technologies can help them reduce operating costs. Workshops need to focus on the next wave of energy management now that most owners and managers have upgraded to equipment with the shortest payback.

Respondents stated workshops and seminars need to be short and not require a large time commitment or incur a high cost. One respondent said a problem with education is that if a company implements a project and it does not demonstrate the amount of savings they were anticipating they do not do another project.

Respondents stated NEEA should educate people by inviting them to peer forums where they can discuss what they are doing, what they have done, and what is working. These forums could be a way to discuss how buildings are planning to get to the next level of energy efficiency. These forums should include people with similar projects and property types.

Contractors should be included in education efforts. SEM should focus on educating contractors about ways to build and design properties that are more energy efficient from the beginning. They should demonstrate how design and construction could keep the costs down while improving the energy efficiency of the building.

Additional Marketing Communications

Overall, respondents would like information delivered in a clear and concise way. Case studies, analytic tools, and templates are important tools for owners and managers.

Respondents stated case studies generally focus on businesses with large amounts of capital. They would like case studies about businesses that have used creative ways to finance efficiency improvements. Some respondents would like case studies focused on smaller buildings. Case studies should focus on successes and failures. Case studies need to be direct and contain only the salient details such as property size, the year of construction, program details, what the building is doing to track energy, what is and is not working. Respondents stated case studies should include the incentive earned for the project. The case study should be one page. Respondents stated case studies need continuous updating so that they are not *"misunderstood."*

Templates and other analytic tools are useful especially for smaller organizations or ones that do not have the budget to create these tools.

One challenge mentioned by managers and owners is the amount of literature they receive regarding energy efficiency and deciding what is important and actionable. NEEA could collaborate with BOMA to offer a seal of approval so that BOMA members could tell which information to read and which to delete.

Respondents mentioned ways to deliver information and tools. They said the best way is for NEEA to come directly to them and present the information. One suggested setting up peer forums where people can exchange ideas with businesses like their own. Websites are a good way to deliver information especially if the information links to BOMA or NEEA. One suggested sending a focused electronic newsletter. One respondent mentioned webinars as a good way to deliver information because they are cost effective and do not use a large percentage of time.

Other ways to motivate SEM adoption and overcome challenges

The interview asked respondents to identify other ways to motivate owners and managers to adopt components of SEM.

According to one respondent, NEEA requires a better understanding of commercial office real estate business practices. Buildings can only make improvements when tenants move out so a long-term investment in energy efficiency is not beneficial, and goals based on this do not prove effective. These buildings focus on taking advantage of short-term energy upgrades.

One respondent said NEEA should not provide one mandate or one program. They need to understand that all buildings are different and need different management strategies. This person said, *"one program, one size doesn't fit every building."*

One respondent stated the current NEEA staff delivered information *"with an attitude"* that did not encourage owners or managers to participate in SEM.

Respondents stated NEEA needs to continue to focus on providing information to owners and managers about the financial benefits of adopting SEM. One way to do this is by offering free or low-cost audits or building walk-throughs to identify upgrades that business could make. NEEA should provide information about why the upgrade would be useful to the buildings finances along with payback and what upgrades provide the biggest payback.

Respondents said financial incentives would be the best way to motivate owners and managers to adopt SEM. One respondent said they should explore ways to work with commercial property owners to help them find incentives. One respondent said they should work with energy savings companies to explore a financial vehicle where the market would be receptive to power purchase agreements.

Two respondents mentioned that smaller buildings (those with less than 50,000 square feet of rentable space) should start focusing on energy management. They said that BOMA and NEEA could collaborate to provide information to smaller buildings about ways they could reduce energy use and the financial benefits for making these changes.

Regulations in Seattle give NEEA an opportunity to contact owners and work with them to provide resources so that buildings can comply with the new laws. They could contact businesses and work with them to provide individual support.

Respondents said that tenants have a large impact on energy use in a building. Respondents suggested working with tenants to change behavior. Some ideas include:

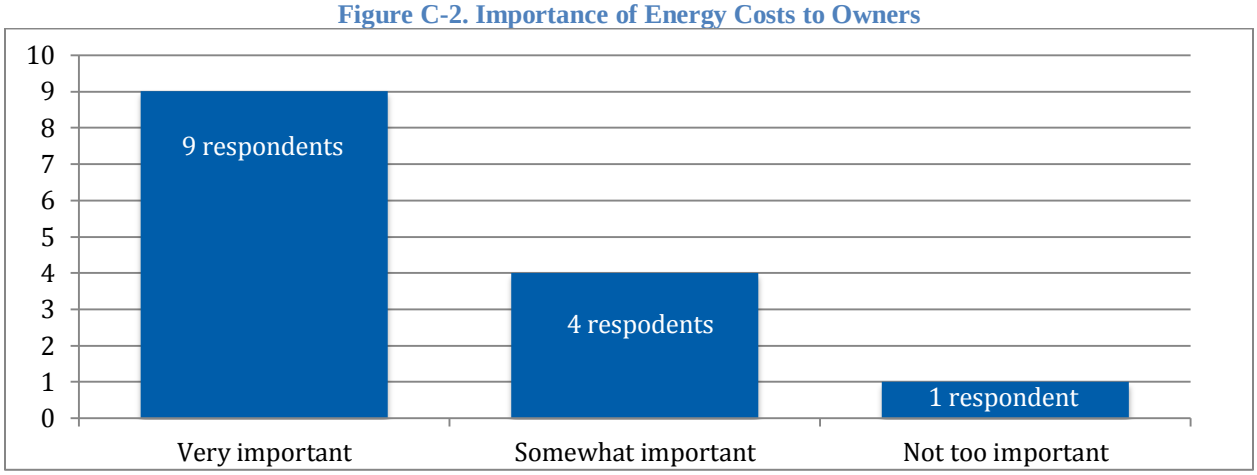
- Setting energy use goals for tenants
- Sponsoring competitions among tenants regarding energy use or some other aspect of energy efficiency

- Providing educational seminars for tenants in buildings
- Setting up a kiosk in the lobby of the building with information about ways to reduce energy use

Business Drivers for Energy-Efficiency Decision Making

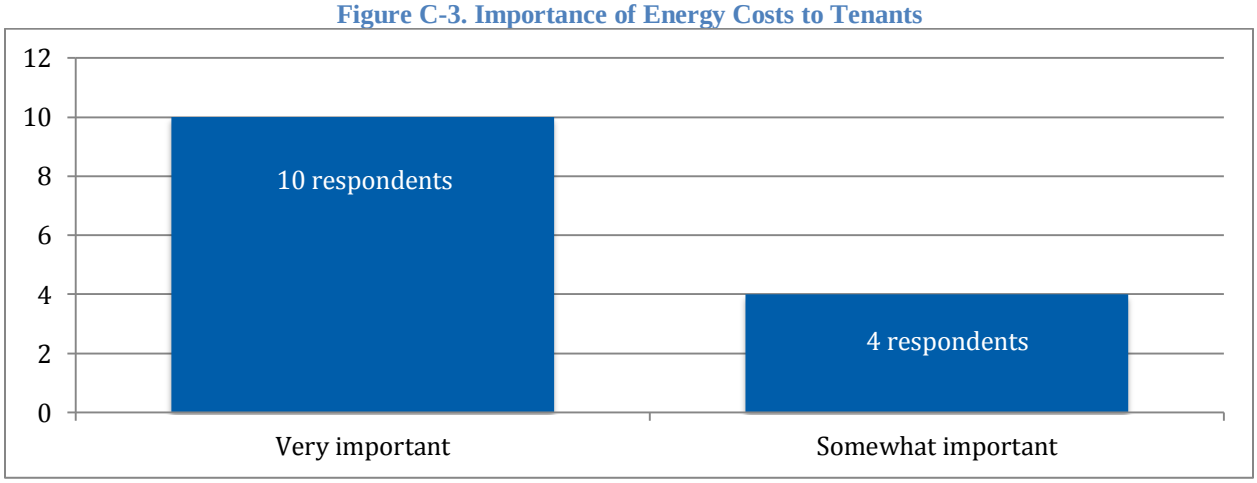
Cadmus asked respondents to discuss business drivers behind energy-efficiency decision making. Nine of the 14 respondents said energy costs are *very important* to commercial office real estate owners, three said they were *somewhat important*, and one said it was *not too important*. Ten of 14 respondents said energy costs are *very important* to commercial office real estate managers and four said they were *somewhat important*.

Figure C-2. Importance of Energy Costs to Owners



Notes: Responses to interview question E1: *In general, how important are energy costs to commercial office real estate owners?*
Total n = 14

Figure C-3. Importance of Energy Costs to Tenants



Notes: Responses to interview question E2: *In general, how important are energy costs to commercial office real estate managers?*
Total n = 14

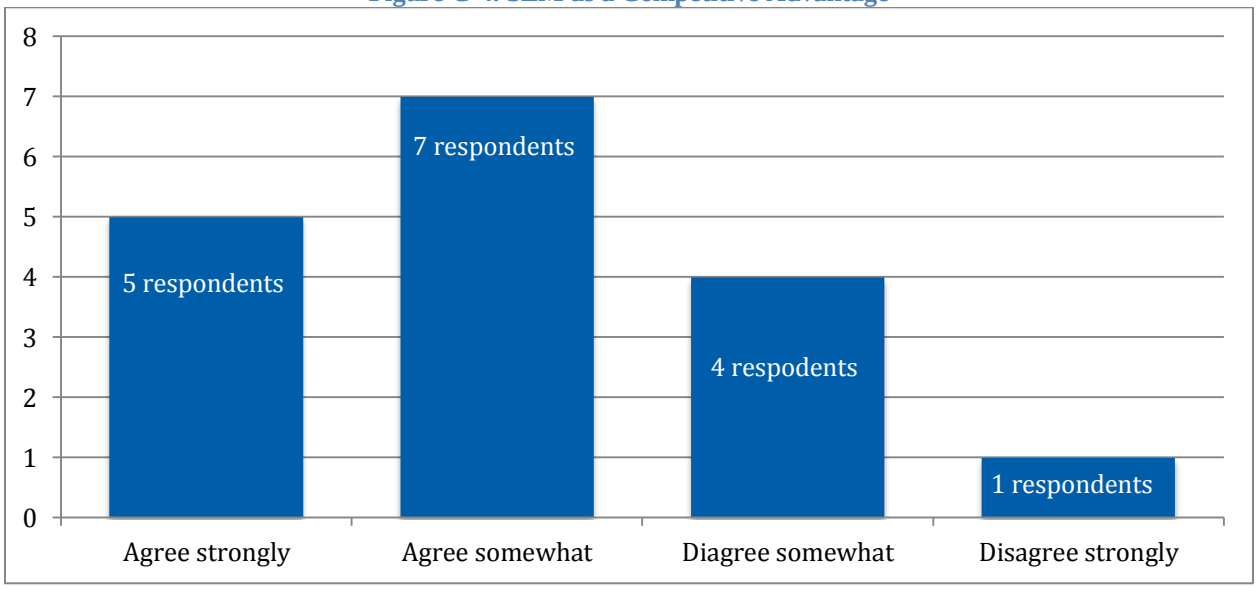
Important Factors

Respondents said the most important factors commercial office real estate companies consider when they are deciding to adopt energy efficiency plans are the overall cost and return on investment. The interview asked about other important factors. Respondents said that property cash flow, company cash flow, asset value, company profit, and marketing and brand positioning are all important but marketing and brand positioning was the least important of the items on the list. They indicated that company cash flow is more important than property cash flow.

Attitudes and Trends

Interviewers asked respondents about whether they thought commercial office real estate owners and managers viewed the adoption of SEM as a competitive advantage. Twelve people agree with this statement and five out of seventeen do not.

Figure C-4. SEM as a Competitive Advantage



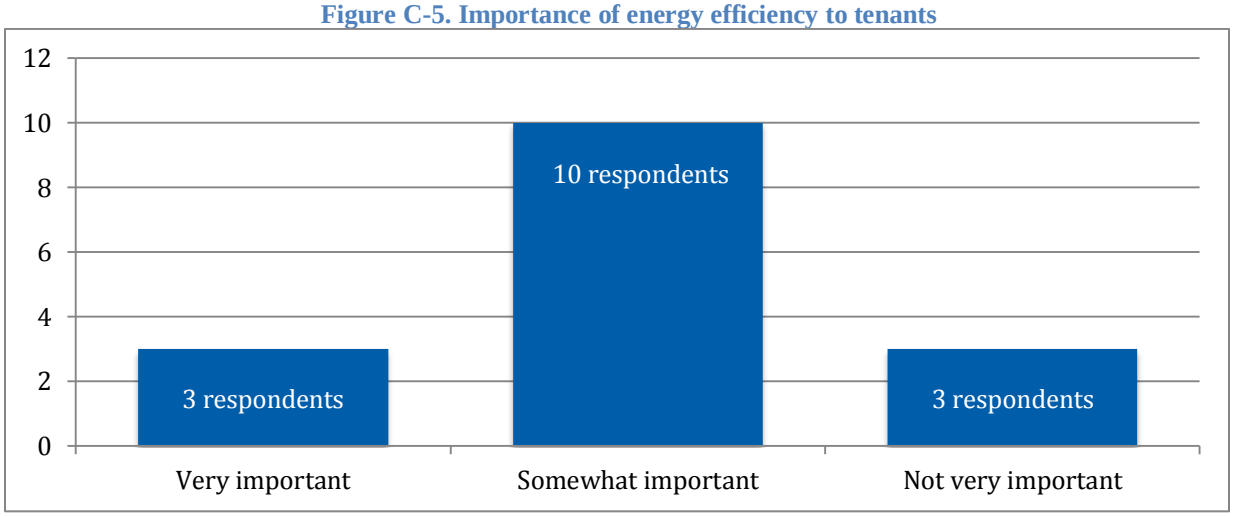
Notes: Responses from interview question D4: *How much do you agree or disagree that commercial office real estate owners or managers view the adoption of Strategic Energy Management as a competitive advantage?*
Total n = 17

The people who strongly agreed with this statement said that it is important to tenants and allows buildings to maintain higher occupancy levels and fill new buildings faster. One respondent said that tenants want to be *"good stewards of the earth."* The respondents who *agreed somewhat* said that it was important but not the most important factor. One respondent said that studies differ about whether LEED certified buildings could charge more per square foot in rent than other buildings. Respondents who disagreed with the statement said it was because of cost. It can be important to some tenants but if the cost is too high then it does not matter. One respondent said that it can help in lease renegotiations but usually does not increase occupancy.

Importance of Energy-Efficiency to Tenants

The overwhelming majority of respondents (10 out of 16) say that energy efficiency is *somewhat important* to tenants (Figure C-5). The importance depends on who pays the utility bills and whether it lowers the operating costs or rent. If a tenant pays the utility bill, they are more likely to be interested in energy efficiency. If it is included in the rent, it is not as important to them. When tenants select a building location, energy efficiency can be one of the factors they review but it is not one of the most important factors in their decision-making. Some tenants are interested in sustainability and being in a LEED or ENERGY STAR certified building is very important to them. Some tenants have an emotional attachment to the idea of being *"good stewards of the environment."* Others do not care at all about this.

Figure C-5. Importance of energy efficiency to tenants



Notes: Results from question F1: *How important do you think energy efficiency is to tenants of office buildings?*
Total n = 16

Respondents answered questions about how much influence owners and tenants have over each other regarding energy efficiency. It is not surprising that tenants typically influence owners to a greater degree about energy efficiency. Owners are more likely to think about energy efficiency if tenants are interested but it does depend on the owner's long-term plans for the building. Respondents stated that implementing energy efficiency influences owners when it results in higher occupancy rates. One respondent stated, *"If it is important to tenants, it is important to owners."*

Respondents stated owner's attitudes and actions regarding energy efficiency do not influence tenants. Some tenants like to see the overall cost of operations decrease because it might save money on their lease. Some believe owners should help them meet their own energy goals and owner's attitudes can affect this.

Availability and Importance of Utility Incentives

Respondents said utility incentives are very available to commercial office real estate property owners. They said that they may not provide enough incentive but they are widely available. One

respondent said incentive applications could be difficult and time consuming to assemble so utilities should work on improving this.

These incentives are very valuable to commercial office real estate property owners because they decrease the payback time and make capital projects more appealing. One respondent said the ability to buy down capital costs by ten percent to thirty percent is critical to ensure that energy upgrades are completed. The incentives generally pay for much of the equipment upgrade costs and decrease the overall energy costs. Incentives encourage discussion of energy upgrades within organizations and once decision makers begin discussing this they are more inclined to make upgrades.

Energy Management Trends

Cadmus asked respondents to identify energy management trends in the commercial office real estate industry. Table C-3 identifies energy management trends.

Table C-2. Trends in Energy Management within the Commercial Office Real Estate Industry

Larger companies are hiring sustainability managers and getting more education about sustainability.
They are becoming more sophisticated and are using new tools in HVAC controls which work well for retrofitting old buildings.
They are using more lighting technology and better innovation for chiller plants. They are evaluating what is working and what is not.
More companies are trying to see energy consumption on a portfolio level not just for each building. Simple tools are needed do that. Tools that require one keystroke to learn about the energy use of an entire portfolio.
There is a little more traction to integrate energy management plans with operations. They are using predictive measures and data to develop maintenances plans instead of using the maintenance information from the manufacturer.
It sounds like NEEA SEM should be copyrighted. I haven't heard of it. The concept sounds like it is innovative but there are so many companies that do the same thing so how do you hear the voice in the wilderness.
More companies are adopting energy management in the commercial real estate industry.
The trend to control and conserve will continue but it is market driven.
There are no real trends. Everyone is doing what they can do. Reaching out to smaller businesses.
New buildings offer more efficient envelope technology. New chillers that are all frequency driven. Water reduction through water reclamation.
More and more companies are being held accountable to the community of future owners. Better education and ongoing education for building owners, architects, engineers and the whole community. More post-secondary education aimed at sustainability.
There will be a little more focus on higher overall costs. Make more staff bonuses dependent on how much energy they reduce.
Companies will not be moving all the way to SEM but certainly benchmarking performance. They will evaluate buildings and monitor them over time. More buildings are applying for ENERGY STAR and bragging about that as a marketing advantage especially with Class A buildings. BOMA has offered BOMA branding programs to allow corporations to apply for earth award programs as a focus of good business. Businesses will practice in a variety of areas to increase operational efficiency and recognition. The types of earth awards are to show sustainable practices such as green cleaning and water efficiency.
A lot of attention is being paid to this nationally but not locally in Idaho.
Really deal with sustainable operations and use as little energy as possible. There are some insane ideas from the 2030 council with BOMA. They need to make operations sensible. Buildings are built to make money not to be an environmental project. Owners purchase them to make money and don't believe in carbon neutrality.
Increased improvements with energy efficiency. Idaho is tough because it is conservative. Owners are slow to adopt.

Notes: Responses from interview question F7: *What trends do you see regarding energy management within the commercial office real estate industry?*
Total n= 16

Appendix D. SEM Adoption Survey Detail

Table D-1. Level of SEM Implementation

		Elements							SEM Components Implemented		
ID#	State	Participant	MPP Bldg ID	Goals Adopted	Goals Documented	Staffing Resources Allocated	Activities Implemented	Management Reviews	Full	Some*	None**
1	WA	N	N	N	N	Y	Y	N		2	
2	MT	N	N	N	N	N	N	N			1
3	ID	Y	Y	N	Y	N	N	Y		2	
4	ID	N	N	Y	N	N	Y	N		2	
5	ID	N	N	Y	N	Y	N	N		2	
6	WA	N	N	N	N	Y	Y	Y		3	
7	WA	N	N	Y	N	Y	Y	N		3	
8	ID	N	N	N	N	N	N	N			1
9	WA	N	N	N	Y	Y	Y	N		3	
10	WA	N	N	Y	Y	Y	Y	Y	5		
11	ID	Y	N	N	N	Y	N	N		1	
12	WA	N	N	N	N	Y	N	Y		2	
13	OR	Y	Y	Y	Y	N	Y	Y		4	
14	WA	Y	N	N	N	Y	Y	Y		3	
15	OR	Y	N	Y	N	N	Y	Y		3	
16	OR	Y	N	Y	N	Y	Y	N		3	
17	WA	Y	N	Y	Y	N	Y	Y		4	
18	OR	Y	N	N	Y	N	Y	Y		3	
19	WA	N	N	Y	Y	Y	N	Y		4	
20	WA	N	N	N	Y	Y	Y	Y		4	
21	WA	N	N	Y	Y	Y	Y	Y	5		
22	WA	N	N	N	Y	Y	Y	N		3	
23	WA	N	N	N	N	N	N	N			1
24	WA	N	N	N	N	N	Y	N		1	
25	WA	N	N	Y	Y	Y	Y	N		4	
26	OR	N	N	N	N	N	Y	Y		2	
27	OR	Y	N	N	N	N	N	N			1

		Elements							SEM Components Implemented		
ID#	State	Participant	MPP Bldg ID	Goals Adopted	Goals Documented	Staffing Resources Allocated	Activities Implemented	Management Reviews	Full	Some*	None**
28	OR	N	N	N	N	N	Y	N		1	
29	OR	N	N	N	N	Y	Y	N		2	
30	OR	Y	N	Y	Y	Y	Y	N		4	
31	OR	N	N	N	N	N	N	N			1
32	ID	N	N	Y	N	N	Y	N		2	
33	ID	N	N	N	N	N	N	N			1
34	ID	N	N	Y	Y	Y	Y	N		4	
35	WA	Y	N	Y	Y	Y	Y	Y	5		
36	WA	N	N	N	N	N	N	N			1
37	WA	N	N	N	N	N	N	N			1
38	WA	N	N	N	N	Y	Y	N		2	
39	WA	N	N	N	Y	N	Y	N		2	
40	OR	N	N	N	Y	N	Y	Y		3	
Percent of Total		28%	5%	38%	40%	50%	68%	38%	8%	73%	20%

*Indicates number of SEM components implemented

**"1" in the column indicates respondent did not implement any SEM components

Table D-2. Practices

Activity
Chiller. We are trying to reduce the amount of overtime air that we are using. We work with tenants.
Building control system; scheduling of systems in the most efficient way to run building.
Energy management system to automate and check conditioning so that we are not conditioning space that isn't being used.
Engineering staff works with various building systems and upgrades.
Green cleaning. Using non-toxic chemicals.
Changing lighting fixtures to top of the line for what city code requests so that they automatically dim or go off when it is bright enough outside.
Kilowatt Crackdown. We are in the process. We signed up for it after Idaho Power came and talked to us about it. They haven't done the audit yet.
Lighting equipment
Lighting retrofits. We are switching to T8 fluorescent.
Review lighting controls to make sure lights go on when building is occupied. We ask tenants when they are in the building and make sure we are not over lighting.
Review of sequences
Trying to cut operating expenses because utilities are one of biggest expenses. Every year at budget time, our engineering team does a review of the system. We want capital investments that pay back within 5 years.
Watch energy consumption and address specific concerns and issues.
A third party provider presented us with return-on-investment summaries of how energy efficient programs can help us.
Energy management system. It would involve a 3rd party contractor.
HBS System
HVAC System
Identifying when shift changes to modify lighting and reduce the use of lights.
It's a long term plan. I think that the improvements will ultimately save us money; i.e. updating our electrical practices, updating heating from steam to hot water will eventually lead to savings and running the building more efficiently.
Material use, lighting, certifications
Occupancy schedules. If CO2 is detected it will us how much air conditioning to use.
Operational boarding on all.
Operations and maintenance
Operations maintenance; and training
We are doing a several million plus dollar retrofit to completely replace systems proposed. We are in various stages of the approval process.
We have gotten energy audits from 3rd party and review their report and make our decisions about how to proceed.
420,000 lighting control retrofit
Audits. We get audits on systems whenever we think we need them.
Behavior changes- opportunities to change the way the building operates. Shut off heating and cooling if tenants leave early in the summer. Changed out garage circulation fan, put on a timer. Security guards go through and turn off lights. Decrease garbage pickup during holidays.
Better lighting controls
Consultant helping with Energy Star certification
Light controls. We are working with our buildings to control when the lights are on.
Look for ways to update lighting to more energy efficiency lighting
Same with HVAC. Had to change the set points and communicated that to the tenants.
Staff training related to energy practices
Start and stop times in building equipment is automatic based on occupancy
Ability to schedule system
Actuate outside air dampers so that they are at the proper position.

Activity
LEED AP classification
Maintenance
Opening up more natural lighting, putting workspaces along windows.
Use of temperature control
250,000 dollar operational changes and improvements
Building exterior. We are starting to look into sealing the building. Install new windows and seal outside dampers. This requires a lot of capital so it will take a while to complete.
Changed lighting program. Use fewer lights. Installed sensors.
Control review by the vendor. Our vendor did an audit and reviewed our controls and gave suggestions for improvements.
Lighting upgrades.
Lighting upgrades- capital improvement. T-12 bulb for a T-8 bulb.
Motor detectors.
Replaced motors so they are right sized and right type.
Consultant helping with LEED certifications.
Encourage tenants to reduce energy usage by turning off lights and computers.
Chiller upgrades.
Equipment that needs motors replaced.
HVAC Chillers. We are using a zone box control system.
Replacing building standard window shades. Changed styles/types- vertical to a roll down (more UV blockage).
Use Energy Expert on a daily basis. This is a program PGE offers.
We automated the sweep system to ensure lights are off after occupants are gone for the day.
Chiller plant.
UFDS and UPS upgrades and changes to be more automatic
We have an engineer working on peak loads. We found that our loads are larger in the morning than they should be so the engineer is working on ways to improve this.
Instant DHW upgrades- far less steam per unit of measure.

Notes: Results are from survey question F2: *Please describe these practices and when you identified each practice. These practices could include all things energy related such as capital purchase, capital improvements, operations, and maintenance changes, training, certifications, other behavioral change efforts, and/or third-party service provider proposals/projects.*
Total n=30

Energy Reduction Plan Outcomes

Cadmus asked respondents about the current outcomes of their energy reduction plans. Overall, planned practices have resulted in a reduction in energy consumption. Three-quarters of respondents who said they identified practices said they reduced their energy consumption as much as they expected (21 out of 28). Eighty-five percent of these respondents said the planned practices were *very* or *somewhat* helpful in reducing energy usage while the others did not know if they have been helpful or not (23 out of 27). Eighty-eight percent of these respondents said they had enough resources to reduce their energy use as much as they intended (23 out of 26). The respondents who did not have enough resources said it was because of financial reasons, not enough staff, or not enough training.

Evolution of Energy Management Practices

Cadmus asked respondents how their energy management practices have evolved since they adopted them. Three people said they have not evolved and six people did not know. Table D-3 shows other answers.

Table D-3. Practice Evolution

Item	Number of Responses
They haven't evolved.	3
Hired consultants.	2
Continually monitor usage and adjust.	6
Install new technology.	1
More aware of what we can do.	3
More/different training.	2
Review utility bills.	1
Benchmark.	1
Continue to grow and look for better ways to be more efficient in what we are doing.	1
Adopting practices slowly.	1
Always evolving.	2
Now have energy management practices.	1
Stricter review process.	1
Don't know.	6

Notes: Results show breakdown of responses to question J4: *How have your energy management practices evolved since you adopted them?*
Total n=26
Respondents could give multiple responses.

Future Changes to Goals

Cadmus asked respondents if they anticipated making changes to their energy reduction goals and practices in the future. One-third of them have no plans to make changes (33 percent) and 19 percent do not know if they will make changes. Of the changes that respondents anticipate, 15 percent said they will look for new technology, seven percent said they will make changes to their buildings envelope, seven percent said they will upgrade lighting. The remaining respondents gave other answers, such as doing what the city requires them to do, making any changes to stay competitive in the marketplace, continually monitoring energy use, more use of occupancy space, bringing 100 percent of portfolio up to national efficiency standards, and developing a system to track changes.

General Awareness

Cadmus asked respondents to name and describe any programs, initiative, or incentives they were aware of that encourage commercial real estate buildings to adopt energy reduction goals and practices. Most respondents did not mention the names of specific programs but did mention the company who implements programs, initiatives, and incentives. Table D-4 outlines all the answers respondents gave. Respondents mentioned Energy Trust of Oregon (24 percent), Seattle City Lights (24 percent), Idaho Power (11 percent), and Puget Sound Energy (11 percent) most often.

Table D-4. Program, Initiative, or Incentive Awareness

Programs, Initiatives, and Incentives	Percent of Responses
Energy Trust of Oregon	24%
Seattle City Lights	24%
Idaho Power	11%
Puget Sound Energy	11%
ENERGY STAR	8%
BETC	5%
Kilowatt crackdown	5%
LEED	5%
Utility rebates unspecified	5%
2030 District	3%
Avista	3%
Clark County utility	3%
Ecotality	3%
Federal program for steam to natural gas financing	3%
HVAC upgrades	3%
Lighting upgrades	3%
NEEA	3%
Resource conservation management program	3%
SPU Plumbing	3%
Other unspecified	3%
None	21%

Notes: Results show breakdown of responses to question D1. *Please tell me which programs, initiatives, or incentives you are aware of that encourage commercial buildings to adopt energy reduction goals and practices.*
Total n=38
Percentages may exceed 100% because respondents could give multiple responses.

Awareness of SEM

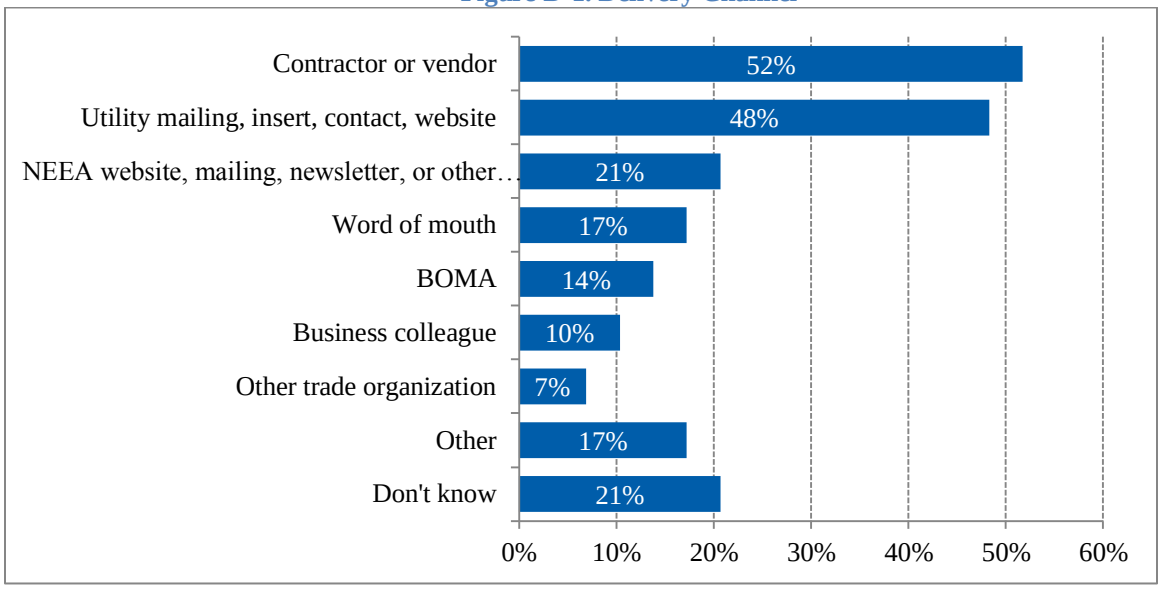
Interviewers asked respondents whether they were aware of SEM and if they were aware of a NEEA initiative to encourage SEM. Over half said they were not familiar with SEM (59 percent). There was no difference between the CRE Initiative cohort group and the non-cohort group. There was a difference of awareness across states. Awareness of SEM was highest among the Idaho respondents with 62 percent who said they were aware of SEM. Thirty percent of Oregon respondents were aware and 40 percent of Washington respondents said there were aware of SEM. The respondent in Montana was not aware.

Over three quarters of respondents said they were not familiar with a NEEA initiative to encourage SEM adoption. There was a difference in awareness between the cohort group and non-cohort group. Over half of the cohort group said they were aware of a NEEA initiative to adopt SEM (55 percent) and only 17 percent of the non-cohort group said this. There was a large difference in awareness across states. Oregon had the highest awareness (55 percent), Washington was lower at 20 percent, and only 12 percent of Idaho respondents were aware of a NEEA initiative to encourage SEM adoption. Again, the respondent in Montana was not aware.

Information Delivery Channels

Cadmus asked respondents who could name programs, initiatives, or incentives where they heard about them and when they became aware of them. Twenty-one percent did not remember. The two most common answers respondents gave were contractor or vendor (52 percent) and utility mailing, bill insert, e-mail, or direct communication (48 percent). Figure D-1 shows the other answers respondents gave to this question. Over two-thirds of respondents said they heard about these programs after 2000 (79 percent). Thirteen percent learned about the programs in 2012 and 2013.

Figure D-1. Delivery Channel



Notes: Results show breakdown of responses to question D2: *How and when did you hear about the program?*
Total n=29
Respondents could give multiple responses so the percentages could exceed 100 percent.

Cadmus asked respondents how they heard about the NEEA initiative to encourage SEM adoption. They gave a variety of answers but contact by NEEA was the top response. Table D-5 shows all of the answers respondents gave for the way they learned about NEEA's initiative to encourage SEM adoption.

Table D-5. SEM Delivery Channel

Delivery Channel	Number of Answers
Contacted by NEEA	3
Energy reduction competitions	2
NEEA website	1
Market Partners Program	1
Utility	1
Word of Mouth	1
BOMA	1
Better Bricks	1
E-mail	1

Delivery Channel	Number of Answers
Website	1
Audit	1

Notes: Results show breakdown of responses to question K3: *How did your organization learn about the NEEA initiative to motivate commercial office real estate organizations to adopt Strategic Energy Management?*
N=11; Respondents could give multiple responses.

SEM Information Channels

Cadmus asked respondents about four different formats (information delivery channels) that NEEA has used to encourage the adoption of SEM among commercial office real estate owners and managers.

Market Partners Program

Only eight percent of respondents were familiar with the Market Partners Program. Eleven percent of cohort respondents were familiar with this program and seven percent of non-cohort participants were familiar.

Almost one-third said it would be *very* or *somewhat* effective (30 percent). Fifteen percent said it would be *not very effective* and 13 percent said it would be *not effective at all*. Forty-one percent did not know if this program would be effective in encouraging businesses to adopt SEM. A larger percentage of cohort respondents said they did not know if this would be effective (60 percent) while only 34 percent of non-cohort respondents said they did not know.

Commercial Office Energy Competitions

Overall, 47 percent of respondents said they were aware of energy reduction competitions. Cohort respondents were much more aware of these competitions (78 percent) than were non-cohort respondents (38 percent). Sixty-two percent of respondents in Idaho were familiar with these competitions, 40 percent in Oregon, and 47 percent in Washington. The respondent in Montana was not familiar with them.

One-quarter of respondents said energy reduction competitions were *very* or *somewhat* effective (25 percent), 25 percent said they were *not very* effective, and 20 percent said they were *not effective at all*. One-fifth of them did not know (20 percent). Sixty-three percent of cohort respondents said they were *very* or *somewhat* effective and only 24 percent of non-cohort respondents said this. Over half of respondents in Oregon said they were *very* or *somewhat* effective (54 percent), 30 percent in Washington, and 24 percent in Idaho. The respondent in Montana did not know.

Industry Education and Training

Cadmus asked respondents if they were familiar with seminars and workshops offered by NEEA and 18 percent of them said they were. Over one-third of cohort respondents said they were aware (36 percent) and 10 percent of non-cohort respondents said they were aware. Twenty-seven percent of respondents in Oregon were aware of these opportunities, 25 percent in Idaho, 10 percent in Washington, and 0 percent in Montana.

One person said they had attended a NEEA sponsored workshop or seminar and that it was *somewhat* effective. Fifty-six percent of respondents said they had attended other professional seminars and workshops offered by different organizations that they found helpful.

Additional Marketing Communication and Tools

Cadmus asked respondents how effective they thought marketing materials such as case studies, analytic tools, and templates are in encouraging businesses to adopt SEM. Half of respondents said they are *very* or *somewhat* effective (50 percent), 12 percent said they are *not very effective*, and 12 percent said they were *not effective at all*. One-quarter did not know how effective they would be. There was very little difference among opinions between cohort and non-cohort respondents or between the states.

Cadmus asked respondents what other tools or seminars and workshops NEEA could offer to motivate SEM adoption. Thirteen respondents did not know what they could offer and 17 people said *"none."* Table D-6 includes all the answers respondents listed.

Table D-6. Possible Tools or Seminars and Workshops

Responses	Number of Responses
Building Engineering workshops. Property managers are already aware of costs, practical or daily strategies, not always capital improvement work would be effective.	2
Everything helps but the question is whether you have human resources to implements. It's still all about educating people. I understand time is a valuable commodity. On-demand webinars are helpful but they need to be low cost or no cost. I understand aggressive marketing but people have sensory overload. I get so damn many e-mails that none of them are effective anymore. People blast out lots of e-mail and I just delete 99 percent of them. It is too difficult to wade through them but they have gotten stupid.	1
I can't think of anything. I guess they need to find a way to get to the next level of audience. Expand to the Class B managers.	1
The effort by the Idaho Design Lab to reach out to property owners and explain to individuals what they offer and demonstrate the offerings particularly to fund and can bring tools to the table. Individual outreach is needed; one on one demonstrations to save money if not to talk about saving the earth for their grandkids. They need to broaden the target market from property owners and managers to include contractors. Cost drivers in construction. Need to help focus design and selection of materials to be more efficient. If they were educated and aware so that they can see that buildings and construction can be made without an increase in building costs while getting energy efficiency and other resources.	1
The key is being able to get information on the building and showing that you can do something. They need case studies that are representative of the building you are in so that you can get best practices from something that is similar.	1

Responses	Number of Responses
The most important thing for NEEA is to understand more about commercial business practices. We can only make improvements when a tenant moves out. If we present goals for a project that doesn't fit in the existing building lifecycle then it won't work. This is why the SEM program doesn't work for us. They need to focus on building owners that are going to continue to own because they will do projects. The ones that buy and sell and buy and sell don't view long-term energy projects as a beneficial investment. It is impossible to get some energy projects done in the short term for these investors. Building owners don't want to do anything except hold and sell when they want. They spend money on upgrades if they are short-term upgrades.	1
Best that I've seen are the free lunch time seminars for engineering staff. BOMA does some. Staff really likes them. Engineering staff comes up with ideas for energy efficiency from these seminars.	1
I think the only way to motivate people is using money.	1
Here is the issue, our industry the office building industry uses a ton of energy. A lot of it is wasted, Here is what really needs to change: the tenants and their expectations. The way to do that is to make the end-users pay for it. Users of the building have to say that this is important to me.	1
Don't know	13
None	17

Source: Results show breakdown of responses to question K13. *What other tools or seminars and workshops can NEEA offer to motivate commercial real estate owners and managers to adopt Strategic Energy Management?* Total n=40; Respondents could give multiple responses.

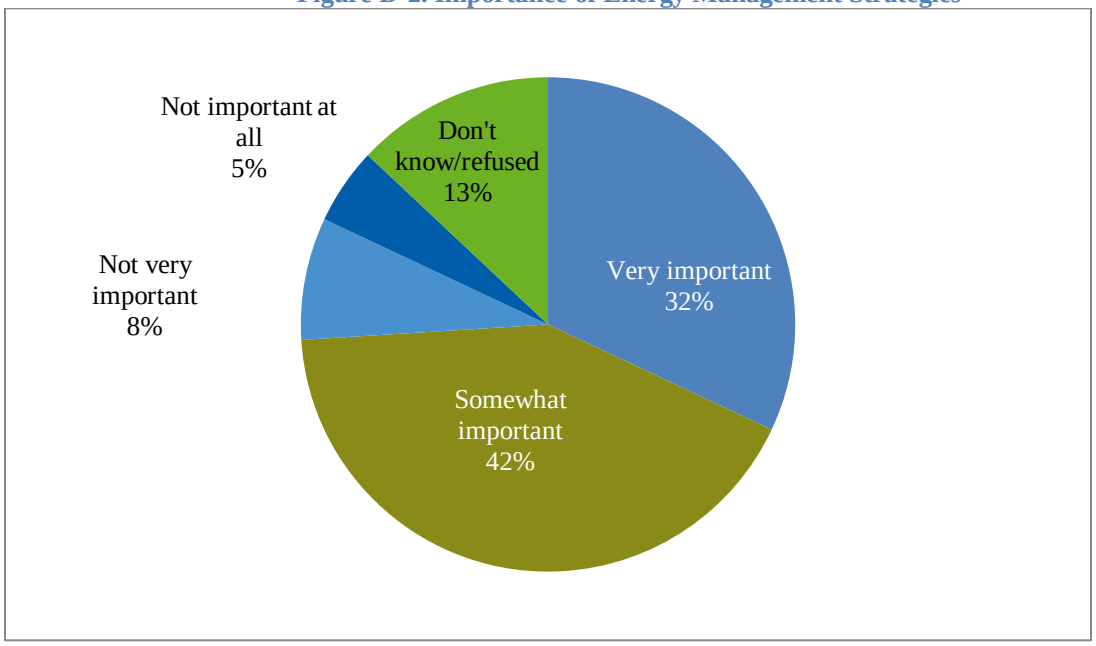
Motivation to Reduce Energy Use

Respondents said the top reason they are motivated to reduce energy use is to save money on electric bills (68 percent). This was the top response for cohort and non-cohort respondents as well as the top response in each of the states. The second most common response was reducing maintenance costs (26 percent). Other answers included protecting the environment (18 percent), marketing and branding (18 percent), and reducing greenhouse gases (18 percent). Sixteen percent said safety and health issues and 16 percent said improving occupant comfort.

Importance of Energy Management Strategies

Cadmus also asked respondents how important energy management strategies are to maintaining a competitive advantage. Almost three-quarters said that it is *very* or *somewhat* important (74 percent) while a small number said it was *not very* or *not at all* important (13 percent). Figure D-2 shows the breakdown of responses to this question. There was no difference in importance between the cohort and non-cohort groups. Ninety percent of respondents in Washington said it was *very* or *somewhat* important. This number was 72 percent in Oregon and 50 percent in Idaho. The respondent in Montana did not know.

Figure D-2. Importance of Energy Management Strategies



Notes: Results show breakdown of responses to survey question P1: *How important are energy management strategies to maintaining a competitive advantage?*
Total n=40

Challenges to Energy Management in General

Cadmus asked respondents about the challenges to participating in major energy-efficiency efforts. The most signification challenge they said was high initial cost (22 percent). The second largest challenge was a long payback period (14 percent) followed by funding competition from other company priorities (11 percent). These were the top three challenges for both cohort and non-cohort groups.

Benefits of SEM Adoption

Cadmus asked respondents who identified goals or practices, allocated resources, or reported goals or practices to management to name the main benefits resulting from adoption of a component of Strategic Energy Management. The top benefit these respondents mentioned was lower energy bill (55 percent). This was the top response mentioned for both cohort and non-cohort respondents. The one mentioned next most often was energy savings (48 percent) among both cohort respondents (30 percent) and non-cohort respondents (58 percent). Table D-7 shows the breakdown of benefits resulting from SEM for those who answered this question and classified by cohort and non-cohort.

Table D-7. Benefits of SEM

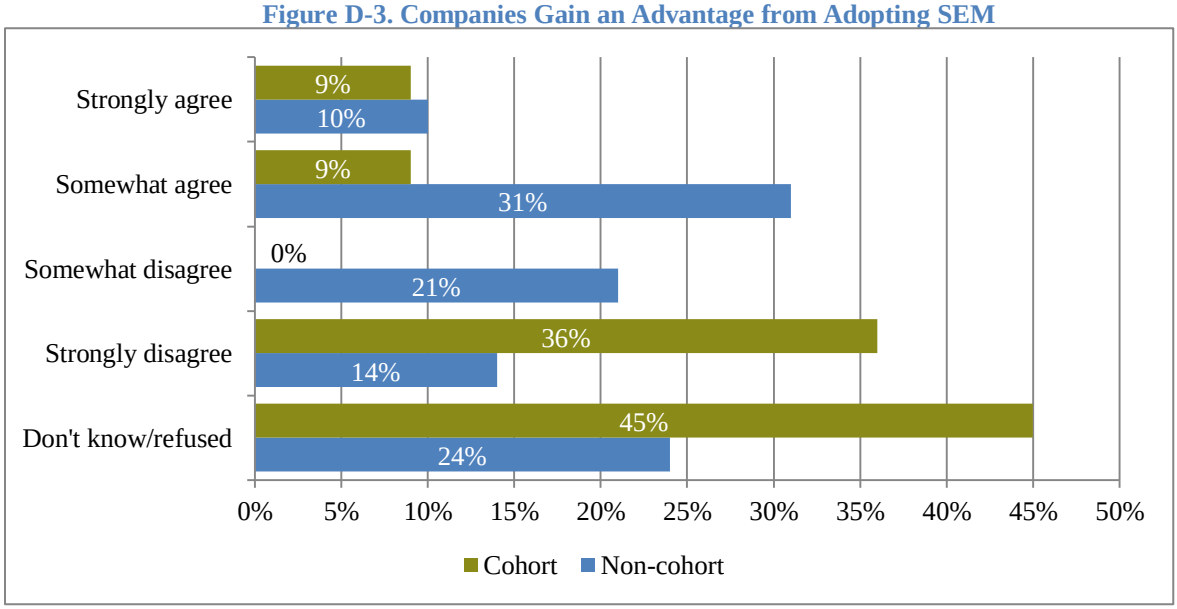
Benefit	Total (n=29)	Cohort (n=10)	Non-cohort (n=19)
Lower energy bill; saved money; reduced operating costs	55%	40%	63%
Energy savings	48%	30%	58%
Marketing benefits	28%	20%	32%
Environmental benefits	28%	20%	32%
Attractive to tenants	28%	10%	37%
Increased occupant comfort	21%	0%	32%
Lower maintenance costs	21%	0%	32%
Other	24%	30%	21%

Notes: Results show breakdown of responses to question M3: *What would you say are the main benefits to your organization resulting from the Strategic Energy Management practices your business in engaging in?*
Respondents could give multiple responses so answers may exceed 100%.

Competitive Advantage

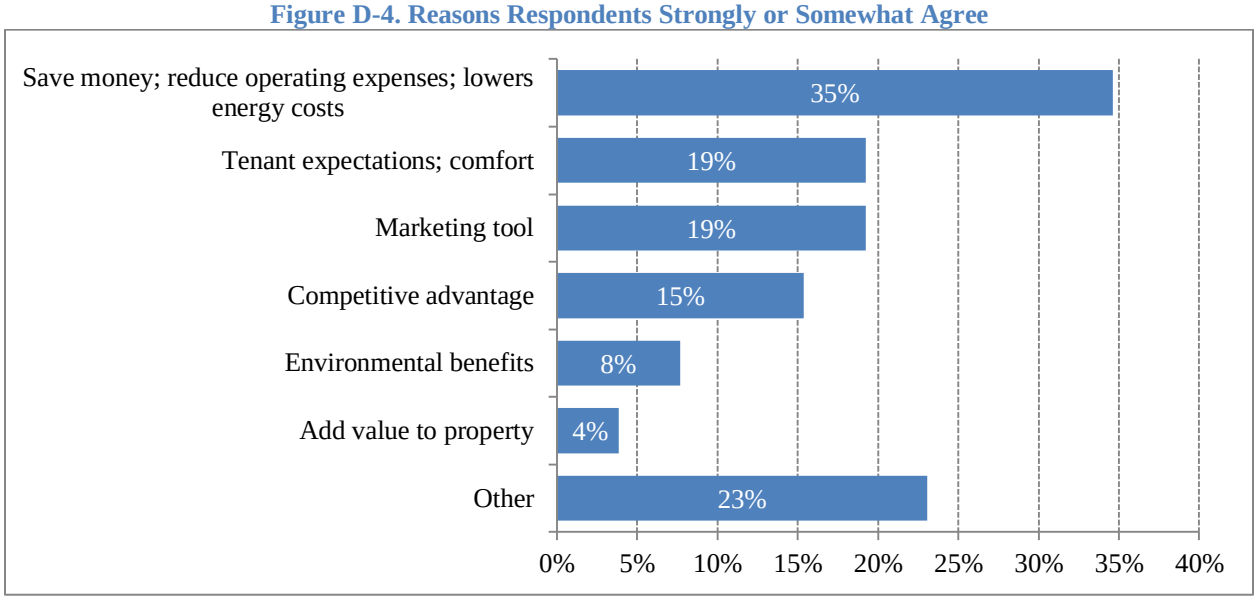
Cadmus asked respondents whether commercial office real estate companies gain an advantage from adopting SEM. Overall, more than one-third *strongly* or *somewhat* agreed with this statement but only 18 percent of the cohort respondents *strongly* or *somewhat* agreed while 41 percent of the non-cohort respondents *strongly* or *somewhat* agreed with this statement. Figure D-3 shows the breakdown of responses to this question by cohort and non-cohort respondents. Respondents gave a variety of reasons about why they *strongly* or *somewhat* agreed with this statement (Figure D-4). The top reason was cost (35 percent) followed by tenant expectations/comfort (19 percent) and to use it as a marketing tool (19 percent).

Figure D-3. Companies Gain an Advantage from Adopting SEM



Notes: Results show breakdown for responses to survey question M8: *Tell me how much you agree or disagree with the statement, "Commercial office real estate companies gain an advantage from adopting Strategic Energy Management." Do you …*
Total n=40; Percentages may not add up to 100 percent because of rounding error.

Figure D-4. Reasons Respondents Strongly or Somewhat Agree



Notes: Results show breakdown of responses to survey question M9: *What are the reasons you said you strongly or somewhat agreed with this statement?*
Total n=26; Percentages may exceed 100 percent because respondents were able to give multiple responses.

Challenges to Adopting SEM

Cadmus asked respondents what the most significant challenge to participating in NEEA's commercial real estate initiative and they said it was lack of staff time (18 percent) followed by funding competition from other company priorities (10 percent). There was no difference between cohort and non-cohort groups. These were the top two answers among respondents in Oregon (18 percent for each). In Washington, the top two were lack of staff time (15 percent) and high initial cost (15 percent). The respondent in Montana reported the biggest challenge as lack of staff time. The respondents in Idaho reported budget limitations, funding competition, lack of technical knowledge, lack of staff time, and convincing the owner as the top challenges (12 percent in each category).

Specific Challenges to SEM Adoption

Cadmus asked respondents how much they agreed or disagreed with statements about specific challenges to adopting NEEA's SEM initiative. A summary of their responses are in Table D-8. The statement they most agreed with was the lack of or inadequate resources, approaches, or tools focusing on SEM targeted to the commercial office real estate industry. Almost half of respondents agreed this was a challenge. A little more than one-third did not know how to answer these questions because they were not familiar with SEM.

Table D-8. Challenges to SEM Adoption

Statement	Strongly or somewhat agree	Strongly or somewhat disagree	Don't know refused
Lack of or inadequate resources, approaches, or tools focusing on Strategic Energy Management that are tailored to the commercial office real estate industry	47%	17%	38%
Lack of or inadequate cost-effective system to track and manage energy for a whole-building	43%	25%	38%
Lack of or inadequate tools and practices to communicate and promote successes with Strategic Energy Management	32%	38%	38%
Lack of or inadequate skills or organizational resources to implement energy reduction practices	35%	35%	25%

Notes: Results shows breakdown of responses to survey question M6: *Please tell me how much you agree or disagree that the following statements are challenges for adopting NEEA's Strategic Energy Management initiative. Let's start with [INSERT STATEMENT]. Do you strongly agree, somewhat agree, somewhat disagree, or strongly disagree that this is a challenge to adopting Strategic Energy Management?*
Total n=40

Respondents from the non-cohort group were more likely to say they *strongly* or *somewhat* agreed with these statements as challenges to SEM. Over half of non-cohort respondents (55 percent) said that lack of or inadequate resources, approaches, or tools tailored to the industry were a challenge while only 27 percent of cohort respondents said this. Almost half said that a cost effective tracking system for the whole building was a challenge (45 percent) and 36 percent of cohort respondents said this. Forty-one percent of non-cohort respondents said that skills or organizational resources to implement energy management practices was a challenge while only 18 percent of cohort respondents said this was a challenge. Table D-9 shows the differences in responses to these statements in each respondent type.

Table D-9. Challenges to SEM in each Respondent Type

Statement	Cohort	Non-cohort	Cohort	Non-cohort
	Strongly or somewhat agree		Strongly or somewhat disagree	
Lack of or inadequate resources, approaches, or tools focusing on Strategic Energy Management that are tailored to the commercial office real estate industry	27%	55%	18%	17%
Lack of or inadequate cost-effective system to track and manage energy for a whole-building	36%	45%	18%	28%
Lack of or inadequate tools and practices to communicate and promote successes with Strategic Energy Management	27%	34%	27%	41%
Lack of or inadequate skills or organizational resources to implement energy reduction practices	18%	41%	36%	35%

Notes: Results shows breakdown of responses to survey question M6: *Please tell me how much you agree or disagree that the following statements are challenges for adopting NEEA's Strategic Energy Management initiative. Let's start with [INSERT STATEMENT]. Do you strongly agree, somewhat agree, somewhat disagree, or strongly disagree that this is a challenge to adopting Strategic Energy Management?*
Total n=40

Overcoming Challenges

Cadmus asked respondents what NEEA could do to help their company overcome challenges to adopting SEM goals and practices. Forty percent did not know what NEEA could do and 20 percent said NEEA could do nothing. Table D-10 lists other responses. .

Table D-10. Ways NEEA Could Help Businesses Overcome Challenges

Responses
Better definition. Exactly what are you talking about? Be careful about the one size fits all approach. It really needs to be about a custom fit. Has to do with building use and business areas of the tenants. If the rate of return on a project is short then owners will consider it a good investment. Have to understand the business model and how people are going to use their program.
Direct outreach to project manager level. Build the case and present suggestions for energy efficiency goals. It is a low priority if the manager doesn't believe it will work.
Provide information and case studies; what energy efficiency practices other organizations are engaging in.
Provide training. The seminars should be about how property managers can manager energy. General topics.
Share ideas and encourage us to do it. We don't focus on competitions. Provide more case studies about new technology. The best thing would be to offer a walk through and then provide information about what could be done.
They could come in and assess the building and provide information on ways the building could be changed to make it more energy efficient. They could do a presentation on ways they found to save money.
Clone me; more staff or time.
Easy to use web based tools.
Very short blurbs on best practices with some data behind it. It is always good to hear success stories.
Send me information in the mail
Tell me what NEEA is. I don't know anything about NEEA, what they do, or how can they help.
Give us some money; there's not a whole lot they could do for us at this point. Our obstacle is money. Maybe getting more grant and rebate programs.
Help fund it. Any would help. Up to 100% would be welcome.
Financial incentives

Notes: Results shows responses to survey question M7: *What could NEEA do to help your company overcome challenges to adopting Strategic Energy Management goals and practices?*
Total n=40

Business Goals and Drivers

Cadmus asked respondents how important certain business goals and drivers were to them when planning energy efficiency goals and practices. Cadmus asked about property cash flow, company cash flow, asset value, total cost, marketing and brand positioning, and company profit. Respondents said all items were important business goals and drivers but the one with the highest percentage of *very* or *somewhat* important responses was property cash flow (97 percent), followed by asset value (95 percent).

Table D-11 shows the percentage of respondents who gave *very* or *somewhat* important to each of the business drivers for all types of responses and a breakdown by respondent type. In most cases cohort and non-cohort respondents answered similarly. The one exception regarded marketing and branding. Eighty-two percent of respondents said marketing and brand positioning was a *very* or *somewhat* important business driver while only 66 percent of non-cohort said this.

Table D-11. Important Business Goals and Drivers

Statement	All	Cohort	Non-cohort
Property cash flow (n=37)	97%	100%	96%
Company cash flow (n=40)	78%	73%	79%
Asset value (n=37)	95%	91%	96%
Total cost (n=40)	90%	91%	90%
Marketing and brand positioning (n=40)	70%	82%	66%
Company profit (n=40)	86%	82%	86%

Notes: Results show breakdown of responses to survey question N1: *Please tell me how important the following items are to you when planning energy efficiency goals and practices.* Results include respondents who answered with *very* or *somewhat* important.

Cadmus asked if there were other business goals and drivers and 86 percent of respondents said there were no others, did not know of others or refused to answer the question. The remaining responses included annual operating profit cash flow, financial and social responsibilities, owner requirements, and to maintain higher occupancy rates.

Energy Attitudes

Cadmus asked respondents how important they thought energy efficiency was to the tenants of their building and how important their energy management practices were to their tenants' adoption of additional energy efficiency practices. Seventy percent of respondents said that energy efficiency is *very* or *somewhat* important to tenants of this building and 72 percent said that their energy management practices are *very* or *somewhat* important to their tenant's adoption of additional energy efficiency practices.

There was little difference between cohort and non-cohort respondents. Respondents in Idaho said tenants were less likely to find energy management practices to be important (50 percent said *very* or *somewhat* important) and they were not influenced by owners and managers energy management practices (37 percent said *very* or *somewhat* important).

Trends

Respondents mentioned many trends in energy management in the future. Table D-12 lists energy management trends that respondents named.

Table D-12. Trends in Energy Management

Response	Percent of responses
More focus and awareness on energy efficiency, energy management, and sustainability	18%
New technologies; capital improvements	10%
Lighting technology upgrades	8%
Use energy management as marketing tool	5%
More reporting; metering	5%
Nothing new	2%
Tracking tenant use	2%
Tenants want it	2%
Using HVAC controls	2%
It's more common	2%
Looking at energy management on a portfolio level	2%
Chiller technology upgrades	2%
Allocating more resources	2%
Don't know/refused	40%

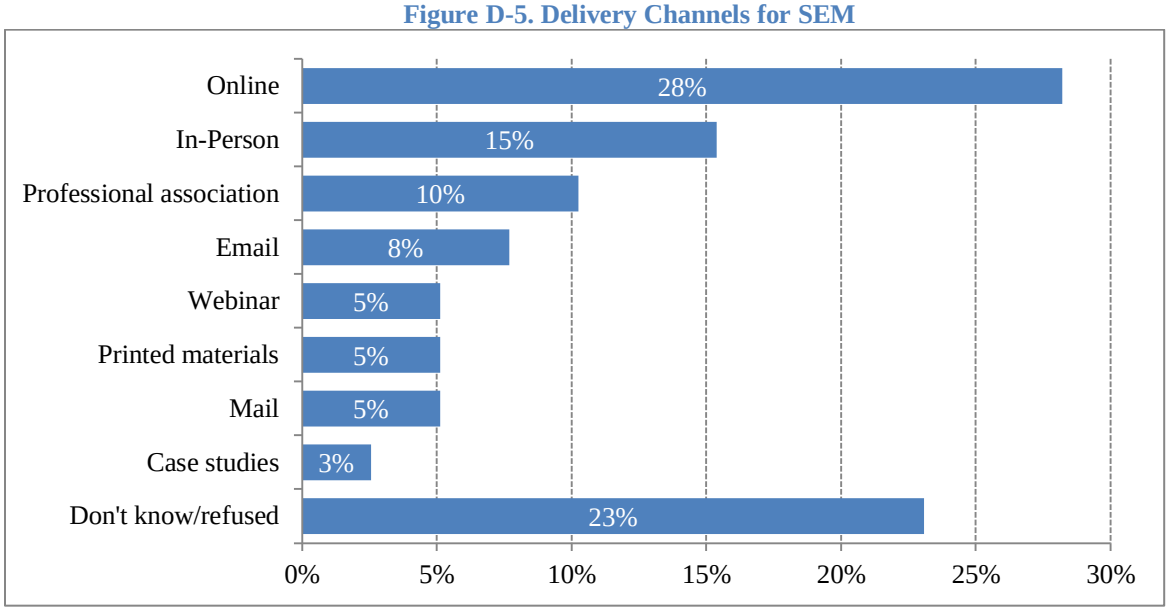
Notes: Results show breakdown of responses to survey question P2: *What trends do you see regarding energy management within the commercial office real estate industry?*
Total n=40; Percentages may exceed 100 percent because respondents were able to give multiple responses.

Communication Regarding SEM

Cadmus asked respondents what type of information would be most useful to them in the future and how NEEA should provide that information. The top response given was for NEEA to provide best practices guidelines and ways for practical implementation (21 percent). The next most common response was providing information about new technology and tools (15 percent). Other responses included: information about incentives, financial benefits, load analysis, regulations, trends in the industry, demand metering, how to get to zero, and continuing education classes.

Respondents said the best way for NEEA to provide information and training about SEM was online (28 percent). Other top ways included in-person (15 percent) and through a professional organization (15 percent). Figure D-5 shows the breakdown of responses to this question.

Figure D-5. Delivery Channels for SEM



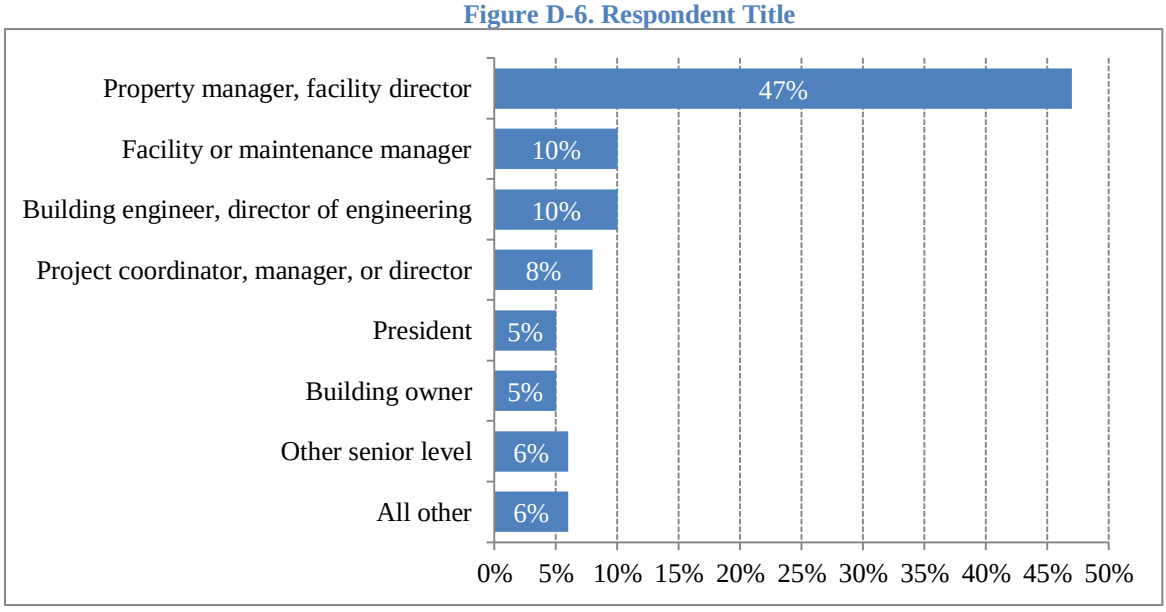
Notes: Results show breakdown of responses to survey question P5: *What would be the best way for NEEA to provide information and training on Strategic Energy Management?*
Total n=39

Respondents' Background

Titles

Cadmus spoke with 40 respondents. Property managers represented 47 percent of the total completed surveys, 10 percent were facility or maintenance managers and 10 percent were engineers. Figure D-6 documents the titles of all respondents.

Figure D-6. Respondent Title

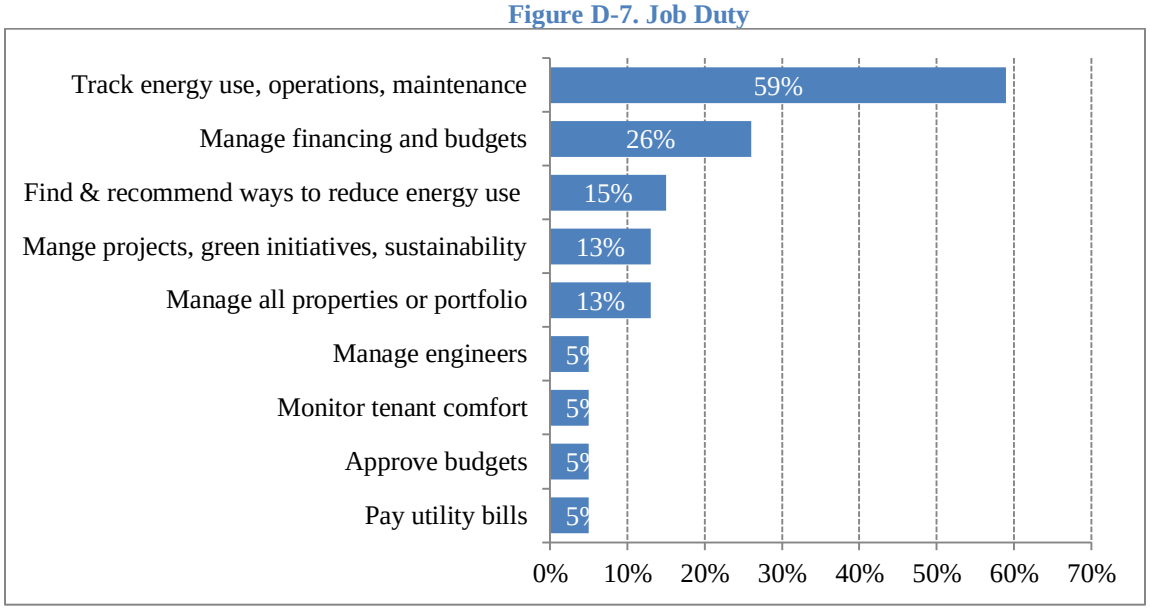


Notes: Results show breakdown of responses to survey question B1: *What is your title?*
Total n=40; Results may not add up to 100 percent because of rounding error.

Job Duty

Cadmus asked respondents how their job duties related to energy use in the building. Fifty-nine percent said they track energy use, operations, and maintenance. Twenty-five percent manage financing or the budget for their building. Figure D-7 shows how respondent's job duties relate to energy use at the building.

Figure D-7. Job Duty



Notes: Results show breakdown of responses to survey question B4: *How do you job duties relate to energy use at this building?*
Total n=39; Responses may exceed 100 percent because respondents could give multiple responses.

Building Characteristics

Cadmus asked respondents to identify details about their building and their company. Cadmus found that 68 percent of companies surveyed owned and managed the property and 33 percent managed the property but did not own it.

Type of Space

Over half of the respondents described their space as *all office space* (54 percent), 23 percent said it was *mostly office space*, and 21 percent said it was *office and retail space.*

Size of Building

Over half of respondents said their building was over 100,000 square feet in size (51 percent), 35 percent said their building was between 50,000 and 99,999 square feet in size, and 14 percent said it was between 15,000 square feet and 49,999 square feet.

Building Age

Sixty-nine percent of respondents said the building was built prior to 2000, 29 percent said it was built between 2000 and 2010, and 3 percent said it was built after 2011.

Number of Occupants

Five percent of respondents said the building had no occupants yet, 25 percent said they had fewer than 100 occupants, 28 percent said between 101 and 500 occupants, and 23 percent said there were 500 or more occupants. The remaining respondents did not know how many occupants the building had.

Renovations

Over half of the respondents said their building has undergone major renovations since construction. Forty-three percent of the renovations were mechanical system renovations, 43 percent were interior renovations, 19 percent were building shell renovations, 14 percent were lighting upgrades, 14 percent were elevator upgrades, 10 percent of the renovations were to add space to the existing building, 5 percent upgrade tenants units, and 5 percent upgraded the fire sprinklers. Additional renovations included asbestos abatement, upgrading paint and carpet, and upgrading the building's automation services.

Current Energy Management Plans and Recent Upgrades

Cadmus asked respondents how they manage energy use in their buildings, whether they have conducted or considered any major energy efficiency upgrades in the last five years, and if the building has undergone any major renovations since construction.

Current Practices

Respondents described their current energy management practices. Over one-third of practices were automating control systems (38 percent) and almost one-quarter were replacing fixtures (24 percent). Table D-13 lists other energy management practices.

Table D-13. Energy Management Practices

Responses	Percent of Responses
Automated control systems	38%
Replace fixtures	24%
Use ENERGY STAR	18%
Watch utility bills	15%
Consultants, service contract	8%
Audits and annual reviews	5%
Review payback	5%
Build in-house energy profiles	3%
Rebates	3%
Educate tenants	3%

Notes: Results show breakdown of response to survey question C1: *How does your company manage energy use in this building?*
Total n=39; Percentages may exceed 100% because respondents could give multiple responses.

Recent Energy Efficiency Upgrades

Over half of respondents said they had conducted or considered major energy efficiency upgrades in the past five years (63 percent). The two most common upgrades were upgrading mechanical systems (56 percent) and lighting (56 percent). Other responses included upgrading or adding automated controls (20 percent), changes to the building shell (12 percent), adding on to the existing building (6 percent), and participating in the kW Crackdown (6 percent). Most of these upgrades were made after 2011 (79 percent), almost half were made between 2001 and 2010 (46 percent), and the remaining were made prior to 2000 or the respondent did not know when the upgrades were made. The percentages for these questions exceed 100 percent because respondents could give multiple responses.

Appendix E. Market Adoption Input Detail

In Table E-1, Cadmus provides 2013 and 2033 market baseline estimates from round 2 and round 3 for each expert and the full text of each expert's third-round comments. As noted above, Cadmus regards revision of estimates in response to other experts' inputs or in response to the additional information provided by the SEM adoption survey responses as a factor to consider in the analysis of the inputs received. For this reason, Cadmus indicated experts who changed their inputs between rounds by shading these rows in the table.

Table E-1. Market Baseline Expert Input Detail

Expert	Round 2		Round 3		Comments
	2013	2033	2013	2033	
1	14%	85%	14%	85%	As energy costs rise the ROI will become even more attractive than it is now. This is infrastructure repair that actually pays back. The stage is set, all we need is a strong leader to champion Energy Savings as sustainable and profitable at the same time .
2	54%	62%	54%	62%	Participation in the programs gave Owners and Third Party managers a "professional" evaluation of the properties which could be used as documentation and leverage to convince managers to fund projects. Tenants usually buy in when they know the investigations have been performed and there is a potential for long term energy savings and reduced cost. Measures must be sensible however and prove there is a return; verification should always be required.
3	39%	43%	3%	29%	NEEA's CRE initiative has increased awareness of SEM practices and helped identify and implement goals at portfolio level.
4	33%	75%	46%	65%	While the additional information provided some details as to 'why' a full adoption was missing, I think consideration should be given to what is full adoption and should it be hard and fast that all 5 elements MUST be implemented. I would give consideration to market adoption if 4 out of 5 are implemented fully or if all 5 have been implemented to some degree. Part of the roadblock to full adoption can be in part to 3rd part management contracts and changes in management firms and/or owners of an asset (or group) and their goals and directions, which can interrupt the SEMP efforts. So is lack of market adoption due to the PM or changes in management and ownership, which can change the players and thus derail good efforts to implement a full SEMP.
5	9%	55%	9%	55%	Without active promotion of energy management solutions market penetration would have been limited to a very select set of operators. The 50 - 250k SF properties would have a much lower participation rate (on average) and the adoption would have been concentrated more highly on assets in excess of 250k SF. Active promotion of SEM strategies and incentive structures has increased adoption and breadth of market.
6	1%	19%	1%	19%	I've not changed my round 2 estimate. I believe it to be consistent with what I've observed based on market research by the International Facility Management Association with respect to sustainability practices among their members. Most members are adopting some SEM practices, but only a small percentage are employing full SEM.
7	34%	71%	3%	24%	Adjusted based on information that only 8% of building managers had adopted full SEM. Given that information and NEEA's ongoing efforts, there are some significant barriers to full adoption.
8	11%	40%	11%	40%	Revised my (first round) estimate based on consideration of leading market actors, energy codes, and national/int'l trends that influence real estate practitioners' behaviors. Still think that inertia, competing priorities, and lack of top-down driven change will hold back the market. Most likely factor to change executive behavior and drive business process change will be regulation, carbon tax, and more stringent local/state mandates.
9	80%	80%	80%	80%	Expecting full SEM is unrealistic. This might be a better tool if you rated each element individually. Because of this – my previous comments still apply. Previous comments: I don't see any value in this tool. Obviously by the response, the majority of participants work in the energy efficiency industry. Too bad you didn't sample the broader market.

Appendix F. CRE Expert Interview Guide

CADMUS

Northwest Energy Efficiency Alliance CRE
Expert Interview

Audience: This interview is for experts including building owners and managers, commercial real estate professionals, energy program manager for utility or program administrator, academic professor or national laboratory scientist, energy management tool vendor, commercial researcher for real estate or property management company, or energy program evaluation consultant

Researchable Questions	Question
Title and background of respondent	A3-A5
State	A6-A7
Awareness and adoption of SEM	B1-B3, C1-C2
Current energy management practices for building owners and managers	B4-B6
Building characteristics for building owners and managers	A9-A13
Barriers to major energy-efficiency efforts	D1
Barriers to adopting SEM	D2-D5
Business drivers	E1-E3
Delivery channels	C4-C4
Increase adoption of SEM	C7, D6, F10
Trends	F7
Energy attitudes	F1-F5

Interviewer instructions are in green.
CATI programming instructions are in red.
Answer options in parenthesis are not read

Sampling plan targets 20-25 total (4 in Idaho, 4 in Montana, 8 in Oregon, and 8 in Washington)

Enter as much information as possible before calling and ask or confirm other details

Contact Name:	
Company:	
Title:	
Phone:	
State:	
Address:	
Building size:	
Age of building:	
Tenant mix:	
Fuel consumption:	

A. Introduction

A1. May I speak with [CONTACT NAME]? I am calling from Cadmus on behalf of NEEA, the Northwest Energy Efficiency Alliance. We are speaking with industry experts about innovation and adoption of energy-efficient products, services, and practices and strategic energy management. Is this a good time for you to answer a few questions about [your energy practices/your view of energy practices in your area]? [IF NO LISTED NAME, ASK FOR SOMEONE WHO MAY BE ABLE TO ANSWER QUESTIONS ABOUT ENERGY PRACTICES AT THEIR COMPANY OR IN THEIR AREA.]

1. (Yes)
2. (No) When would be a good time for me to call back? [SCHEDULE CALLBACK]

A2. Before we get started, I'd like you to know that your responses are confidential and will only be aggregated with other people's responses in our report. Your responses will not be linked to you or your company, so please feel free to speak as candidly as you like.

A3. According to our records, your title is [TITLE]. Is this correct?

1. (Yes)
2. (No)

[ASK IF A3=2]

A4. What is your title? [DO NOT READ]

1. (Building owner)
2. (Owner's representative or agent)
3. (Property manager)
4. (Maintenance manager)
5. (Facility manager)
6. (Consultant)
7. (Building operator)
8. (Building engineer)
9. (Other) [SPECIFY:_____]

A5. What is your role within the organization? [IF NEEDED: How do your job duties relate to energy efficiency?]

A6. Please tell me if you are familiar with commercial office real estate, specifically buildings that are 50,000 square feet or larger in [INSERT EACH STATE]: [RECORD 1 for YES AND 2 FOR NO]

1. Washington
2. Oregon

A7. Are you familiar with commercial office real estate, specifically buildings that are 20,000 square feet or larger in [INSERT STATES]: [RECORD 1 for YES AND 2 FOR NO]

1. Idaho
2. Montana

A8. For our questions today, when we talk about commercial office real estate, we are referring to buildings that are [IF Oregon OR Washington SAY, "50,000 square feet or larger in Washington and Oregon." AND IF Idaho OR Montana SAY, "20,000 square feet or larger in Idaho and Montana"]

[ASK A9-A13 IF BUILDING OWNER, MANAGER, PROPERTY MANAGER, MAINTENANCE MANAGER, FACILITY MANAGER, BUILDING OPERATOR, OR BUILDING ENGINEER. WILL ALSO ASK PERTINENT SURVEY QUESTIONS]

A9. Does your company own, manage, or both own and manage the property?

1. (Owns only – does not manage)
2. (Manages only – does not own)
3. (Owns and manages property)
4. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

A10. How would you describe the use of space in the building? [READ LIST]

1. All office space
2. Mostly office space
3. Office and retail space
4. Mostly retail space
5. Something else [SPECIFY:_____]
98. (Don't know) [ASK FOR SOMEONE WHO DOES AND START AT BEGINNING]
99. (Refused) [THANK AND TERMINATE]

A11. What is the approximate square footage of rentable space in this building? [CONFIRM SIZE IF KNOWN OTHERWISE ASK. DON'T READ LIST UNLESS NECESSARY]

1. [RECORD ANSWER AND THEN CODE RESPONSE BELOW]
2. (Less than 50,000 square feet)
3. (50,000-99,999 square feet)
4. (100,000 to 249,999 square feet)
5. (250,000 to 499,999 square feet)
6. (500,000 square feet or more)
98. (Don't know) [ASK FOR SOMEONE WHO DOES AND START AT BEGINNING]
99. (Refused) [THANK AND TERMINATE]

A12. When was this building built?

1. [RECORD YEAR:_____]
98. (Don't know)
99. (Refused)

A13. Has it undergone any major renovations since it was built?

1. (Yes) [ASK A13a and A13b]
   - A13a. When? [RECORD ANSWER]
   - A13b. Could you describe the type of renovation? [IF NEEDED: For example, was the building size increased or decreased, heating or cooling systems upgraded?]
2. (No)

98. (Don't know)
99. (Refused)

B. Awareness

B1. What are commercial office real estate owners and managers in [READ IN STATE(S) FROM A6 AND A7] doing to reduce energy consumption and increase energy efficiency within their buildings, portfolios, and organizations? [IF MORE THAN ONE STATE, ASK ABOUT EACH STATE INDIVIDUALLY. IF PRACTICES ARE DIFFERENT FOR BUILDINGS OR PORTFOLIOS THEN CLARIFY THE DIFFERENCES.]

B2. Are you aware of any programs, initiatives, or incentives that encourage commercial real estate organizations to adopt energy reduction goals?

1. (Yes)
2. (No) [SKIP TO INSTRUCTION ABOVE B4]

B3. Which programs, initiatives, or incentives are you aware of? [RECORD ANSWER(S)]
[FOR EACH MENTIONED, ASK]

1. What are the details of these programs, initiatives, or incentives? [FIND OUT WHAT THEY ARE, WHO ADMINISTERS THEM, HOW THEY WORK, ETC.]
2. How did you first learn about these programs, initiatives, or incentives?
3. When did you first learn about these programs, initiatives, or incentives? [GET SPECIFICS ABOUT THE PROGRAMS, INTIATIVES, OR INCENTIVES, SOURCE OF THEIR INFORMATION, AND WHEN THEY FIRST HEARD ABOUT THE PROGRAMS, INITIATIVES, OR INCENTIVES, INCLUDING UTILITY SPONSORED PROGRAMS.]

[ASK B4-B6 IF QUALIFIED FOR SURVEY (PROPERTY OWNER, MANAGER, BUILDING ENGINEER, FACILITY MANAGER, MAINTENANCE MANAGER)]

B4. How does your company manage energy use in this building?
[RECORD ANSWER]

B5. Has your company conducted or considered any major energy efficiency upgrades in the past five years?

1. (Yes) [ASK B5a]
   B5a. Could you describe the upgrades you conducted or considered, and when they were completed? [RECORD ANSWER]
2. (No)
98. (Don't know)
99. (Refused)

B6. How many occupants are in this building?

1. [RECORD ANSWER]
98. (Don't know)
99. (Refused)

[IF QUALIFIED FOR SURVEY (A3=BUILDING OWNER, PROPERTY MANAGER, MAINTENANCE MANAGER,

FACILITY MANAGER, BUILDING OPERATOR, BUILDING ENGINEER OR A4 = 1, 3, 4, 5, 7, OR 8) SWITCH TO SURVEY AND START WITH E1 OTHERWISE CONTINUE WITH SECTION C BELOW]

C. Awareness and Delivery Channels

[ASK C1 IF SEM NOT MENTIONED IN B3]

C1. Are you familiar with Strategic Energy Management; an energy management system where companies identify management-approved energy reduction goals, plan practices to reach the goal(s), allocate resources toward the goal(s), and regularly report progress to management toward achieving the goal(s)? [IF NEEDED: Resources include staff and training or capital.]

1. (Yes)
2. (No)

C2. Are you familiar with a NEEA initiative to encourage commercial office real estate organizations to adopt components of Strategic Energy Management? "This is an ongoing energy management system where companies identify management-approved energy reduction goals, plan practices to reach the goal(s), allocate resources towards the goal(s), and regularly report progress to management toward achieving the goal(s). [IF NEEDED: Resources include staff and training or capital.]

1. (Yes)
2. (No)

[ASK IF C2=1]

C3. How and when did you learn about the NEEA initiative to adopt Strategic Energy Management? [GET SPECIFICS ABOUT THE SOURCE OF INFORMATION AND WHEN THEY FIRST HEARD ABOUT THE INITIATIVE]

[ASK IF C2=1]

C4. NEEA encourages commercial real estate companies to adopt Strategic Energy Management through a variety of formats. Which NEEA Strategic Energy Management formats have you heard of? [FOLLOW-UP WITH, "What is your opinion of that format as a way to encourage adoption of Strategic Energy Management?"]

1. [RECORD RESPONSE]

[ASK IF C2=1]

C5. [ASK ABOUT EACH FORMAT BELOW NOT ALREADY MENTIONED IN C4] "I'm going to read a list. First, please tell me if you have heard of the format and then tell me your opinion as a way to encourage adoption of Strategic Energy Management?"]

C5a. Market Partners Program. This is a coaching process with the goal of making Strategic Energy Management an important part of how commercial real estate companies do business.

C5b. Competitions to adopt components of SEM. These competitions are conducted in partnership with organizations such as Building Owners and Managers Association (BOMA). [IF NEEDED: "Examples include Portland's Office Energy

Showdown, Portland's Carbon4Square, and Kilowatt Crackdowns in Seattle, Portland, and Boise."]

C5c. NEEA provides professional seminars and workshops to build analytic skills and operating knowledge of the competitive advantages of energy efficiency.

C5d. NEEA develops case studies, analytic tools, and templates for commercial real estate owners, managers, and operators to increase market value through energy efficiency. [IF NOT MENTIONED, ASK, "What would be the best way to provide decision makers with resources such as analytic tools and case studies?]

[ASK IF C2=2]

C6. NEEA encourages commercial real estate companies to adopt Strategic Energy Management through a variety of formats. Please tell me your opinion of each of these as a way to encourage businesses to adopt Strategic Energy Management.

C6e. Market Partners Program. This is a coaching process with the goal of making Strategic Energy Management an important part of how commercial real estate companies do business.

C6f. Competitions to adopt components of SEM. These competitions are conducted in partnership with organizations such as Building Owners and Managers Association (BOMA). [IF NEEDED: "Examples include Portland's Office Energy Showdown, Portland's Carbon4Square, and Kilowatt Crackdowns in Seattle, Portland, and Boise."]

C6g. NEEA provides professional seminars and workshops to build analytic skills and operating knowledge of the competitive advantages of energy efficiency.

C6h. NEEA develops case studies, analytic tools, and templates for commercial real estate owners, managers, and operators to increase market value through energy efficiency. [IF NOT MENTIONED, ASK, "What would be the best way to provide decision makers with resources such as analytic tools and case studies?]

[ASK ALL]

C7. What other ways can NEEA motivate commercial office real estate owners and managers to adopt Strategic Energy Management?
[RECORD ANSWER]

D. Barriers

Now I'd like to ask you a few questions about the challenges to increasing energy efficiency in office buildings.

D1. What are the main challenges for commercial office real estate companies in undertaking major energy-efficiency efforts? [IF NEEDED: "Please base your answers on your knowledge of the commercial real estate industry."]

D2. NEEA's initiative engages commercial office real estate organizations to adopt ongoing Strategic Energy Management, with the goal of demonstrating that energy efficiency offers a competitive advantage. This is an ongoing initiative where companies identify management-approved energy reduction goals, plan practices to reach the goal(s), allocate resources towards the goal(s), and regularly report progress to management toward achieving the goal(s).

What do you see as the challenges to adopting Strategic Energy Management?

[CAN SKIP CHALLENGES ALREADY MENTIONED D2]

D3. NEEA has identified some potential challenges to participation in their commercial real estate initiatives. Please tell me whether you think the following are challenges and the reason for your answer? Let's start with … [INSERT EACH STATEMENT SEPARATELY AND RECORD ANSWER]

- D3a. Lack or inadequate resources, approaches, or tools focusing on strategic energy management that are tailored to the commercial real estate industry
- D3b. A cost-effective system to track and manage energy for a whole-building
- D3c. Knowledge about tools and practices to communicate about and promote successes of Strategic Energy Management

D4. How much do you agree or disagree that commercial office real estate owners or managers view the adoption of Strategic Energy Management as a competitive advantage? Do you … [READ LIST]

1. Agree strongly
2. Agree somewhat
3. Disagree somewhat
4. Disagree strongly

D5. What is the reason you [INSERT ANSWER FROM D4]? [IF NEEDED: Please base your answers on your knowledge of the commercial office real estate industry.] [PROBE FOR DIFFERENCES BETWEEN OWNERS AND MANAGERS]

D6. What could NEEA do to help commercial office real estate companies overcome challenges to adopting Strategic Energy Management? [RECORD ANSWER]

E. Business Drivers

Now I would like to talk with you about commercial office real estate owners' and managers' business goals as they relate to energy consumption.

E1. In general, how important are energy costs to commercial office real estate owners? Would you say… [READ LIST]

1. Very important
2. Somewhat important
3. Not very important
4. Not important at all

E2. In general, how important are energy costs to commercial office real estate managers? Would you say… [READ LIST]

1. Very important
2. Somewhat important
3. Not very important
4. Not important at all

E3. What are the most important factors commercial office real estate companies consider when they're deciding to adopt energy efficiency plans?

1. [RECORD ANSWER, THEN ASK: Why [is that factor/are those factors] important?
2. [ASK ABOUT E3a-f IF NOT MENTIONED]
   - E3a. Property cash flow
   - E3b. Company cash flow
   - E3c. Asset value
   - E3d. Total cost [if needed, prompt: of adopting energy efficiency practices]
   - E3e. Marketing and brand positioning
   - E3f. Company profit

F. Current Attitudes and Trends

F1. How important do you think energy efficiency is to tenants of office buildings?

1. Very important
2. Somewhat important
3. Not very important
4. Not at all important

F2. Why do you say [INSERT ANSWER FROM F1]?

F3. In your opinion, how are tenants influenced by owner's attitudes and actions regarding energy efficiency?

F4. How are owner's attitudes and actions influenced by tenant's opinions regarding energy efficiency?

F5. Thinking about utility incentives for energy efficiency improvements, how available do you think these are to commercial office real estate property owners?

F6. How valuable do you think utility incentives are in encouraging energy efficiency practices among commercial office real estate property owners?

F7. What trends do you see regarding energy management within the commercial office real estate industry?

F8. Is there anyone else you'd recommend we speak with about strategic energy management in commercial buildings?

1. (Yes) [ASK FOR CONTACT NAME, AFFILIATION, PHONE NUMBER, AND E-MAIL ADDRESS]
2. (No)

F9. Can we contact you again in the future for additional research studies?

1. (Yes) [RECORD NAME, PHONE, AND EMAIL ADDRESS]
2. (No)

F10. Do you have any additional comments or suggestions regarding energy management practices or NEEA's efforts to motivate commercial real estate owners and managers to adopt Strategic Energy

Management?

Thank you for your help. We appreciate your time and opinions.

Appendix G. SEM Adoption Survey

CADMUS

Northwest Energy Efficiency Alliance CRE
Strategic Energy Management Practices Survey
For Building Owners, Property Managers, Building Engineers, or Physical Managers

Audience: This survey is for building owners, property managers, building engineers, or physical managers of privately owned commercial office real estate buildings larger than 50,000 square feet in OR and WA and 20,0000 square feet in MT and ID.

Researchable Question Topics	Questions
Respondent and company details	B1-B2
Building characteristics	B3-B9
Program awareness	D1-, K1-K2
Adoption of management-approved energy reduction goal	E1-E9
Documentation of planned practices to achieve the goal	F1-F9
Allocation of resources	G1-G3
Implementation of planned practices	F4-F5
Regular reviewing of progress	I1-I9
Outcome	J1-J5
Motivation and Decision Making	K13, L1, P5
Business Drivers, priorities, and challenges	M1-M2, N1, N2
Barriers to SEM	M4-M9
Marketing channels	K3-K12, P4
Energy attitudes	O1-O2, P1
Recommendations	P3
Future trends	P2
Current energy management practices	C1, C2
Benefits	M3

Interviewer instructions are in green.
CATI programming instructions are in red.
Answer options in parenthesis are not read

[Variables from sample]
[CONTACT NAME]
[TITLE]
[COMPANY]
[ADDRESS]

*Questions asked of everyone are represented by an asterisk.

+Questions to be asked only of respondents who specifically say they are familiar with NEEA SEM practices are designated by the plus sign.
Questions without a symbol will be asked based on answers to previous questions.

A. Introduction

A1. *May I speak with [CONTACT NAME]? OR [IF NO NAME] May I speak with the person responsible for making energy decisions for [COMPANY] at [ADDRESS]? [IF THAT PERSON IS NOT AT THIS PHONE NUMBER, ASK FOR NAME AND PHONE NUMBER AND START AGAIN]

1. (Yes)
98. (Don't know) [ASK TO SPEAK WITH SOMEONE WHO KNOWS AND BEGIN AGAIN]
99. (Refused) [THANK AND TERMINATE]

A2. *Hello, I'm [INSERT NAME] calling from [INSERT COMPANY] on behalf of NEEA, the Northwest Energy Efficiency Alliance. Are you the person responsible for making energy decisions at [ADDRESS]?

1. (Yes)
2. (No, person is able to come to phone) [ASK FOR PERSON WHO IS AND START AGAIN]
3. (No, person is not able to come to phone) [GET NAME, PHONE NUMBER, AND SCHEDULE CALLBACK]
98. (Don't know) [ASK FOR PERSON WHO WOULD KNOW AND START AGAIN]
99. (Refused) [THANK AND TERMINATE]

A3. *We are conducting an important study with owners and managers of commercial office buildings that are larger than [IF Oregon OR Washington SAY, "50,000 square feet" AND IF Idaho OR Montana SAY, "20,000 square feet"] about energy use. Is this a good time for you to answer a few questions about energy practices at [ADDRESS]?

1. (Yes) [Continue]
2. (No [ASK: When would it be a good time for me to call back?] [SCHEDULE CALLBACK])
98. (Don't know) [ASK TO SPEAK WITH SOMEONE ELSE AND START AGAIN]
99. (Refused)

A4. *Before we get started, I'd like you to know that we will keep your responses anonymous. They will be aggregated with other people's responses in our report. Your responses will not be linked to you or your company, so please feel free to speak as candidly as you like.

Back-up information, not to be programmed:

[If "No – Not a convenient time," ask if Respondent would like to arrange a more convenient time for us to call them back or if you can leave a message for that person.]

[IF RESPONDENT ASKS HOW LONG, SAY: "APPROXIMATELY 30 MINUTES."]
[IF NEEDED:] This survey is for research purposes only and this is not a marketing call. This is the primary way for NEEA to gather information about the commercial real estate initiative. Your participation in this study is important so that NEEA can include your perspectives in how their energy efficiency initiatives are offered.

B. Screeners

B1. *What is your title? [READ LIST ONLY IF NECESSARY]

1. (Building owner)
2. (Owner's Representative/Agent) [THANK AND TERMINATE]
3. (Property Manager)
4. (Maintenance Manager)
5. (Facility Manager)
6. (Consultant) [THANK AND TERMINATE]
7. (Building operator)
8. (Building engineer)
9. (Other [SPECIFY:_____])
98. (Don't know) [ASK FOR SOMEONE ELSE WOULD BE INVOLVED IN MAKING ENERGY DECISIONS AT THIS ADDRESS. IF NO ONE THEN THANK AND TERMINATE.]
99. (Refused) [ASK FOR SOMEONE ELSE WOULD BE INVOLVED IN MAKING ENERGY DECISIONS AT THIS ADDRESS . IF NO ONE THEN THANK AND TERMINATE.]

B2. *Does your company own, manage, or both own and manage the property?

1. (Owns only – does not manage)
2. (Manages only – does not own)
3. (Owns and manages property)
4. (Other [SPECIFY:_____])
98. (Don't know) [THANK AND TERMINATE]
99. (Refused) [THANK AND TERMINATE]

[ASK EVERYONE]

B3. *[IF B2 = 2 MANAGE ONLY: "Does the owner" or B2 <> 2 OTHERWISE SAY: "Does your company"] occupy more than 50% of this building?"

1. (Yes) [ASK TO SPEAK ABOUT A DIFFERENT PROPERTY AND GO BACK TO B1; REMEMBER TO NOTE ADDRESS OF NEW PROPERTY]
2. (No)
98. (Don't know) [ASK TO SPEAK ABOUT A DIFFERENT PROPERTY AND GO BACK TO B1; REMEMBER TO NOTE ADDRESS OF NEW PROPERTY]
99. (Refused) [THANK AND TERMINATE]

B4. *How do your job duties relate to energy use at this building? [IF THEY SAY THEY TRACK ENERGY USE FIND OUT HOW THEY DO THIS.]
[RECORD ANSWER]

B5. *How would you describe the use of space in the building? Would you say: [READ LIST]

1. All office space
2. Mostly office space
3. Office and retail space

4. Mostly retail space
5. Something else [SPECIFY:_____] [THANK AND TERMINATE]
98. (Don't know) [ASK to speak with SOMEONE WHO is also responsible for making energy decisions and can describe the use of space in this building ND START AT BEGINNING GOTO A2]
99. (Refused) [THANK AND TERMINATE]

B6. *What is the approximate square footage of rentable space in this building? [CONFIRM SIZE IF KNOWN OTHERWISE ASK. DON'T READ LIST UNLESS NECESSARY]
[RECORD ANSWER AS A NUMERIC AND THEN CODE RESPONSE BELOW]

B6.1 Code B6 response below

1. (Less than 20,000 square feet) [THANK AND TERMINATE]
2. (20,000 – 49,999 square feet) [CONTINUE IF ID OR MT OTHERWISE THANK AND TERMINATE]
3. (50,000-99,999 square feet)
4. (100,000 to 249,999 square feet)
5. (250,000 to 499,999 square feet)
6. (500,000 square feet or more)
98. (Don't know) [ASK FOR SOMEONE WHO DOES KNOW THE SQUARE FOOTAGE OF RENTABLE SPACE IN THE BUILDING AND WHO IS ALSO RESPONSIBLE FOR MAKING ENERGY DECISIONS AND START AT BEGINNING GOTO A2]
99. (Refused) [THANK AND TERMINATE]

B7. *When was this building built?

1. [RECORD YEAR:_____]
98. (Don't know)
99. (Refused)

B8. *Has it undergone any major renovations since it was built?

1. (Yes) ASK B8a and B8a
   - B8a. Could you describe the type of renovation? [IF NEEDED: For example, was the building size increased or decreased, heating or cooling systems upgraded?]
   - B8b. When? [RECORD ANSWER; OPEN END]
2. (No)
98. (Don't know)
99. (Refused)

B9. *How many occupants are in this building? [IF THEY DON'T KNOW NUMBER OF OCCUPANTS ASK FOR NUMBER OF TENANTS. IF DON'T KNOW EITHER RECORD AS DON'T KNOW.]

1. [RECORD ANSWER/TEXT]
98. (Don't know)
99. (Refused)

C. Current Energy Management Practices

C1. *How does your company manage energy use in this building? [RECORD TEXT ANSWER]

C1a. [ASK IF PROPERTY MANAGER] Do you represent the buildings ownership?

1. (Yes)
2. (No)

C2. *Has your company conducted or considered any major energy efficiency upgrades in the past five years that you have not already mentioned?

1. (Yes) [ASK: C2a and C2b]

C2a. Could you describe the upgrades you conducted or considered? [TEXT ANSWER]

C2b. When did you make the upgrades (or when did you consider making them)? [TEXT ANSWER]

2. (No/No, only the ones I already mentioned)
98. (Don't know)
99. (Refused)

D. Awareness

D1. *Please tell me which programs, initiatives, or incentives you are aware of that encourage commercial buildings to adopt energy reduction goals and practices. Please tell me the name if you know it and who implements it. [INTERVIEWER NOTE: If they don't know the name get a fe details about the program.]

1. [D1.1 RECORD ANSWER 1] enter name of initiative (enter details about the initiative if they don't know the name), then ask, who implements it GOTO D2.1
2. [D1.2 RECORD ANSWER 2] enter name of initiative (enter details about the initiative if they don't know the name), then ask, who implements it GOTO D2.2
3. [D1.3 RECORD ANSWER 3] enter name of initiative (enter details about the initiative if they don't know the name), then ask, who implements it GOTO D2.3
4. [D1.4 RECORD ANSWER 4] enter name of initiative (enter details about the initiative if they don't know the name), then ask, who implements it GOTO D2.4
5. [D1.5 RECORD ANSWER 5] enter name of initiative (enter details about the initiative if they don't know the name), then ask, who implements it GOTO D2.5

97. (I am not aware of any such programs)/ No other programs GOTO E GOAL ADOPTION
98. (Don't know) GOTO E GOAL ADOPTION

99. (Refused) GOTO E GOAL ADOPTION

[ASK IF ANY MENTIONS IN **D1**]

D2. [ASK D2.1 FOR D1.1 , THEN GO BACK TO D1.2 CONTINUE ALL RESPONSES FOR D1.1 THROUGH D1.5 HAVE BEEN ASKED D2 [labeled D2.1 – D2.5])*How and when did you hear about [INSERT EACH ANSWER FROM D1.1 , D1.2 , D1.3 , D1.5 , D1.5 in corresponding D2.1, D2.2 , D2.3, D2.4, D2.5]? [RECORD ANSWER FOR EACH PROGRAM, INITIATIVE OR INCENTIVE][DO NOT READ LIST]

1. (NEEA Website, mailing, newsletter, or other NEEA sponsored reference) [ASK D2A.1: When did you hear about that program?_____]
2. (Utlity mailing, bill insert, or utility Website) [ASK D2A.2: When did you hear about that program?_____]
3. (Contractor or vendor) [ASK D2A.3 : When did you hear about that program?_____]
4. (Business colleague) [ASK D2A.4 : When did you hear about that program?_____]
5. (Word of mouth; family or friend) [ASK D2A.5 : When did you hear about that program?_____]
6. (BOMA) [ASK D2A.6 : When did you hear about that program?_____]
7. (Other trade organization [SPECIFY:_____]) [ASK D2A.7: When did you hear about that program?_____]
8. (Other [SPECIFY:_____]) [ASK D2A.8: When did you hear about that program?_____]

98. (Don't know)
99. (Refused)

E. Goal Adoption

Now I'd like to talk about your energy management plans.

E1. *Has your company established any energy reduction goals in the last five years? Goals can be expressed as a percentage reduction or an absolute number compared to existing energy use. It can be expressed as an energy intensity reduction. It can be defined implicitly through adoption of other systems such as LEED or ENERGY STAR.

1. (Yes)
2. (No) [ASK E1a AND E1b]

   E1a. Do you anticipate doing so in the future?

   1.YES 2. NO 3. DON'T KNOW [SKIP TO NEXT SECTION]

   E1b. When do you anticipate doing this in the future? [TEXT]

98. (Don't know)
99. (Refused)

[ASK E2-E10 IF E1=1]

E2. What are the energy reduction goals? Goals can be expressed as a percentage reduction or an absolute number compared to existing energy use. It can be expressed as an energy intensity reduction. It can be defined implicitly through adoption of other systems such as LEED or ENERGY STAR.

1. [RECORD 1st MENTION]
   E2a. When did you adopt this goal? [RECORD TEXT]
2. [RECORD 2ND MENTION]
   E2b. When did you adopt this goal? [RECORD TEXT]
3. [RECORD 3RD MENTION]
   E2c. When did you adopt this goal? [RECORD TEXT]
4. [RECORD 4TH MENTION]
   E2d. When did you adopt this goal? [RECORD TEXT]
5. [RECORD 5TH MENTION]
   E2e. When did you adopt this goal? [RECORD TEXT]

98. (Don't know)
99. (Refused)

E3. ADDED TO E2

E4. Are the goals for this building only, for a particular portfolio, or the entire organization?

1. (Building)
2. (Portfolio)
3. (Entire organization)
4. (Other [SPECIFY:_____])

98. (Don't know)
99. (Refused)

E5. Have these goals been presented to and accepted by members of the management team such as C-level executives, VP of Property or Asset Management, Senior Property Manager, Chief Engineer or some other member of the management team? [DO NOT READ LIST]

1. (Yes, presented and accepted) [ASK: "When?" RECORD TEXT ANSWER]
2. (Yes, presented only) [ASK: "When?" RECORD TEXT ANSWER]
3. (No, haven't been presented or accepted)
4. (Other [SPECIFY:_____])

98. (Don't know)
99. (Refused)

[ASK IF E5=1 OR 2]

E6. Who were the goals presented to and accepted by? [IF NEEDED: We don't need names, just their title or position.]

1. (CEO
2. (CFO)
3. (COO)
4. (Director)
5. (VP of Property or Asset Management)
6. (Senior Property Manager)

7. (Chief Engineer)
8. (Other [SPECIFY:_____])

E7. Have the goals been documented?

1. (Yes) [ASK: "When?" RECORD TEXT ANSWER]
2. (No)
98. (Don't know)
99. (Refused)

E8. Were the goals communicated only to internal staff or were they given to people outside the company? [DON'T READ LIST] [IF NEEDED: This includes with tenants, agents, brokers, contractors, energy service providers, or others.]

1. (Shared internally)
2. (Shared externally)
3. (Both)
4. (Other [SPECIFY:_____])

98. (Don't know)
99. (Refused)

[ASK E9 IF E8=2 OR 3]

E9. Who were the goals shared with outside the company? [RECORD ALL THAT APPLY]

1. (Tenants)
2. (Agents)
3. (Brokers)
4. (Energy related contractors)
5. (Energy related service providers)
6. (Owners)
7. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

E10. How were the goals communicated? [READ LIST IF NECESSARY; RECORD ALL THAT APPLY]

1. (Email)
2. (Website)
3. (Newsletter)
4. (Company meeting)
5. (Open house presentation)
6. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

F. Identification, Implementation, and Documentation of Practices

Now I would like to talk about practices that you and/or your organization have planned for reducing energy in this building, your portfolio, or your organization.

F1. *Have you and/or your organization identified practices to help you reduce energy use in this building? These practices could include all things energy related such as capital purchases, capital improvements, operations and maintenance changes, training, certifications, other behavioral change efforts, and/or third-party service provider proposals/projects.

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

[ASK F2-F9 IF F1=1]

F2. Please describe these practices and when you identified each practice. These practices could include all things energy related such as capital purchases, capital improvements, operations and maintenance changes, training, certifications, other behavioral change efforts, and/or third-party service provider proposals/projects.

1. [F2.1A RECORD PRACTICE 1] AND THEN F2.1B ASK: When did you identify this practice? [COLLECT YEAR] GO TO 3F.1A
2. [F2.2A RECORD PRACTICE 2] AND THEN F2.2B ASK: When did you identify this practice? [COLLECT YEAR] GOTO 3F.2A
3. [F2.3A RECORD PRACTICE 3] AND THEN F2.3B ASK: When did you identify this practice? [COLLECT YEAR] GOTO 3F.3A
4. [F2.4A RECORD PRACTICE 4] AND THEN F2.4B ASK: When did you identify this practice? [COLLECT YEAR] GOTO 3F.4A
5. [F2.5A RECORD PRACTICE 5] AND THEN F2.5B ASK: When did you identify this practice? [COLLECT YEAR] GOTO 3F.5A

97. No other practices
98. (Don't know)
99. (Refused)

F3. Please tell me what helpful resources or information your organizations used to determine what practices to implement and where you found the information or resources? [IF MORE THAN ONE, "Let's start with … [INSERT FIRST ANSWER FROM F2][USE ANSWER LIST BELOW FOR FOLLOW-UP QUESTION]

F3.1A [RECORD RESOURCES FOR PRACTICE 1] AND THEN F3.1B ASK, "Where did you find the information or resource?" GOTO F4 IF F2.2A = 97,98,99 ELSE GOTO NEXT PRACTICE

F3.2A [RECORD RESOURCES FOR PRACTICE 2] AND THEN F3.2B ASK, "Where did you find the information or resource?" GOTO F4 IF F2.3A = 97,98,99 ELSE GOTO NEXT PRACTICE

F3.3A [RECORD RESOURCES FOR PRACTICE 3] AND THEN F3.3B ASK, "Where did you find the information or resource?" GOTO F4 IF F2.4A = 97,98,99 ELSE GOTO NEXT PRACTICE

F3.4A [RECORD RESOURCES FOR PRACTICE 4] AND THEN F3.4B ASK, "Where did you find the information or resource?" GOTO F4 IF F2.5A = 97,98,99 ELSE GOTO NEXT PRACTICE
F3.5A [RECORD RESOURCES FOR PRACTICE 5] AND THEN F3.5B ASK, "Where did you find the information or resource?" GOTO F4

[DO NOT READ LIST; CODE ALL THAT APPLY]

1. (NEEA Website, mailing, newsletter, or other NEEA sponsored reference)
2. (Utlity mailing, bill insert, or utility Website)
3. (Contractor or vendor)
4. (Business colleague)
5. (Word of mouth; family or friend)
6. (BOMA)
7. (Other trade organization [SPECIFY:_____])
8. (Internal audit/walk through)
9. (Company engineers)
10. (Other [SPECIFY:___])
98. (Don't know)
99. (Refused)

F4. Have you implemented all, most, some, or none of the practices you planned as part of reducing energy use?

1. (All)
2. (Most)
3. (Some)
4. (None) [SKIP TO F6]
98. (Don't know) [SKIP TO F6]
99. (Refused) [SKIP TO F6]

F5. F5.1 When did you start implementing this practice? Let's start with … [INSERT PRACTICE FROM F2.1A]
F5.2 When did you start implementing this practice? [INSERT PRACTICE FROM F2.2A]
F5.3 When did you start implementing this practice? [INSERT PRACTICE FROM F2.3A]
F5.4 When did you start implementing this practice? [INSERT PRACTICE FROM F2.4A]
F5.5 When did you start implementing this practice? [INSERT PRACTICE FROM F2.5A]

1. [RECORD TEXT]
98. (Don't know)
99. (Refused)

F6. Have you and/or your organization documented the list of practices you identified? By this we mean documenting an energy reduction work plan for each building, or something similar.

1. (Yes)
2. (No) [SKIP TO SECTION G]
98. (Don't know) [SKIP TO SECTION G]

99. (Refused) [SKIP TO SECTION G]

[ASK F7-F9 IF F6=1]

F7. When did you and/or your organization document the practices?

1. [RECORD ANSWER/TEXT]
98. (Don't know)
99. (Refused)

F8. How did you and/or your organization document the practices? [READ LIST IF NECESSARY, RECORD ALL THAT APPLY]

1. (Email)
2. (Website)
3. (Newsletter)
4. (Company meeting)
5. (Quarterly report)
6. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

F9. Which of the following have you and/or your organization documented for your energy reduction practices? Let's start with the … [INSERT FIRST ITEM]. Has this been documented for all, most, some, or none of your energy reduction practices? [READ LIST AND RECORD 1=all, 2=most, 3=some, 4=none; 96 FOR N/A, 98 FOR DON'T KNOW, 99 FOR REFUSED] [RANDOMIZE LIST]

F9a. A description of energy reduction practices
F9b. The staffing resources that your organization will need to conduct the practice
F9c. The training resources that your organization will need to support the practice
F9d. The capital resources that your organization will need
F9e. The timeframe for completion
F9f. The expected impacts and/or benefits of the practice

G. Allocation of Resources

Now we will talk about how your organization has allocated resources for reducing energy.

G1. *Which of these resources has your organization allocated for energy reduction? [READ EACH AND RECORD 1=YES, 2=NO, 98=DON'T KNOW, 99=REFUSED]

G1a. Staffing; Staffing resources can include time you spend on energy reduction, assigning a responsible 'champion', forming a volunteer sustainability committee or cross-department team, reallocate existing personnel, hiring new personnel or creating a new position.

G1b. Training; Training resources can include participating in utility incentive programs, onsite or offsite training, related certifications, or executive training on how participation can advance energy tools.]

G1c. Capital resources

G1d. Any other resources [SPECIFY]

[ASK IF YES TO ANY IN G1a,G1b, G1c, G1d]

G2. How have you documented these resources? [READ LIST IF NEEDED AND RECORD ALL THAT APPLY]

1. (Building or company budget)
2. (Asset manager report)
3. (Quarterly organization report to shareholders)
4. (Emails)
5. (Meeting presentations)
6. (Or some other way [SPECIFY:_____])
7. (No documentation of any of the resources mentioned in G1)
98. (Don't know)
99. (Refused)

[ASK FOR EACH NO IN G1]

G3. [ASK IF 'NO'IN G31a] G3.1 What are your reasons for not allocating [INSERT G1a] resources?
[ASK IF 'NO'IN G31b] G3.2 What are your reasons for not allocating [INSERT G1b] resources?
[ASK IF 'NO'IN G31c] G3.3 What are your reasons for not allocating [INSERT G1c] resources?
[ASK IF 'NO'IN G31d] G3.3 What are your reasons for not allocating [INSERT G1d] resources?

1. [RECORD ANSWER]
98. (Don't know)
99. (Refused)

H. Implementation [no questions in this section]

I. Reviewing Progress

Now we're going to talk about the review process.

I1. *Do you provide reviews for management indicating your company's progress toward reducing your organization's energy use?

1. (Yes)
2. (No) [SKIP TO SECTION J]
3. (Plan to in the future) [SKIP TO SECTION J]
98. (Don't know) [SKIP TO SECTION J]
99. (Refused) [SKIP TO SECTION J]

[ASK I2-I9 IF I1=1]

I2. Are these management reviews provided for a single building, a portfolio, or the entire organization?

1. (Single building)
2. (Portfolio)
3. (Entire organization)
4. (Other [SPECIFY:_____])

98. (Don't know)
99. (Refused)

I3. When did you start producing reviews for management?

1. [RECORD ANSWER/TEXT]

98. (Don't know)
99. (Refused)

I4. How frequently do you provide reviews to management about the progress your organization is making in reducing energy use? [READ LIST IF NECESSARY]

1. (Annually)
2. (Quarterly)
3. (Monthly)
4. (Never provide updates)
5. (Other [SPECIFY:_____])

98. (Don't know)
99. (Refused)

I5. Are these reviews communicated only to internal staff or are they given to people outside the organization such as tenants, agents, or brokers? [DON'T READ LIST]

1. (Shared internally)
2. (Shared externally)
3. (Both)
4. (Other [SPECIFY:_____])

98. (Don't know)
99. (Refused)

I6. How does your organization regularly communicate the results of these reviews? [READ LIST AS NEEDED; RECORD ALL THAT APPLY]

1. (Email)
2. (Website)
3. (Newsletter)
4. (Company meeting)
5. (Open house presentation)
6. (Other [SPECIFY:_____])

98. (Don't know)
99. (Refused)

I7. Which of the following items do your management reviews include? Do they include … [READ LIST AND RECORD 1 FOR YES, 2 FOR NO, 97 FOR N/A, 98 FOR DON'T KNOW AND 99 FOR REFUSED]

I7a. [ASK IF E1=1] Actual performance measured against the goal
I7b. Effectiveness of each activity on reducing energy
I7c. Whether the resources allocated were sufficient to perform the practice
I7d. Changes to goals, metrics, practices, or resource allocation

I8. How often does management approve updates or modifications made to your energy reduction goals or practices? [READ LIST IF NECESSARY]

1. (Annually)
2. (Quarterly)
3. (Monthly)
4. (Never, haven't made any)
5. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

[ASK IF I8=1, 2, 3, OR 5]

I9. How does your organization document the management-approved updated goals or practices? [READ LIST IF NEEDED; RECORD ALL THAT APPLY]

1. (Email)
2. (Website)
3. (Newsletter)
4. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

J. Plan Outcome

[ASK J1-J5 IF F1=1]

J1. Now I'd like to talk about current outcomes of your energy reduction plans. Has your company reduced its energy consumption as much as expected?

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

J2. How helpful do you think the planned practices were in helping you reduce your energy usage? Have they been … [READ LIST]

1. Very helpful
2. Somewhat helpful
3. Not too helpful
4. Not helpful at all
98. (Don't know)
99. (Refused)

J3. Did you have enough resources to reduce your energy use as much as you intended? [IF NEEDED: We are talking about staffing, training, and capital resources.]

1. (Yes)
2. (No)
   J3a. Please explain which resources were less available than planned? [If needed, staffing,training, capital resources , any other?]
98. (Don't know)
99. (Refused)

J4. How have your energy management practices evolved since you adopted them? [RECORD ANSWER]

J5. What changes do you anticipate making in the future to your energy reduction goals and practices? [RECORD ANSWER]

K. Delivery Channels

K1. *Are you familiar with Strategic Energy Management; an energy management system where companies identify management-approved energy reduction goals, plan practices to reach the goal(s), allocate resources toward the goal(s), and regularly report progress to management toward achieving the goal(s)? [IF NEEDED: Resources include staff and training or capital.]

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

K2. *Are you familiar with a NEEA initiative to encourage commercial office buildings to adopt Strategic Energy Management. [READ IF DIDN'T READ THIS IN ABOVE QUESTION."This is an energy management system where companies identify management-approved energy reduction goals, plan practices to reach the goal(s), allocate resources towards the goal(s), and regularly report progress to management toward achieving the goal(s)".]

1. (Yes)
2. (No) [SKIP TO K4]
98. (Don't know) [SKIP TO K4]
99. (Refused) [SKIP TO K4]

K3. +How did your organization learn about the NEEA initiative to motivate commercial office real estate organizations to adopt Strategic Energy Management? [DON'T READ LIST. RECORD ALL THAT APPLY]

1. (Market Partners Program)
2. (Energy reduction competitions, i.e. Kilowatt Crackdown or Carbon4Square)
3. (NEEA website; www.neea.org)
4. (Contacted by NEEA)
5. (Utility)
6. (Contractor/Vendor/Trade ally [ASK: Which one?_____])
7. (Word of mouth)
8. (Trade show or workshop [ASK: Which one?_____])

9. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

K4. *NEEA encourages commercial buildings to adopt Strategic Energy Management in a variety of ways. I would like to talk with you about some of these.

Are you familiar with the Market Partners Program? The Market Partners Program is a coaching process with the goal of helping commercial real estate organizations adopt Strategic Energy Management practices as an important part of how they do business and competitive advantage.

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

K5. *How effective do you think the Market Partners Program is in encouraging businesses like yours to adopt Strategic Energy Management? Is this format … [READ LIST]?

1. Very effective
2. Somewhat effective
3. Not very effective
4. Not effective at all
98. (Don't know)
99. (Refused)

K6. *Are you familiar with competitions to adopt Strategic Energy Management-related practices? [IF NEEDED: Competitions can include goal setting, developing an energy management action plan, or reporting energy reduction results. These competitions are in partnership with organizations such as Building Owners and Managers Association (BOMA). Past competitions include Portland's Office Energy Showdown, Carbon4Square, and Seattle's Kilowatt Crackdown. Current competitions include Portland and Boise's Kilowatt Crackdown.]

1. (Yes)
2. (No)

K7. *How effective do you think competitions like Kilowatt Crackdown or Carbon4Square are in encouraging businesses like yours to adopt Strategic Energy Management ? Are they … [READ LIST]?

1. Very effective
2. Somewhat effective
3. Not very effective
4. Not effective at all
98. (Don't know)
99. (Refused)

K8. *Are you familiar with professional seminars and workshops offered by NEEA? [IF NEEDED: The seminars and workshops are structured to build analytic skills and operating knowledge of the competitive advantages of energy efficiency.]

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

[ASK IF K8=1]

K9. *Have you attended a NEEA seminar or workshop about Strategic Energy Management?

1. (Yes)
2. (No)
3. (Don't know)
4. (Refused)

[ASK IF K9=1]

K10. *How effective were the NEEA seminars or workshops in supporting Strategic Energy Management or teaching your organization how to adopt Strategic Energy Management? Were they … [READ LIST]?

1. Very effective
2. Somewhat effective
3. Not very effective
4. Not effective at all
98. (Don't know)
99. (Refused)

K11. *Have you attended other professional seminars and workshops offered by different organizations that you found helpful?

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

K12. *NEEA designed tools to help commercial real estate owners, managers, and operators increase market value through energy efficiency. How effective do you think marketing materials such as case studies, analytic tools and templates are in encouraging businesses like yours to adopt Strategic Energy Management? Are they … [READ LIST]?

1. Very effective
2. Somewhat effective
3. Not very effective
4. Not effective at all
98. (Don't know)
99. (Refused)

K13. *What other tools or seminars and workshops can NEEA offer to motivate commercial real estate owners and managers to adopt Strategic Energy Management?

97. None
98. (Don't Know)
99. (Refused)
[RECORD ANSWER]

L. Motivation

[ASK EVERYONE]

L1. *What factors have motivated your company to reduce energy use? [DON'T READ LIST AND SELECT ALL THAT APPLY]

1. (Save money on electric bills, reduce operating costs)
2. (Reduce maintenance costs)
3. (Protect the environment)
4. (Improve building appearance)
5. (Improve occupant comfort)
6. (Reduce greenhouse gas/carbon emissions)
7. (Safety/health reasons)
8. (Marketing/branding)
9. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

M. Barriers

[ASK EVERYONE]

M1. *What are the significant challenges to participating in major energy-efficiency efforts? [DON'T READ LIST. RECORD ALL THAT APPLY]

1. (Age/condition of building)
2. (Budget limitations)
3. (Enough return on investment)
4. (Funding competition from other company priorities)
5. (High initial cost)
6. (Lack of staff time to dedicate to pursuing energy efficiency upgrades)
7. (Lack of technical knowledge about energy efficiency equipment)
8. (Long payback period)
9. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

[ASK IF M1 HAS MORE THAN ONE ANSWER]

M2. *What is the most significant challenge to participating in major energy-efficiency efforts? [DON'T READ LIST. RECORD ONE ANSWER]

1. (Age/condition of building)
2. (Budget limitations)
3. (Enough return on investment)
4. (Funding competition from other company priorities)
5. (High initial cost)
6. (Lack of staff time to dedicate to pursuing energy efficiency upgrades)
7. (Lack of technical knowledge about energy efficiency equipment)
8. (Long payback period)
9. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

[ASK M3 IF E1=1 OR F1=1 OR G1a=1 OR G1b=1 OR G1c=1 OR G1d=1, OR I1=1]

Now I would like to talk with you specifically about Strategic Energy Management. Again, this is an energy management system where companies identify management-approved energy reduction goals, plan practices to reach the goal(s), allocate resources towards the goal(s), and regularly report progress to management toward achieving the goal(s).

M3. +What would you say are the main benefits to your organization resulting from the Strategic Energy Management practices your business is engaging in? [DON'T READ LIST AND SELECT ALL THAT APPLY] [IF NEEDED: We are asking this because your answers have shown that you engage in some of the Strategic Energy Management guidelines such as implementing and identifying energy reducation goals and practices, allocating resources toward the goals, or reporting progress toward the goal.]

1. (Attractive to tenants)
2. (Energy savings)
3. (Environmental benefits)
4. (Increased occupant comfort)
5. (Lower energy bill; saved money, reduced operating costs)
6. (Lower maintenance costs)
7. (Marketing benefits)
8. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

[ASK EVERYONE]

M4. *What would you say are the challenges to participating in NEEA's commercial real estate initiative and adopting Strategic Energy Management? [DON'T READ LIST AND SELECT ALL THAT APPLY]

1. (Age/condition of building)
2. (Budget limitations)
3. (Enough return on investment)
4. (Funding competition from other company priorities)
5. (High initial cost)
6. (Lack of staff time to dedicate to pursuing energy efficiency upgrades)
7. (Lack of technical knowledge about energy efficiency equipment)
8. (Lack or inadequate resources, approaches, or tools tailored to the commercial real estate industry)
9. (Long payback period)
10. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

[ASK IF M4 HAS MORE THAN ONE ANSWER]

M5. *What do you see as the most significant challenge to participating in NEEA's commercial real estate initiative and adopting Strategic Energy Management? [RECORD ONE ANSWER; DO NOT READ LIST]

1. (Age/condition of building)
2. (Budget limitations)
3. (Enough return on investment)
4. (Funding competition from other company priorities)
5. (High initial cost)
6. (Lack of staff time to dedicate to pursuing energy efficiency upgrades)
7. (Lack of technical knowledge about energy efficiency equipment)
8. (Lack or inadequate resources, approaches, or tools tailored to the commercial real estate industry)
9. (Long payback period)
10. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

M6. *Please tell me how much you agree or disagree that the following statements are challenges for adopting NEEA's Strategic Energy Management initiative. Let's start with [INSERT STATEMENT]. Do you strongly agree, somewhat agree, somewhat disagree, or strongly disagree that this is a challenge to adopting Strategic Energy Management?
[STRONGLY AGREE=1, SOMEWHAT AGREE=2, SOMEWHAT DISAGREE=3, STRONGLY DISAGREE=4, DON'T KNOW=98, AND REFUSED=99]

- M6a. Lack of or inadequate resources, approaches, or tools focusing on Strategic Energy Management that are tailored to the commercial office real estate industry
- M6b. Lack of or inadequate cost-effective system to track and manage energy for a whole-building
- M6c. Lack of or inadequate tools and practices to communicate and promote successes with Strategic Energy Management
- M6d. Lack of or inadequate skills or organizational resources to implement energy reduction practices

M7. *What could NEEA do to help your company overcome challenges to adopting Strategic Energy Management goals and practices?

97. Nothing
98. (Don't Know)
99. (Refused)

[RECORD ANSWER]

[ASK EVERYONE]

M8. *Tell me how much you agree or disagree with the statement, "Commercial office real estate companies gain an advantage from adopting Strategic Energy Management." Do you … [READ LIST]

1. Agree strongly
2. Agree somewhat
3. Disagree somewhat
4. Disagree strongly
98. (Don't know)
99. (Refused)

[ASK IF M8=1-4]

M9. *What is the reason you said you [INSERT ANSWER FROM M8]?
[RECORD ANSWER]

N. Business Goals and Drivers

[ASK EVERYONE]

N1. *Please tell me how important the following items are to you when planning energy efficiency goals and practices. The first statement is [INSERT STATEMENT]. Is this very important, somewhat important, not very important, or not at all important when planning energy efficiency goals and practices? [RECORD 1 FOR VERY IMPORTANT, 2 FOR SOMEWHAT IMPORTANT, 3 FOR NOT VERY IMPORTANT, 4 FOR NOT AT ALL IMPORTANT, 97 FOR NOT APPLICABLE, 98 FOR DON'T KNOW, AND 99 FOR REFUSED]

- N1a. Property cash flow
- N1b. Company cash flow
- N1c. Asset value
- N1d. Total cost [IF NEEDED, PROMPT: of adopting energy efficiency practices]
- N1e. Marketing and brand positioning
- N1f. Company profit

N2. *What other financial or business goals that impact the reduction of energy in your company?
97. None
98. (Don't Know)
99. (Refused)
[RECORD ANSWER]

O. Building Characteristics

[ASK EVERYONE]

Now we have a few questions about tenants of this building. [INSERT ADDRESS FROM B2.2 IF ASKED, ELSE A2 AND REPEAT ADDRESS IF NECESSARY]

O1. *How important do you think energy efficiency is to the tenants of this building? Would you say … [READ LIST]

1. Very important
2. Somewhat important
3. Not very important
4. Not important at all
98. (Don't know)
99. (Refused)

O2. *In your opinion, how important are your energy management practices to your tenants' adoption of additional energy efficiency practices? Would you say … [READ LIST]

1. Very important
2. Somewhat important
3. Not very important
4. Not important at all
98. (Don't know)
99. (Refused)

P. Closing

We have a couple final questions.

P1. *How important are energy management strategies to maintaining a competitive advantage? Are they … [READ LIST]

1. Very important
2. Somewhat important
3. Not very important
4. Not important at all

98. (Don't know)
99. (Refused)

P2. *What trends do you see regarding energy management within the commercial office real estate industry?

98. (Don't Know)
99. (Refused)

[RECORD ANSWER]

P3. *What kind of information on energy management practices would be most useful to you in the future?

98. (Don't Know)
99. (Refused)

[RECORD ANSWER]

P4. *How should NEEA provide information and training on Strategic Energy Management? [DON'TREAD LIST; RECORD ALL THAT APPLY]

1. (Professional association [ASK: Which one?__])
2. (In-person)
3. (Online)
4. (Peer forum)
5. (Short pieces on mobile phone)
6. (Webinars)
7. (Other [SPECIFY:_____])

98. (Don't know)
99. (Refused)

[ASK IF MULTIPLE ANSWERS IN PREVIOUS QUESTION]

P5. What would be the best way for NEEA to provide information and training on Strategic Energy Management? [DON'T READ LIST; RECORD ONE ANSWER] Only display responses from P4

1. (Professional association [ASK: Which one?__])
2. (In-person)
3. (Online)
4. (Peer forum)
5. (Short pieces on mobile phone)
6. (Webinars)
7. (Other [SPECIFY:_____])
98. (Don't know)
99. (Refused)

P6. [BLANK]

P7. *Can we contact you in the future for other research studies?

1. (Yes) ASK P7.1

   P7.1 May I please have your :

   P7.1a RECORD NAME

   P7.1b COLLECT PHONE

   P7.1C COLLECT AND VERIFY EMAIL ADDRESS
2. (No/Don't know/Refused)

P8. *NEEA would like your permission to obtain energy consumption data from your utility? Is this something you would be willing to grant NEEA?

1. (Yes)
2. (No)
3. (Other [SPECIFY:_____])

Thank you for your help. We appreciate your time and opinions.