



Project 6B: Comprehensive Design Approach Process Evaluation Final Report

Massachusetts Energy Efficiency Programs' Large
Commercial & Industrial Evaluation



Prepared for: Massachusetts Energy Efficiency Program Administrators
Submitted to: The Massachusetts Program Administrators and the EEAC

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1. Executive Summary

This Executive Summary highlights the findings and recommendations from a process evaluation of the Comprehensive Design Approach (CDA) track offered in Massachusetts by the Program Administrators (PAs) National Grid, Western Massachusetts Electric Company (WMECO) and NSTAR¹ and a comparative study of the Advanced Buildings (AB) track as implemented in Massachusetts, Vermont, and Maine.

The process evaluation of the CDA track includes a case study comparison of new construction projects that used the CDA track and those that did not but could have qualified to do so. It also includes a review of the PAs' data tracking systems, which evaluates the advantages and disadvantages of each PA's database system as it relates to tracking details about CDA projects. This evaluation is designed to examine how the implementation and operation of the comprehensive tracks meet their primary goals, which are to: 1) maximize energy and demand reduction in new construction projects; and 2) influence energy efficiency best practices in the commercial design sector.

CDA is a track within the custom large commercial and industrial (C&I) new construction energy efficiency programs offered by the energy efficiency Program Administrators in Massachusetts, though it is actively offered by National Grid, WMECO, and NSTAR since the smaller PAs typically do not have projects big enough to qualify for CDA. It is an integrated approach that is ideally initiated at the beginning of the building design stage in order to ensure that cost-effective energy efficiency opportunities are incorporated such that energy use reduction of 20 percent or more is achieved relative to the requirements of state building code. The CDA track also offers financial incentives that are usually larger than those offered by prescriptive or the traditional custom new construction programs. This is because it requires additional time and effort by customers to go through multiple design stage iterations, as well as requirements to meet minimum thresholds for energy reduction. Energy and demand reductions for CDA projects are typically estimated using whole-building simulation software which models the interactive effects of the selected energy efficiency measures.

The Advanced Buildings track is similar to CDA, however it targets smaller buildings within the commercial new construction market and aims to simplify and expedite the participation process by using standardized incentive and savings assumptions.² The New Buildings Institute (NBI)

¹ These entities are collectively referred to as "Program Administrators (PAs)" or "Sponsors" in this report.

² These incentive and savings assumptions were established through energy modeling to assess the average energy savings stemming from the use of particular energy efficient measures.

developed Core Performance as part of Advanced Buildings (AB), a suite of technical information and training resources that PAs can offer to customers as a part of their energy efficiency programs for new construction. In order for customers to receive monetary incentives through the AB track, they must incorporate a series of 13 Core Performance requirements into their building designs.

1.1 Study Objectives

The impetus for this CDA process evaluation came from PA concerns about low levels of participation in this program track. As shown later in the report, during the 2008-2009 program period one of the participating PAs only had a single CDA project and another only had two projects. Therefore key objectives include investigating why these participation levels are so low and what can be done to increase them. More detailed study objectives include:

- Gain a qualitative sense of market penetration of both program marketing and program participation;
- Determine the level of program awareness among key actors in the new construction market;
- Assess the PAs' market intelligence of upcoming new construction projects and at what point the Sponsors are intervening;
- Gauge the effectiveness of program marketing and promotion, in terms of messaging and targeted audience;
- Assess the level of customer satisfaction among CDA participants;
- Assess the program delivery mechanism from the position of the program delivery consultants, program customers, architects, engineers, developers and other key stakeholders;
- Explore the degree of missed opportunities in non-CDA projects, including new construction projects that did not participate in any Sponsor incentive programs, as well as new construction projects that involved multiple prescriptive and/or custom measures, but did not participate in the CDA track;
- Describe the barriers to program participation;

- Provide detailed explanations as to why non-participants did not participate, from the perspective of owners, developers, builders, architects and engineers; and
- Identify the lessons learned and specific actionable recommendations for program improvement.

The AB track study compares and contrasts the approaches offered by the Massachusetts PAs with those offered in Vermont and Maine according to the following criteria:

- Program delivery methods;
- Reported program participation and penetration rates;
- Effectiveness of marketing and outreach activities;
- Market tracking systems;
- Program successes;
- Barriers to program participation;
- Lessons learned; and
- Best Practices.

1.2 Findings and Recommendations

Based on a review of data sources as well as insights provided by program actors during in-depth interviews, the evaluation team developed a number of findings and recommendations regarding both the CDA and AB tracks. The CDA findings and recommendations, which are discussed in detail in Section 5 of this report, pertain to CDA-related topics such as implementation efforts, market intelligence, marketing approaches, barriers to customer participation, incentive structure, and the most prevalent market segments that participate in the CDA track.

The findings and recommendations from the AB track comparative study are detailed in Section 6, following a presentation of the comparative study which looks at the AB tracks offered in Vermont and Maine and compares and contrasts them to the AB track offering in Massachusetts. Conversations with staff members at the various New England programs revealed assorted elements of program design that contribute to program success and the barriers which impair program implementation. In consideration of these elements, the evaluation team recommends a set of actionable best practices described in this evaluation. These best practices represent a synthesis of the observations of implementation staff and the recommendations of the evaluation team.

1.3 Summary of Cross-Cutting Analysis of CDA and Advanced Buildings Tracks

The final section of this report explores how the offering of both the CDA and AB tracks can be coordinated to provide better energy efficiency program coverage for the new construction market in Massachusetts. Each track is analyzed in detail within this evaluation, and this section synthesizes the findings to show how the PAs can increase participation in the comprehensive new construction program through a collaborative program offering. Despite a difference in project size requirements and differences in the procedural steps to participating in each, the CDA and AB tracks have many characteristics in common including similar program objectives with regard to energy efficiency, common customer base targets, and similar program actors. Each track has a unique way of addressing these goals. However, the PAs and their customers could benefit greatly from an exploration of the potential synergies that exist between the tracks and how they can be exploited to increase participation by C&I new construction customers. These potential synergies are presented in this cross-cutting analysis.

2. Introduction

This report presents a process evaluation of the Comprehensive Design Approach (CDA) track offered by the PAs in Massachusetts. The PAs that actively offer CDA are National Grid, Western Massachusetts Electric Company (WMECO), and NSTAR³. Also included in this report is a comparative study of the Advanced Buildings (AB) track implemented in Massachusetts, Vermont, and Maine. The CDA and AB tracks represent two different approaches to comprehensive energy efficiency for commercial and industrial (C&I) new construction projects. These approaches are unlike the traditional new construction programs generally offered to commercial and industrial customers by the Sponsors.

The CDA track exists within the custom large C&I new construction energy efficiency programs offered by the Massachusetts Program Administrators (PAs). It is thorough and extensive in that it requires customer engagement through multiple stages of building design. The monetary incentives available to building owners who use the CDA track generally exceed those available through other non-comprehensive C&I new construction approaches. To ensure that a project's full energy efficiency potential is met, the CDA requires the use of energy modeling to maximize the synergistic benefits of all measures installed when a new building is constructed or an existing building is subject to major renovation.

The AB track differs from the CDA in that it targets smaller commercial buildings and includes “a suite of tools and resources that helps design teams create energy efficient, high performance commercial buildings...It is a prescriptive program to achieve significant, predictable energy savings in new commercial construction.”⁴ In order for customers to receive monetary incentives through the AB track, they must incorporate a series of 13 Core Performance requirements into their building designs (discussed in Section 4 of this report). The New Buildings Institute (NBI) has developed this package of energy efficiency improvements in such a way that when applied to new construction projects, it is designed to produce estimated average energy savings of 20-30 percent over the requirements of ASHRAE 90.1-2004.⁵

Prior to 2010, the CDA and AB tracks were offered in Massachusetts through National Grid's Design 2000*plus* program, WMECO's Energy Conscious Construction program, and NSTAR's

³ These entities are collectively referred to as “Program Administrators (PAs)” or “Sponsors” in this report.

⁴ *Core Performance Guide*, New Buildings Institute, July 2007, page 11. Note that although the AB track is referred to as a prescriptive program in the Core Performance Guide, it is included as a part of each PAs' Custom Program offering.

⁵ *Core Performance Guide*, New Buildings Institute, July 2007, page 11.

Construction Solutions program.⁶ Both tracks attempt to increase the achievable energy and demand savings in newly-constructed or newly-renovated C&I buildings by taking a “from the ground up” approach to energy efficiency instead of making these improvements on a measure-by-measure basis. The CDA track is a comprehensive customized approach to new construction and major renovation projects.

In the CDA process evaluation, a case study comparison of CDA and non-CDA projects was made to examine the conditions under which customers would opt for the CDA and when they might instead choose to use an alternative energy efficiency program or no program at all.⁷ Projects selected for comparison were of similar square footage and in the same market sectors. The non-CDA projects that were used for the comparison took a comprehensive approach to energy efficiency but did not use the CDA because the customers were either not familiar with the CDA track, received more in incentive payments by participating in another new construction program, or their project budget constraints led them to eliminate some of the energy efficiency improvements that would have been required by the CDA. The evaluators selected the projects based on information from in-depth interviews with PA representatives and data and technical studies provided by the PAs.

The AB track study compares and contrasts the performance and delivery of this new construction approach in Massachusetts to similar efforts in Maine and Vermont. This research examined customer participation in the different programs and identified differences in program implementation.

The main program characteristics we compared include program delivery methods, program participation, market penetration rates, and the reported effectiveness of marketing activities and outreach activities. The ultimate goal of this study is to identify the lessons learned and to present a set of program best practices.

⁶ Beginning with the 2010 Program Year, the Sponsors use the common name “Large C&I Construction and Major Renovation Program” to refer to their programs offered to the C&I new construction and major renovation market. Both the CDA and AB tracks are offered under this new statewide program name.

⁷ For the purposes of this evaluation, non-CDA projects are those that would have qualified to use the CDA but were completed through another track in the new construction program or through no energy efficiency program at all.

The remainder of this report is organized as follows:

Section 3 describes the data collection process and study methodology. The main sources of information include PAs' data sources (i.e., program tracking data, reports, program descriptions, project application materials) and 58 in-depth interviews we conducted with program managers and staff, account executives, design team members, technical consultants, and CDA participants and non-participants.

Section 4 presents the CDA process evaluation. It includes details of the participation process, a new construction case study comparison of selected CDA and non-CDA projects, as well as a brief review of the Sponsors' data tracking systems. The process evaluation focused on how the PAs market the CDA track, when customers inform the PAs of new construction projects, how account executives learn about potential CDA projects, and how program managers and staff work with customers and their design teams to implement the CDA. This evaluation also explored whether participants were satisfied with the CDA track and how to help break down barriers that may unnecessarily discourage customers from using this more comprehensive approach to energy efficiency. A new construction case study comparison examines when customers decide to use the CDA track and when they chose to use an alternative approach for their new construction project. The review of data tracking systems examined the information tracked by the Sponsors for CDA projects, evaluated the advantages and disadvantages of each PA's data system as it relates to tracking details about CDA projects, and provided recommendations to improve the systems for CDA tracking efforts.

Section 5 provides findings regarding the use and effectiveness of the CDA based on the research conducted for this process evaluation. For each finding we present, we make at least one actionable recommendation in an attempt to address any shortcomings associated with the CDA track.

Section 6 is a standalone section comprised of the Advanced Buildings Track Comparative Study that compares and contrasts the performance and delivery of the AB track in Massachusetts by National Grid, WMECO, and NSTAR to the comparable tracks available in Maine and Vermont. Data showed that the participation rate in the AB track in Massachusetts was much lower than it was in either Maine or Vermont. In an effort to explain this difference in participation rates, the evaluation team conducted interviews with PA staff in Massachusetts, Maine, and Vermont. It also conducted reviews of marketing strategies and materials and reviewed other program documents such as project application materials, program implementation plans, and relevant reports.



Section 7 highlights the cross-cutting elements of the CDA and Advanced Buildings tracks and focuses on how lessons learned from the evaluation of the CDA track lend themselves to the implementation of the Advanced Buildings track, and vice versa. In an effort to increase participation in comprehensive C&I new construction energy efficiency programs, the evaluation looks at the opportunities available to the PAs to consolidate their presentation of these programs in a way that leaves the customer less confused with each track's specific requirements. With the multiple program tracks available, the need exists for the PAs to help the customer find the current program track that best fits each customer's needs. .

3. Data Collection and Methodology

Section 3 describes the data and methodology used to complete these process evaluations. The main sources of data used in the evaluation appear first. Following these are a series of tables that present how the team used each data source to inform the evaluation. We also present a list of hypotheses, developed at the outset of the evaluation, to help guide the evaluators in developing interview guides to learn about the CDA and AB tracks.

3.1 Data Sources

The evaluation team used data sources provided by the Sponsors, such as program tracking data, PA reports, technical assistance (TA) studies, case studies, project application materials, and descriptions of sample projects. The team also relied upon information gathered during in-depth interviews with Massachusetts PA representatives, CDA participants and non-participants, and members of the building design community who are familiar with the CDA track or have worked on CDA projects in the past.⁸ This latter group included independent architects and the technical assistance firms that the PAs hired to provide energy modeling services.

3.1.1 Reports, Contacts, and Documents

At the beginning of this evaluation, the evaluation team provided a data request memorandum to the Sponsors in order to acquire information about the CDA and AB tracks. The memorandum requested the following:

- Overviews or descriptions of the CDA and AB tracks;
- Marketing materials;
- Blank incentive application forms and examples of completed applications;
- Contact information of managers and staff responsible for the implementation of the CDA and AB tracks;

⁸ For the purposes of this evaluation, CDA non-participants are those customers who might have considered using the CDA for their new construction projects, but opted not to do so. These may be customers who started out using the CDA but dropped out, chose to participate in a prescriptive or other custom energy efficiency track instead, or decided not to participate in any PA efficiency program at all.

- Contact information for C&I account representatives who are involved in the promotion of new construction programs;
- Names and contact information of data tracking personnel;
- Complete CDA and AB tracking data for recently completed projects by PA customers;
- Contact information for customers who began projects using the CDA or would have been eligible to use the CDA but did not use this approach;⁹
- Contact information for technical representatives who provide TA studies of CDA projects for the PAs and participants,
- Information concerning Sponsors' methods used to identify the target market sectors for the CDA and AB tracks, and
- Sponsors' estimates of the size of the new construction market in their service territories.

In response to the evaluation team's data request, the PAs provided selected data, reports, and documents on a piecemeal basis over the course of the evaluation. track as it more suited the types of facilities to be built.

Table 3-1~~track as it more suited the types of facilities to be built.~~

Table 3-1 below shows the data items we requested from the Sponsors, the priority level we assigned to these items, and whether we received the information. Some of the data we requested we found did not exist and therefore could not be provided.

track as it more suited the types of facilities to be built.

Table 3-1~~track as it more suited the types of facilities to be built.~~

Table 3-1 shows that NSTAR and National Grid and NSTAR were able to provide the evaluation team with most of the requested information. Both were able to provide tracking data for CDA projects as well as marketing materials (however, it is important to note that these marketing materials described C&I new construction energy efficiency programs in general and not the CDA track specifically). They also provided contact information that allowed the evaluation team to conduct interviews with individuals representing the various parties involved in CDA projects.

⁹ For the purposes of this evaluation, these customers are considered non-CDA participants.

National Grid was able to provide a few items that that NSTAR did not, such as TA studies and reports covering the CDA and AB tracks.

The table also shows that WMECO was not able to provide much of the requested CDA data. The WMECO service territory is mostly rural and does not contain many large C&I facilities, making CDA less applicable to WMECO’s customers. WMECO did not provide any architect, engineer, and customer contact information and when the evaluation team asked for marketing materials, a WMECO representative indicated that most of its marketing for the CDA and other large C&I program tracks was by word-of-mouth. The WMECO new construction program manager said virtually all of the commercial new construction projects in WMECO’s service territory went through the AB track as it more suited the types of facilities to be built.

Table 3-1: Data Requested and Received by Sponsors

PA Data Sources	Priority	National Grid	NSTAR	WMECO
Program Information				
Overview	High	X	X	X
Joint Statewide 2010-2012 Plan	High	X	X	X
Program Changes	High			
Policy & Procedures	High	X	X	
Relevant Reports	High	X		X
Blank Forms	High	X	X	X
TA Studies	High	X		
Sample Project Applications	High	X	X	
PA Contacts				
Program Managers	High	X	X	X
Program Staff	High	X	X	X
Technical Reps	Low	X	X	X
Account Reps	Low	X	X	X
Tracking Contact	Med	X	X	X
Non-PA Contacts				
Participating Architects	Low	X	X	
Engineers	Low	X	X	
Contacted Non-Participants	Low	X	X	
Non-Participating Architects	Low	X		

Data				
CDA Tracking Data	Med	X	X	
Advanced Building Track Data	Med	X	X	X
Canceled Projects	Med	X	X	
Marketing				
Marketing Materials	Med	X	X	
Marketing Recipients	Low			

¹A list of specific non-participating architects was not provided. National Grid directed the evaluation team to an online directory of architects in Massachusetts: http://www.architects.org/directories/list_firms.cfm?type=massfirms

3.1.2 In-Depth Interviews

The evaluation team conducted in-depth interviews with a number of program actors familiar with the CDA track and/or new construction and major renovation projects that would qualify to use the CDA track. Interviewees included PA representatives, architects and engineers who worked on C&I building designs, technical consultants familiar with energy modeling, CDA participants, and CDA non-participants.

The original research work plan included the number of interviews the evaluation team planned to conduct with the different parties involved in the implementation of the CDA. As the Sponsors began providing contact information, it became clear that WMECO had virtually no recent CDA projects and therefore could not provide the evaluation team with many contacts. This meant that the evaluation team had far fewer individuals familiar with the CDA track to interview than we had anticipated when developing the work plan. Therefore, the number of interviews actually conducted differs from the numbers originally planned, as shown in [Table 3-2](#). Most of the interviewees came from contact lists provided by National Grid and NSTAR.

Table 3-2: Interviews Planned and Conducted in Support of Evaluation

Interviews for Data Collection	Planned	Conducted
Participant Customer Projects	12	20
Non-Participant Customer Projects	12	4
Participant Design Team Members ¹⁰	12	5
Non-Participant Design Team Members	12	- ¹¹
PA - Managers/Staff Members	10	7
PA - Account Executives	12	10
PA - Technical Staff	6	2
Technical Assistance Consultants ¹²	6	2
PA - Tracking System Contacts	3	3
Advanced Building Contacts	-	5
TOTAL	85	58

The evaluation team interviewed several PA representatives including C&I new construction program managers and their staff, account executives who work directly with C&I customers and personnel responsible for the maintenance of program tracking databases. Many of the PA staff members we interviewed about the CDA and AB tracks were also knowledgeable about the implementation of the prescriptive and custom C&I new construction programs. Their knowledge of these new construction approaches to energy efficiency was useful for the CDA process evaluation because the interviewees were able to compare and contrast the CDA track to the prescriptive and non-comprehensive custom approaches. It is important to keep in mind that though the PA staff and managers are well informed about comprehensive and non-comprehensive energy efficiency approaches to new construction, their opinions could have affected or biased the information provided to the evaluation team.

We also interviewed architects and engineers in the building design community and technical consultants who contribute to efficient building design and develop energy models for CDA

¹⁰ Some of these design firms have participated in the CDA track offered by one, two, or all three PAs. In comparing these experiences, the evaluation team believed that the number of interviews we conducted adequately captured the design community's experience with the CDA track.

¹¹ Non-Participant design team member interviews were not conducted due to a lack of specific contact information. Text below provides a further explanation of Itron's attempts to contact non-participant design team members.

¹² Technical assistance firms also participated in the CDA track as design firms. The dual nature of these market actors is reflected in the interview findings.

projects. The purpose of these interviews was to learn their views on the comprehensive approach to energy efficiency and how it affects building design. During interviews with PA managers and staff, the evaluation team learned that certain architecture and engineering firms have working relationships with the Sponsors and therefore have become well versed in the CDA track. Contact information for some of these firms was provided when available. We asked design team members how their designs incorporated the CDA principles, which key market sectors the CDA is best suited to, whether or not they inform potential clients of the CDA, and how the track can be used to maximize energy savings. We discuss findings from these interviews in detail in Section 4 of this report.

The evaluation team also planned to speak with architects and engineers who did not participate in the CDA track but who work on large C&I new construction and major renovation projects that would qualify for this track. We assumed that these design teams resisted using the CDA track because of the additional time and effort needed to incorporate the CDA principles into their building designs, which they may not have planned or budgeted for.

National Grid provided the evaluation team with a link to the Boston Society of Architects (BSA) database containing a listing of 780 practicing architects in the Massachusetts area. This database was intended to serve as a source of non-participant design team members.¹³ A review of the information in the database revealed that it was not detailed enough to determine whether the listed architecture firms worked on C&I building designs that would qualify for the CDA track. The database provided a list of firms with contact information and -- in a few cases -- listed whether the architects at these firms focused on residential and/or C&I buildings.

Initially, the evaluation team called a random sample of approximately 50 firms that were listed in the database. Only 10 to 12 of these firms specialized in C&I building design. None of these calls were successful in producing interviews. Usually, an administrative assistant or receptionist answered the phone and asked the interviewer to leave a message or to call back another time. In an effort to make contact with a larger number of potential non-participating design team members, we sent emails with an incentive offer of \$150 Visa gift card to a sample of 20 C&I architectural firms to recruit them for an interview. However, the evaluation team received no responses to these emails. While these approaches were not successful in obtaining interviews with design team members who had never participated in the CDA track, we were able to obtain interviews with design firms who were “partial” non-participants. These

¹³ http://www.architects.org/directories/list_firms.cfm?type=massfirms The non-participant design team members are those architects and engineers who have worked on large C&I new construction and major renovation projects that would qualify for the CDA but that were not built using the CDA track.

were design firms that sent some of their construction projects through the CDA track, but not others. These firms were able to provide some insights on barriers to CDA participation or why some projects were more suitable to the CDA track than others.

3.2 Data Collection Plan

To facilitate the examination of the different aspects of the CDA, the RFP divided this evaluation into four study components. These included:

1. The CDA Process Evaluation,
2. The New Construction Case Study Comparison,
3. The Advanced Buildings Track Comparative Study, and
4. A Review of Sponsors' Data Tracking Systems.

The evaluation team developed a data collection plan to support each of these study components. The plan for each study component is presented in a series of tables below ([Table 3-3](#) through [Table 3-6](#)). Each table identifies the study objectives defined for a given component of the evaluation and how the data sources were used to meet each of the study objectives.

We conducted in-depth interviews with participating and non-participating CDA customers in support of the new construction case study. These interviews were designed to gather details about new construction projects and determine the factors that made it more likely for a project to opt for the CDA track. As the evaluation team collected this information, it became clear that these data were useful for the CDA process evaluation as well. Because the new construction case study comparison would heavily inform the overall process evaluation, we decided to combine these study objectives.

The evaluation team also folded the review of the data tracking systems into the CDA process evaluation. At the outset of the study, each of the PAs envisioned this component of the study differently. The evaluation team was therefore tasked with a revised focus that the PAs agreed upon. This entailed conducting in-depth interviews with data tracking personnel to find out the types of information tracked for CDA projects, the advantages and disadvantages of each Sponsor's data tracking systems, and how the systems can be improved to better track CDA efforts.



Table 3-3: Data Collection and Analysis Design for CDA Process Evaluation

Study Objectives	PA Data Sources				Primary Project Data Collection								
	Program Tracking Data	CIS and Other Customer and Project Statistics	Sponsor and Industry Vendor Data	Sponsor Reports, Incentives and Applications and Program Materials	Participant Customer Survey	Non-participant Customer Survey	PA Account Executives	Participant Design Team Members (Architects, Engineers, Developers)	Non-Part Design Team Members (Architects, Engineers, Developers)	PA Managers and Staff	PA Technical Staff	Technical Assistance Consultants	Tracking System Contact
CDA Process Evaluation													
Measure participation-based penetration	•	•		•									
Examine marketing-based penetration				•	•			•					•
Assess program awareness of key market actors					•				•				
Review market intelligence system for upcoming new construction projects	•	•								•			•
Determine the timing of sponsor intervention in project life cycle	•	•											•
Examine effectiveness of program marketing and promotion		•		•								•	
Assess customer satisfaction													
Study program delivery effectiveness			•										•
Identify barriers to participation in CDA				•									•
Determine missed CDA program opportunities in the marketplace	•	•											•
Examine reasons why customer decision makers that don't participate in CDA	•	•											•
Provide key findings and recommendations to improve CDA	•	•											•



Table 3-4: Data Collection and Analysis Design for the New Construction Case Study Comparison

Study Objectives	PA Data Sources				Primary Project Data Collection								
	Program Tracking Data	CIS and Other Customer and Project Statistics	Sponsor and Industry Vendor Data	Sponsor Reports, Incentives Applications and Program Materials	Participant Customer Survey	Non-participant Customer Survey	PA Account Executives	Participant Design Team Members (Architects, Engineers, Developers)	Non-Part Design Team Members (Architects, Engineers, Developers)	PA Managers and Staff	PA Technical Staff	Technical Assistance Consultants	Tracking System Contact
New Construction Case Study Comparison													
Detail the decision making that led to CDA vs. a prescriptive program path					•		•	•		•	•	•	
Examine the role of customer profiles (building size, occupancy, etc.)	•	•			•		•	•		•	•	•	
Determine the role and timing of the program and program affiliated actors					•		•	•		•	•	•	
Determine the role of non-program market actors					•		•	•	•			•	
Examine satisfaction with program delivery and building design and function					•		•	•			•	•	



Table 3-5: Data Collection and Analysis Design for the Advanced Buildings Track Comparative Study

Study Objectives	PA Data Sources				Primary Project Data Collection								
	Program Tracking Data	CIS and Other Customer and Project Statistics	Sponsor and Industry Vendor Data	Sponsor Reports, Incentives and Program Materials	Participant Customer Survey	Non-participant Customer Survey	PA Account Executives	Participant Design Team Members (Architects, Engineers, Developers)	Non-Part Design Team Members (Architects, Engineers, Developers)	PA Managers and Staff	PA Technical Staff	Technical Assistance Consultants	Tracking System Contact
Advanced Buildings Track Comparative Study													
Compare and contrast market tracking, marketing and outreach and delivery	•	•		•			•			•			•
Compare and contrast program participation rates	•	•											
Assess differences and provide program recommendations	•	•		•						•		•	•



Table 3-6: Data Collection and Analysis Design for the Review of PA Tracking Systems

Study Objectives	PA Data Sources			Primary Project Data Collection									
	Program Tracking Data	CIS and Other Customer and Project Statistics	Sponsor and Industry Vendor Data	Sponsor Reports, Incentive Applications and Program Materials	Participant Customer Survey	Non-participant Customer Survey	PA Account Executives	Participant Design Team Members (Architects, Engineers, Developers)	Non-Part Design Team Members (Architects, Engineers, Developers)	PA Managers and Staff	PA Technical Staff	Technical Assistance Consultants	Tracking System Contact
Review of Sponsor Tracking Systems													
Review use of market intelligence data to track potential program projects		•		•			•			•			•
Review content of contact log for potential program projects		•					•			•			•
Review program tracking of accomplishments and spending	•	•		•			•			•			•
Review staff assignments and adherence to follow-through procedures		•					•			•			
Examine tracking system content for impact and process evaluations	•	•											•

3.3 Hypotheses and Implications to Inform Study Design

The study design for the CDA process evaluation was also informed by the development of a series of hypotheses that the evaluation team planned to test as it conducted research for the evaluation. The hypotheses helped guide development of questions to include on the interview guides and determine the types of information the team searched for in the PA-provided data sources. There were four areas of study for which the evaluation team developed hypotheses in regard to the CDA track. The set of hypotheses for each of these areas appears below along with their implications for the CDA process evaluation.

3.3.1 Participation

Hypothesis P1: Large offices are a key target market for CDA and participation in the new construction program via the CDA track is expected to reflect this emphasis. Large office buildings and their owners are particularly well-suited to comprehensive design-based new construction energy efficiency projects. The process evaluation effort and case studies might focus on large office results. This will ensure comparability of CDA vs. non-CDA participating case study results. Evaluation sample sizes are small and should therefore be focused on the most important business types.

Hypothesis P2: To ensure comparability, the case study sample should focus on a limited number of business sectors (for example, schools and colleges, office buildings, biotechnology facilities). To determine which segments to focus upon, the evaluation team shall ask PAs which segments are likely to be frequent participants or targets for participation, and consider that input when developing a sampling plan. Comparisons using fewer than three points are unlikely to yield meaningful results, and so it is recommended that no more than two segments be sampled.

Hypothesis P3: It may be difficult to influence national chains with a common design across regions and stores. Since many chain stores have existing designs and may be inflexible in making exceptions in Massachusetts, the PAs should consider this and act accordingly with marketing and outreach efforts. The CDA track may not prove successful in the retail segment, especially with national chains and we can test this hypothesis. It is important that the PAs think deeply about appropriate segments for CDA and segments that are unlikely to yield successes, and thereby best direct program resources and efforts.

Hypothesis P4: Other segments that we would expect to be successful using a CDA track are hospitals, government buildings, institutions, and schools. Customer decision making criteria

and drivers -- and the potential for their influence over other market actors involved in a given project -- are important considerations for the success of the CDA. The evaluation team can test this hypothesis by asking market actors whether they view these segments as being potentially successful and why or why not. These buildings are owner occupied and therefore the owners should have a longer-term investment perspective for the buildings that they occupy.

3.3.2 Customer Characteristics

Hypothesis C1: Another hypothesis is that CDA participation rates will be successful among quality seekers. Therefore CDA marketing and outreach efforts should target customers that are interested in a high quality building product, as well as the market actors that these customers work with. We can test this hypothesis in the interviews by asking if there are key customers segments -- such as seekers of low first costs or those under tight construction deadlines -- that are not suited to the CDA. This is because CDA participation may increase the duration and cost of the project from the point of concept to completion.

Hypothesis C2: We anticipate that owner-occupied buildings will be better projects for the CDA track. We can test this hypothesis in the interviews by asking whether projects that are built for sale or rent are less likely to invest time and effort in the CDA track. While built-for-sale buildings are not likely to participate in this track, it could be that rental buildings where the tenants don't pay the energy bills might motivate owners to participate, although this seems unlikely.

3.3.3 Other Market Actors

Hypothesis M1: Reaching projects through motivated designers might be another successful recruitment channel for the PAs to pursue. Sometimes designers are proponents of energy efficiency projects and can serve as valuable program trade allies that might drive CDA projects forward. During interviews, the evaluation team will gauge designers' willingness to develop CDA projects with their customers. This important potential participation channel should be explored in this study. To date, account executives have informed customers of the CDA track, but not always in time for them to adopt this strategy since it requires the input of the PAs during the design phase. Marketing to customers is an area that should be addressed more thoroughly in the program design.

Hypothesis M2: Can PAs rely on account representatives to do the heavy lifting on project identification and follow-through? Or do the program staff themselves need to do much of the marketing and outreach for CDA projects? The evaluation team needs to explore which paths to

CDA projects are most likely to be fruitful. As part of this research, the team should explore various delivery channels and provide findings and recommendations that will help the PAs achieve success with marketing and outreach efforts. In general this process evaluation should yield actionable findings and recommendations for the PAs.

3.3.4 Intervention Strategies

Hypothesis 11: Success with the CDA track requires early intervention preferably prior to the start of design efforts. Since comprehensive energy efficiency requires buy-in and input from the design team, the implementers of this approach need to influence projects at an early stage. As part of this evaluation, the team will assess Sponsors' efforts to track new construction projects in the pipeline using Dodge data and other sources, and determine if they intervene appropriately and in a timely fashion.

Hypothesis 12: An important finding to pursue in the case studies will be to gain an understanding of the efficiency gaps that remain in non-CDA projects after participation and the reasons for those gaps. The PAs are interested in deeper savings per customer project using the CDA and other program approaches. The evaluation team needs to explore why some recommendations for energy efficiency improvements are not implemented. During CDA participant and non-participant interviews, it will be important to get at the root of customer decision making and how they weigh risk management, project timeliness, and other traditional barriers that may be at play.

4. CDA Track Process Evaluation

Section 4 presents the process evaluation of the CDA track. As noted, this evaluation is based on a review of Sponsor-provided documents; in-depth interviews with PA representatives (i.e., managers, staff, and account managers), design team members, and CDA participants and non-participants. It also includes findings from a comparison study of new construction CDA and non-CDA projects and a review of the Sponsors' data tracking systems.¹⁴ This section presents a description of the CDA track and how it differs across the PAs. It then outlines the study objectives of the process evaluation. This is followed by a description of the key players involved in CDA projects as well as the steps to implement these projects.

4.1 CDA Track Description

The CDA track gives targeted large C&I customers an opportunity to maximize their energy efficiency when constructing a new building or completing a major renovation of an existing building. It is an integrated process that ideally is initiated at the beginning of the building design stage in order to ensure that all cost-effective energy efficiency opportunities are incorporated.

One of the salient benefits of the CDA is that it offers customers a way to plan for reduced operating costs upon completion of their building projects, thus allowing them to estimate their long term energy savings. Higher financial incentives are available to customers when they use the CDA instead of prescriptive or more traditional custom new construction programs. They are designed to encourage participation despite the more rigorous and time-consuming CDA process and because a minimum threshold for energy efficiency must be met. The modeling requirement of the CDA track helps to ensure that those cost-effective measures that maximize the energy efficiency potential of the project are the ones incorporated into the building design, and that the energy savings estimate includes the interactive affects of the implemented energy efficiency measures.

Prior to 2010, the CDA track was offered through the PAs' C&I new construction and major renovation programs: Design 2000*plus* (National Grid), Construction Solutions (NSTAR), and the Energy Conscious Construction Program (WMECO)¹⁵. These programs include the

¹⁴ The non-CDA projects used in the comparison study are for large commercial and industrial buildings whose projects would have qualified to use the CDA but chose not to. The customers of these projects are referred to in this report as CDA non-participants.

¹⁵ Starting in 2010, these programs are marketed under the statewide program name C&I New Construction and Major Renovation.

prescriptive and custom energy efficiency offerings in addition to the CDA option, and all of these options are available to qualifying customers involved in new construction projects or major renovations to existing facilities.

When the evaluation team interviewed the Sponsors' new construction program managers, the manager at WMECO stated that it did not actively offer or use the CDA (the CDA track exists for WMECO customers, but is rarely used), but instead relied upon the AB track as a comprehensive approach to new construction energy efficiency. WMECO's service territory is more rural than those of National Grid and NSTAR and the projects are smaller than the suggested minimum size of CDA projects. It therefore may not be cost-effective for many of WMECO's customers to engage in energy modeling to determine the maximum achievable cost-effective energy savings for their new buildings.

The program manager at WMECO stated that its customers often opted for the AB track instead of the CDA track, because it is relatively comprehensive, but is still prescriptive in nature. The AB track specifies the energy efficient measures that need to be adopted to reduce energy use by at least 20 percent. "In theory, if there were a reason to offer the (CDA track),...I suppose we would, [but] I can't think of an instance why that would be a good opportunity for the customer or for WMECO," said the program manager. The program manager indicated that projects initiated in WMECO's service territory rely exclusively on the AB track; the discussion in the CDA process evaluation therefore focuses primarily on the tracks offered by National Grid and NSTAR.

The CDA is typically reserved for larger projects, which is defined slightly differently by each of the Sponsors. [Table 4-1](#) presents the project characteristics for which the CDA is most appropriate, according to the PAs. Because the CDA track is thorough and requires the modeling and documentation of energy efficiency interactive effects, it clearly is not appropriate for smaller projects since the modeling of energy savings alone is a costly endeavor.

Table 4-1: CDA Size and Cooling Load Project Characteristics

Characteristics	National Grid ¹	NSTAR ²	WMECO ³
Building Size	at least 75,000 sq. ft.	at least 100,000 sq. ft.	at least 100,000 sq. ft.
Cooling Load	at least 150 tons	at least 200 tons	N/A

¹ National Grid. *Comprehensive Design Approach Guidelines*, National Grid: Massachusetts Customers, 2008.

² NSTAR. *C&I Energy Efficiency Programs for 2009*, PowerPoint Presentation.

³ Information based on interview with WMECO's C&I New Construction Program Manager. September 12, 2010.

Examination of data on recent CDA projects completed in the service territories of NSTAR and National Grid shows that the size guidelines have been loosely interpreted and that projects smaller than the above-listed guidelines have used the CDA track when it has been cost-effective. In addition, projects that were large enough to rely upon the CDA have opted for the AB track which has a size guideline that is roughly 20,000 to 100,000 square feet.¹⁶ A review of some of the Sponsors' documents shows conflicting information about appropriate building sizes for the CDA. For example, National Grid provided the evaluation team with a document stating that a new construction project must be at minimum 50,000 square feet, while most other documents from National Grid stated that a minimum of 75,000 square feet is the appropriate project size.¹⁷

Small building size may not be the only reason why a given project is not sent through the CDA track. Some designers may find the CDA requirements to be too cumbersome or costly upfront to the customer (i.e., costly modeling of the interactive energy savings). In other cases, the new building has already been designed and cannot be modified to meet CDA requirements unless design plans are redone. Finally many customers and designers may simply be unfamiliar with the CDA and the benefits it can offer.

Through the CDA track, the Sponsors encourage their C&I customers to incorporate all cost-effective energy efficiency improvements into new building and major renovation projects in exchange for financial incentives and technical support provided throughout the building design phase and beyond. In addition, the Sponsors pay a portion of the energy modeling costs (approximately 50%) and commissioning costs (about 25%), both of which are required when using the CDA. The financial incentives offered to the customer through the comprehensive approach are generally larger than those available through the Sponsors' other new

¹⁶ The size guideline for the AB track is also interpreted loosely by the Sponsors.

¹⁷ National Grid. *Top Ten Questions about Comprehensive Design Approach*, 2003.

construction program tracks because the CDA track requires customers to delve deeper into the energy efficiency opportunities that can be incorporated into their projects. It obligates them to reach at least a 20 percent energy use reduction compared to an equivalent code-compliant building design based on the results of a technical assistance study that is completed by a third-party. In some cases, incentives are also available to the customer's design team members as a way to compensate them for the extra time and resources required of them when their customers choose to use the CDA track.

The CDA track promises significant energy savings and provides larger incentives relative to the non-comprehensive prescriptive or custom energy efficiency approaches available for large C&I new construction and major renovation projects, however use of this approach has been lower than expected by the Sponsors. This process evaluation provides an explanation as to why customers may opt not to use the CDA track and provides the PAs with suggestions for increasing customer participation.

4.2 Study Objectives

The CDA process evaluation study objectives, summarized from the work plan, are as follows:

- Gain a qualitative sense of market penetration of both program marketing and program participation;
- Determine the level of program awareness among key actors in the new construction market;
- Assess the market intelligence of upcoming new construction projects and at what point the Sponsors are intervening;
- Gauge the effectiveness of program marketing and promotion, in terms of messaging and targeted audience;
- Assess the level of customer satisfaction among CDA participants;
- Assess the program delivery mechanism from the position of the program delivery consultants, program customers, architects, engineers, developers and other key stakeholders;

-
- Explore the degree of missed opportunities in non-CDA projects, including new construction projects that did not participate in any Sponsor incentive programs, as well as new construction projects that involved multiple prescriptive and/or custom measures, but did not participate in the CDA track;
 - Describe the barriers to program participation;
 - Provide detailed explanations as to why non-participants did not participate, from the perspective of owners, developers, builders, architects and engineers; and
 - Identify the lessons learned and specific actionable recommendations for program improvement.

4.3 Findings Based on PA Sources and In-Depth Interviews

This subsection describes the program actors involved in CDA projects, followed by a presentation of findings made about the CDA track based on a review of PA reports, CDA project documents, as well as in-depth interviews. A majority of the research conducted for this evaluation consisted of interviews conducted with:

- **CDA participants** who are ultimately responsible for the costs and design of their projects.
- **Participant Design Team Members (Architects, Engineers, Developers)** who work in the commercial and industrial building design area and who are familiar with and/or have previously participated in the CDA track;
- **PA Account Executives** who serve as the first point of contact with large C&I customers;
- **Technical Assistance Consultants** who develop the technical assistance studies and energy models for CDA projects to proposed efficiency measures and estimate savings; and
- **PA Implementation Staff** who implement the new construction programs and the CDA; also includes technical staff, such as PA engineers who are well-versed in measure-level energy savings.

4.3.1 Parties Involved in CDA

There are a number of program actors involved when a C&I customer chooses to use the CDA to complete a new construction or major renovation project. The following describes the role each plays in the implementation of a project using the CDA track.

4.3.1.1 CDA Participants

Use of the CDA track begins with a large new construction project. A Sponsor's customer is the owner of the building or project and is the one who is ultimately responsible for the building design and construction costs. The customer owns the building but is not necessarily the one who will occupy it. The customer may choose to lease out the space, in which case the energy costs of building operation will fall upon the building tenant.

4.3.1.2 Participant Architects, Engineers, and Developers

The customer typically hires a group of building consultants who comprise the design team. This group includes the project architect, electrical and mechanical engineers, and in some cases, building developers. Together, the design team develops the building design and the specifications regarding the types of equipment that will be installed (i.e., lighting, HVAC, insulation, motors). While the customer retains the decision-making power, he or she often turns to the design team for its advice regarding building planning. The Sponsors focus on informing design team members of the benefits of the CDA because they know the team heavily influences the decisions made by the customer.

4.3.1.3 PA Account Executives

A PA account manager is assigned to the Sponsor's largest customers and is usually the main point of contact between the customer and the Sponsor. The account executive keeps the customer informed of energy efficiency programs and opportunities that might be beneficial and works to coordinate meetings between the customer and program managers, staff, and technical consultants. With regard to the CDA, the account executive is often the first to inform the customer of this opportunity once he or she is made aware of a customer's new construction project.

4.3.1.4 Technical Assistance Consultants

Technical consultants can be employees of the PAs or hired from an outside firm. Their role in the implementation of a CDA project is to review, and in some cases help develop, the baseline

energy use of a building project, suggest appropriate energy efficiency measures to incorporate into the project, and run the building simulation models to determine the combination of measures that maximize energy efficiency savings, including those resulting from interactive effects. Sometimes, the customer will hire a technical consultant who is not employed by the PAs to estimate the energy savings. In these cases, the modeling results are reviewed by the Sponsors' technical staff for accuracy.

4.3.1.5 PA Implementation Staff

The implementers of the CDA track are usually the managers and staff members who are responsible for the implementation of all large commercial and industrial new construction programs. The staff's role is to hold meetings with potential CDA customers to inform them of the benefits, determine whether projects would qualify to use the CDA, and work with customers to help them and their design teams understand the requirements and incentives of the CDA track (such as the development of a baseline for their project and the technical modeling required to account for all potential energy savings). They also participate in meetings and events to inform architects, engineers, and developers about the CDA and its benefits and how they might, in turn, inform their clients about the approach.

4.3.2 CDA Implementation and Delivery

There are a number of steps involved when the CDA track is used for new construction or major renovation projects. The steps are provided here in brief, followed by a more detailed discussion of what each of these steps entails and how the Sponsors have been delivering the CDA.

4.3.2.1 Implementation Steps for the CDA

First, the PA is made aware of a new construction or major renovation project by a customer in its service territory. The customer's account executive is usually the first point of contact.

The account manager presents the customer with the tracks available in the C&I new construction program. These include the prescriptive and custom tracks, of which AB and CDA are a part. In some cases, the customer hears about the incentives offers available through energy efficiency programs from a design team member, technical consultant, or PA staff member whom they have worked with in the past.

If the customer shows an interest in the CDA and the building design phase has not begun, brainstorming meetings are set up between the customer, the customer's design team, technical

assistance engineering support, and the PA's implementation staff who are responsible for the implementation of CDA projects.

If the brainstorming meetings are successful in establishing a set of suitable energy efficiency measures, a third party technical consultant then develops an energy usage model to determine the combination of measures that results in the greatest savings (making sure to account for any interactive effects between measures).

A memorandum of understanding (MOU) is developed between the customer and the PA to specify the general CDA efficiency requirements, the portion of the modeling costs for which each party is responsible, the date by which the project is expected to be completed, and the portion of the costs each party must pay for commissioning of the building.

A technical assistance consultant conducts energy modeling which incorporates energy savings from each of the measures individually as well as the savings generated from the interactivity of the measures. The Sponsor's technical staff reviews the results to make sure that all parties are in agreement with the savings upon which the incentives will be based. There are multiple iterations of this step as the best combination of measures is determined. The final list of measures to be included is determined collaboratively. Based upon this list of measures and the resulting energy savings, the PAs determine the final incentive amount.

At this point in the process, building construction is carried out based on the plans developed by the design team with input from the Sponsor's CDA technical staff. Typically, a majority of the incentive payment is made at the completion of construction.¹⁸

After the building is completed, it is commissioned. A successful commissioning process then leads to payment of the remaining amount of incentives from the PA to the customer. In the case of National Grid, this amounts to the remaining 15-20 percent of the incentive amount. In some cases, incentives are paid to design team members as well.

4.3.2.2 Findings Related to CDA Implementation

According to PA representatives, the account executive is usually the first to hear about a customer whose project potentially qualifies to use the CDA track. Sometimes the account executive hears about a new construction project when a customer calls to request electrical

¹⁸ Based on CDA descriptions and historical project data provided by National Grid, this incentive payment is approximately 80-85% of the total. The typical percentage paid out by NSTAR and WMECO is not known.

service for a building that is in the planning or building stages.¹⁹ Other times, the account executive may find out about project plans by consulting data sources such as building permit postings in the Boston Business Journal²⁰, announcements of projects in commercial real estate journals, articles in the local newspaper, and the Dodge database of new construction projects.²¹

Another way the Sponsors may hear about new construction projects is if a customer contacts a PA implementation staff member. Staff members that already have established relationships with certain customers may be approached by them regarding the incorporation of energy efficient measures into an upcoming new construction project. Design teams might even initiate contact with the PAs on behalf of their clients if these program actors are knowledgeable about the availability of incentives for new construction projects.

Interviews with members of technical assistance firms revealed that they sometimes serve as a means of educating customers and design teams about the CDA track. According to an individual at one such firm, “We were initially hired by the architect to be on their design team, and we informed them about the CDA. The design team and the customer would have eventually learned about the incentives from their account manager, but because we were involved at the earliest stages of the process, our advice really got them motivated to contact the utility program as early as possible.”

Once the account executive or PA implementation staff learns of a new construction project, he or she informs the customer of the PA’s various energy efficiency programs, including the AB and CDA options. The account executive or PA staff member helps determine whether the CDA is applicable to the project based on discussions with the customer about the size of the project, the energy savings potential of the project, whether building design has begun, and the customer’s interest in energy efficiency.

The likelihood of the CDA being adopted is affected by the extent to which the building design is complete and the willingness of the customer to make the necessary adjustments to the building plans to meet the standard of energy efficiency required by the CDA track. Ideally, the Sponsor

¹⁹ Note that if the building is in the construction phase, it is often too late to use the CDA because the PA has not had an opportunity to provide input regarding the types of energy efficiency measures to install. It would only be eligible if the customer were willing take a step back to the design stage and incorporate the PA’s input.

²⁰ Information received during interview with an account representative from NSTAR, September 2010.

²¹ <http://dodgeprojects.construction.com/>

would learn of a new construction project at the conceptual stage prior to the initiation of any design work. This allows the PA to work with the customer's design team and technical consultants to make sure it incorporates all energy savings opportunities into the plans of the building before any construction begins. If a building's design has not been initiated or is at the beginning stages, program staff can generally intervene and successfully introduce the CDA. Other times, the account executive or staff member hears about a new construction project after the building design stage. In these cases, the CDA track is a viable option only if the customer and the design team are willing to return to the conceptual design stage of the project and revise the building plans to include the suggested energy efficiency improvements.

After the customer expresses interest in adopting the comprehensive design approach, a meeting is set up between the customer, the customer's design team, PA implementation staff, and technical assistance consultants so they can brainstorm potential energy efficiency improvements to incorporate into the building design. The concept and the benefits of the CDA are explained to the customer and the design team. According to one program staff member, the CDA encourages customers to capitalize on all energy efficiency opportunities for the new building. Through modeling, a building can be designed in such a way as to get the maximum amount of savings by incorporating the synergistic benefits based on the interaction the energy efficient measures included in the plans. "The major motivator to use CDA is really savings and, obviously, the incentive they are going to gain," said one staff member.

A memorandum of understanding (MOU) is drafted for those projects that will use the CDA track. This MOU forms an agreement stating that the customer will use the CDA and that the PA and the customer agree to share the cost of the technical study that will be used to determine the combination of energy efficiency measures resulting in the most savings.

The energy modeling study is then completed by a technical consulting team that may be recommended by the Sponsor, but is ultimately selected by the customer. The Sponsors have developed working relationships with a number of firms that specialize in technical studies used to determine the most energy efficient combination of measures for projects. The study entails defining an energy baseline for the new construction project being considered, evaluating the independent and interactive energy savings stemming from the adoption of energy efficiency measures into the building design, and performing a simulation of the energy use across the scenarios to estimate savings. In addition, the incremental construction costs of implementing the measures recommended through the CDA are calculated.

Upon completion of the study, the PA's technical staff reviews the findings and, if they are acceptable, approves them. A follow-up meeting with the customer and design team is then convened to make sure all parties are in agreement with the findings of the technical study. This is a key step since the financial incentive paid to the customer is based upon the findings of the technical study.

The customer and the design team then proceed with the new construction project based on the plans that were developed using the CDA. Upon construction completion and PA staff inspection to verify the installation of efficiency measures, a majority of the rebate owed is paid to the customer.

The building is then commissioned to ensure that the building's energy system works properly. Successful commissioning leads to the payment of the remaining balance of incentives to the customer. According to the new construction program manager at NSTAR, a commissioning agent is sometimes brought into the process at the conceptual stage to assure that the process goes smoothly. The involvement of commissioning agents from beginning to end when the CDA is used helps to ensure the quality, installation, and testing of the energy efficient equipment. After building commissioning, the remainder of the incentive payments is made to the customer and the design team (if applicable).

The impetus for this CDA process evaluation came from PA concerns about low levels of participation in this program track. Therefore key research objectives include investigating why these participation levels are so low and what can be done to increase them. Table 4-2 shows that during the 2008-2009 program period (the most recent years for which we have complete data), one of the participating PAs only had a single CDA project and another only had two projects. It should be noted that the NSTAR projects were hospitals, which explains their higher kWh/project ratios compared to the CDA projects from the other Sponsors.

Table 4-2: 2008-2009 CDA Participating Projects

Program Administrator	Program Year	Number of Projects	Gross Annual kWh Savings
National Grid	2008	11	3,721,440
	2009	11	4,322,220
NSTAR	2008	1	2,717,449
	2009	1	3,352,840
WMECO	2008		
	2009	1	1,180,771
Total		25	15,294,720

4.3.3 Barriers to CDA Participation

The evaluation team conducted an in-depth analysis of why participation in the C&I new construction programs using the CDA has been lower than anticipated in recent years, especially since the incentives available through this track are generally larger than those available through other tracks. According to program managers, staff, and account executives, some the most significant barriers to CDA track participation, are:

- A lack of customer awareness about the CDA;
- Lack of design team support for the CDA;
- The upfront costs of using the CDA;
- The recent downturn in the economy, and
- Competition with alternative new construction energy efficiency program options.

Interviews we conducted with technical consultants and design team members revealed that they did not agree with all of the above listed barriers to participation. Non-PA program actors described barriers to participation that had not been mentioned by the Sponsors such as, confusion regarding eligibility requirements to use the CDA and the lack of familiarity of equipment vendors with the comprehensive approach. These barriers are presented in this subsection as well. The following subsections discuss each of these barriers in turn.

4.3.3.1 Lack of customer awareness about the CDA

Almost universally, program managers, staff, and account executives stated that their customers are not aware of the existence of the CDA. PAs do not spend a great deal of time or resources marketing the CDA to potential participants. This likely stems from the fact that it is only applicable to a small fraction of their overall customer base and that it is more efficient to educate and market programs that are widely applicable.

When the evaluation team asked if printed marketing materials are distributed, PA representatives responded that few, if any, CDA-specific brochures exist. National Grid and NSTAR publish descriptions of projects that have used the CDA track, but these are not widely distributed. Brochures describing the new construction/major renovation programs and the available approaches were provided to the evaluation team by National Grid and NSTAR and these do mention the CDA, along with the custom and prescriptive tracks. From our discussions with program staff and account executives, however, we found that customers were rarely familiar with the CDA track. In fact, a few of the staff members interviewed were not even aware that CDA marketing materials existed.

A total of four CDA non-participants were interviewed and of this group, two were aware of the CDA. This group confirmed that there is a lack of awareness by customers about the CDA. “Because I was not aware of the CDA at the time, and I assumed that I would just be going through the regular prescriptive and customer application, I didn’t try to bring the utility aboard right at the beginning,” said one of the non-participants. “And by the time it came up, it was too late. It’s been several years, but thinking back, I think that’s where we missed the CDA opportunity.”

The evaluation team learned that one of the main methods of education and outreach of potential CDA participants is through conversations with their account executives. Customers usually make first contact with their account executive when they need to discuss the activation of electric service to new buildings and this first contact is made either during the construction phase or after the building has been completed. In either case, it is too late for the customer to use the CDA since the Sponsor did not have the opportunity to influence the building design to incorporate all potential energy efficiency improvements. Account executives are often only able to recommend the installation of prescriptive measures or for some larger projects, installing measures using the custom approach. If customers knew to make contact with the PAs at the conceptual stage or beginning stages of building planning, they would be able to recommend the use of the CDA and would have an opportunity to explain what it is.

Unlike PA representatives, design teams did not believe customers were unaware of the CDA track and therefore did not view it as a barrier to participation. Architects expressed the viewpoint that large customers with a local presence have already had past experiences with efficiency programs and were typically already aware of incentive opportunities. “Given the emphasis on LEED, green buildings design, and energy efficiency regulations, most organizations are already familiar with such programs,” said the representative of one architectural firm. On the other hand, design firms considered new building developers from outside the region to be in need of more education regarding program opportunities.

4.3.3.2 Lack of Design Team Support for the CDA

The in-depth interviews indicated that PAs are aware that direct communication with the customers about the comprehensive track has not been a successful way to encourage them to select this approach, especially since account executives usually do not find out about new projects in time to intervene. An alternative method used by the Sponsors is to educate potential design team members about the CDA track through “lunch and learn” events and making presentations at professional meetings attended by architects and engineers such as Build Boston and the BAS Committee on the Environment. According to one architect, design teams welcome these learning opportunities.

The PAs have also hired architects and engineers to meet with design team members in their service territories who might be receptive to the CDA. Customers cannot begin the design phase of a new construction project without design team members, so by recruiting them to use the CDA track, the PA staff hope that design teams will recommend it to their clients. Though these strategies have been used by the Sponsors, they have not been as successful as they had hoped.

According to PAs, design team members are resistant to the use of the CDA track. The CDA requires a customer’s design team to take additional time and resources to incorporate the energy efficient measures recommended by the Sponsor into the building design and wait for results of the technical study required by the CDA to determine the best combination of measures that maximize energy savings. A staff member at NSTAR indicated that the CDA “is very ancillary to (the design team’s) primary goal, which is to build a building... [The CDA] just slows the whole process down.”

PA staff also indicated that design firms consider the submittal of paperwork to be a burden. This view seems to be shared by some, but not all, architects interviewed. One architect, who worked with the NSTAR program, stated that “gathering all the information and filling out the

forms can take 40 hours or more for which we don't charge the client." This would be another reason why design teams are perceived as not supporting use of the CDA track. In order to resolve this burden, this architect suggested placing the paperwork burden on the PA staff and the technical consultants.

Other architects interviewed by the evaluation team did not agree with the view of program staff regarding the perception that design teams do not support the CDA track and that it requires a significant amount of additional time and resources. One architect estimated that participation added "less than one percent of incremental time in relation to the whole amount of time spent on a project." "The extra time is minimal and not a burden as long as you follow the guidelines," said another. CDA participants also disagreed with the program staff's views regarding a lack of support for the CDA by design team members. Interviews with participants showed that they felt most design teams are open-minded and willing to accept and integrate CDA and Sponsor-recommended energy efficiency technologies into their building designs.

The Sponsors, in some cases, offer incentives to the design team to encourage them to use the CDA. Yet program staff believed architects won't find these incentives large enough to compensate them for the extra time and energy required to run a project through the CDA. One program manager stated that "a lot of the architects and engineers think it's too much work, it's going to make them look bad, and we're going to ask them to do something they haven't done before, which is going to be extra work for them."

Another cost of using the CDA track is the additional time required to coordinate and manage the interactions between the design team, program staff, and technical consultants in order to develop plans that meet the CDA design objectives (i.e., maximize the energy savings of the building). A technical consultant stated that sometimes design firms mistakenly perceive program interaction as a critique of their own design. The representative attributed this misconception to bruised egos and a delicate balance of interpersonal skills between involved parties. "Sometimes the architects and engineers perceive the process as more work because our firm has to double-check their savings figures," said the representative. "Sometimes these firms perceive this process as a critique, when it's really intended to be feedback. Such personality conflicts are often overlooked."

4.3.3.3 Upfront Cost of Using the CDA

The incentives available to CDA participants are generally larger relative to those available through other efficiency tracks. However, even with the large incentives, there are still upfront costs that CDA participants incur that would not necessarily be faced if an alternative approach

to new construction energy efficiency were used. These are the costs of completing a TA study - a model of energy efficiency measures that maximizes the energy savings of the entire project. One architect estimated the cost of a TA study to be in the range of \$10,000 to \$20,000, though this cost is usually split equally between the PA and the customer. “Not every client is willing to put up the money for a technical study,” said the architect. “Sometimes it’s a cash-flow issue or the customer just isn’t convinced that putting up the additional money is justified. More of our customers would do the program if they didn’t have to pay this money up-front.” While participants agreed that the upfront costs of completing a technical study are burdensome, most agreed that the studies were worth it. They also indicated that the costs did not affect the decision to participate in the new construction program using the CDA (as long as the study continues to be co-funded by the Sponsors).

4.3.3.4 The Recent Economic Downturn

According to the PAs’ representatives, another factor affecting participation in the comprehensive track is the downturn in the economy. As a consequence, the market for new construction has shrunk. “Over the last couple years, a lot of [the issue] has been that people aren’t building buildings,” a PA staff member said. “So now there are not enough buildings being built, and the ones that are being built are on such a shoestring budget that they can’t proceed with putting efficiency measures in.” The program manager at NSTAR stated that, “budgets for our customers have been streamlined with this economy and they really don’t want to spend a lot of extra money.” Finally one new construction program manager said that there has been “little new construction since the economy tanked. It’s not a question of Advanced Building or comprehensive or prescriptive. There’s just not much happening in new construction.”

The existence of this barrier is also supported by comments made by several of the CDA participants that were interviewed. “There has been less new construction and a renewed focus on looking at existing facilities and how to retrofit all the systems,” said one. Another stated that, “market conditions played a big role in our decision and we are very sensitive to the dollars we spend.” At the margin, even when buildings are being built, they are likely to be built smaller than they might have been prior to the recession. This leads customers towards simpler energy efficiency tracks that are closer to the approaches they may have used before. In other words, the CDA track is a viable option for fewer projects than before the current downturn in the economy.

4.3.3.5 Competition with Alternative New Construction Energy Efficiency Approaches

While the CDA track offers customers the opportunity to maximize the energy savings in their new construction projects, many C&I customers opt to use the AB track or the prescriptive or non-comprehensive custom programs instead. There are a number of reasons for this, most of which have been mentioned earlier. First off, the CDA track is only available to large commercial projects (i.e., those generally in excess of 100,000 square feet). In addition, while the CDA has been used for smaller projects, it is relatively costly to engage in energy modeling for them and therefore customers may opt for a lower upfront cost programmatic option. While Sponsors generally split the cost of the study with the customer, it still requires the customer to incur costs that it would not have had to if an alternative non-comprehensive approach was used. The CDA also requires early involvement of the Sponsors to ensure that all relevant energy efficiency improvements are incorporated into the customer's building design. Unfortunately, customers do not always make contact with the PAs during the conceptual design stage and therefore the opportunity to use the CDA is often lost.

Alternative new construction programs offered by the Sponsors are typically less complex, especially the prescriptive program. The prescriptive approach simply pays the customer a pre-approved incentive when qualifying energy efficient measures are purchased, an application is completed, and proof of purchase is provided. The prescriptive track pre-determines the incentive level, which provides customers with an exact rebate amount to consider prior to choosing to participate. Participation in the prescriptive program is far greater than participation in the CDA because it is available to customers for any sized C&I project and is relatively simple to participate in. Customers are also more likely to have heard of the prescriptive program because the PAs market them to a much greater degree.

While the traditional, or "non-CDA" custom track has far more requirements than the prescriptive track, it is still less cumbersome to use than the CDA track. The custom track does require some analysis to determine site-specific energy savings of measures to be installed. This means that a baseline must be established against which the performance of the energy efficiency measure will be compared. The savings are then compared to the costs of installation to determine if the measures are cost-effective for the project in question. Once this is determined, incentives for the project are estimated. These are unique to each project. The CDA track has an additional requirement that a customer reach a 20 percent reduction in energy consumption compared to baseline and that the analysis be based on a whole-building simulation.

Sometimes, customers may agree to use the CDA track but later down the road, decide to use a different track or no track at all. Design firms were asked to cite examples of why their clients might abandon the use of the CDA. Their responses are listed below:

- “Sometimes there are political situations within an organization that preclude implementing certain types of equipment and controls.”
- “We’ve had customers who were going through the CDA process, but the project came in over budget and they elected to take out some components [hence disqualifying them from the CDA]. I usually advise them to find another area to save money, but the decision is ultimately the client’s.”
- “One client, a university, determined that the cost to do the program wasn’t justified by the savings. They figured it would have cost them more to do the program than if they did not do it. There were conflicts between the program and labor laws and union contracts.”

In two projects in National Grid’s service territory, higher rebates were offered through the AB track. The customers with these projects abandoned the CDA and switched to the AB track.

4.3.3.6 Additional Barriers to CDA Participation Mentioned by Non-Sponsor Actors

The interviews with design team members, technical consultants, and PA staff identified some additional barriers.

Design firms reported that confusion regarding eligibility requirements was a barrier. One participant complained that he received conflicting information about eligibility requirements from a single Sponsor depending on if he was speaking to the account executive or PA staff. This interviewee even went as far to suggest that program implementation should be removed entirely from the Sponsors. “I think these programs should be taken away from the utilities and become the responsibility of a third party that can issue rebates from a single program pool of resources,” he stated.

PA staff and an architect both mentioned concern with misinformation presented by account executives to customers regarding the CDA. One architect complained that account executives are unfamiliar with program details. “I’ve had poor experience with the...[Sponsor’s] program,” he said. “Sometimes, the account executive will say that a piece of equipment is eligible for a

rebate and later it turns out to be ineligible. I think the account executives should be removed from the picture and just let the customer deal directly with the program staff.”

The interviews indicated that equipment vendors were not valued as an effective means of marketing the CDA track. Unlike the prescriptive track -- in which incentives are received for measures of a specific end-use -- measures of several end-uses are needed to satisfy the CDA track. As a result, the sales pitch of a specialized equipment vendor is not congruent with the broader design requirements of the CDA track and is a barrier to recruiting additional CDA participants.

4.3.4 CDA Incentives

Because the CDA track requires the incorporation of input from PA’s technical staff regarding building design plans and to meet or exceed a reduction in energy of 20 percent, the incentives are usually larger than if the customer were to rely on the prescriptive or non-comprehensive custom new construction tracks. The incentives are meant to compensate the customer for the additional investment of time and money required in the design process and to encourage customers to achieve deep energy reductions. Sometimes incentives are also offered to members of the customer’s design team, since participation in the CDA requires their cooperation as well.

A review of the PAs’ documents shows that incentives of 75-90 percent of incremental cost are available when customers use the CDA.²² The NSTAR website states that a customer can receive “rebates up to 90% of the incremental cost differential (and) cost sharing for engineering services and commissioning services”²³ when it uses the CDA. National Grid’s CDA guidelines document states that “customers will receive an incentive of up to 80% of the incremental cost of approved electric efficiency measures, not exceeding an amount that reduces the owners cost to a one year simple payback.”²⁴ The guidelines continue on and say that a customer is eligible for an additional 10 percent on top of standard incentives if they involve National Grid’s technical designers in the building design phase and if the projected savings of the final bundle of measures is at least 25 percent. In WMECO’s 2009 Energy Efficiency Plan, it states that

²² Incremental costs are those costs incurred by the participants for any energy efficiency improvements over and above the standard baseline (i.e., approved code and/or efficiency standard).

²³ http://www.nstar.com/business/energy_efficiency/electric_programs/construction_solutions.asp

²⁴ National Grid. *Comprehensive Design Approach Guidelines*. National Grid: Massachusetts Customers, 2008.

“financial incentives range from prescriptive amounts to incremental incentives for qualifying measures, at 75% of incremental cost.”²⁵

Interviews with CDA participants revealed that the main element that led customers to opt for the CDA track for their projects was the offer of the incentives. “The main motivator is the incentive paid to include certain technologies. That is the trump card,” said one customer. “While the lower operational costs are a selling point, the major motivator is defraying the upfront capital costs of construction.”

While most CDA participants were reasonably satisfied with the level of incentives received, they did note that even higher incentive levels would allow them to install more energy efficiency technologies. The incentives were used mostly for reducing cost of new construction and energy usage and they helped reduce the payback period. A participant summed up his satisfaction by stating: “it essentially allowed me to internally get optimal systems over the lifecycle of the facility to run at the cheapest cost. So anytime I can put some money in upfront to get those systems, it helps the sustaining operational team to provide the lowest price of our product.”

4.3.5 CDA Participation Rates

Participation in the new construction CDA tracks at National Grid, NSTAR, and WMECO has been lower than expected given that the CDA offers customers higher incentives than many of its new construction program counterparts and provides a great deal of assistance related to building design and commissioning. Based on the in-depth interviews, the number of CDA projects initiated per year ranges from one up to four per Sponsor, depending on the year and PA. One of the main questions posed in the RFP for this evaluation was to seek out why participation in this track has been so low. The evaluation team uncovered a variety of explanations and these are discussed below.

The energy efficiency new construction programs available to C&I customers vary from the simplistic (i.e., prescriptive) to the complex (i.e., traditional custom and even more so, the CDA). All new construction projects can use the simpler “menu driven” approach that allows the customer to receive fixed incentives for the installation of given energy efficiency equipment. The CDA, however, is designed for larger projects for which the customer is addressing all building end-uses. Given this restriction, it is natural that participation in this program is going to be lower than the other options available.

²⁵ Western Massachusetts Electric Company. *2009 Energy Efficiency Plan*. Pg. 52.

If we look at the pool of construction projects that could opt to use the CDA track, we still see that more than a few customers choose the prescriptive or other non-CDA custom track, or no program at all. Using the CDA requires a sizable upfront investment in order to complete a technical study to evaluate applicable energy efficiency options that will maximize savings. Completion of the technical study also requires additional time that may have not been considered when the project deadline was established. When the project timeline and budget cannot accommodate the extra time required and the additional study costs, customers will choose not to use the CDA track and may opt for a different approach instead.

One technical consultant felt that the PAs are somewhat responsible for the level of participation in programs. He explained:

Utility program staff drives the decision to participate in a certain track, not the customers. Clients don't say 'I want to do the CDA track.' Prescriptive measures tend to cover the items that end up in the CDA anyway, but with the prescriptive (track) the customer doesn't get the benefit of measure interactivity. The prescriptive track is designed with the understanding that you're not going to get 100 percent realization with every installation – you're going to undershoot on some projects and overshoot on others. The benefit of the CDA is that you can determine the actual savings of a particular measure. The customer has to pay more up-front to determine these savings, but the CDA generally provides a higher incentive in the end. To do the paperwork for a prescriptive project might cost 15 percent of the cost required to do the modeling for a CDA project.

This comment suggests that PA staff could potentially direct more customers to consider the use of the CDA by informing them of this option. However, even if PA staff were to inform potential CDA customers of the comprehensive approach, it is not certain that these customers would select it.

4.3.6 Prevailing Market Sectors Using the CDA

While the CDA track is appropriate for any large C&I project, the evaluation team hypothesized that certain market sectors might be better suited to the CDA than others. When the PAs' representatives, design team members, and technical consultants were interviewed, they indicated that any project large enough would be eligible to use the comprehensive track. Yet they almost universally mentioned that schools, universities, hospitals, supermarkets, and biotech/pharmaceutical projects commonly rely on the CDA more than other market segments. These are the market sectors that are well suited to the CDA because the new construction

projects in these sectors are built to be long lasting, are generally owner occupied, and tend to be high quality seekers. Since customers in these market sectors seem to benefit from the CDA, it is an ideal market to target to recruit participants. The CDA is not a widely-known track to many C&I customers, even those who would benefit from it the most. It would therefore be worthwhile for the PAs to inform these potential participants of the benefits of this approach.

Architects and technical consultants also mentioned that any firm or company that has an interest in sustainability is well suited to the CDA. “Colleges and universities are the business sector we see using the CDA,” said a staff member from NSTAR, “especially when they are building a new dorm or lab space because those buildings will be around a long time.” The longevity of a building is a major consideration in the design and construction phase since the upfront investment in energy efficient equipment translates into less energy use and hence lower operation costs over the building’s lifetime.

According to a program manager from National Grid, large office buildings are also a good fit for the CDA track. However, a barrier to using the comprehensive approach does exist for office buildings which are not owner-occupied but which instead lease out office space. In such cases it is not in the building owner’s interest to adopt the highest energy efficiency equipment if he or she will not reap the benefits of it – the so-called “split incentive barrier.” Virtually all of the PAs we interviewed cited this as a barrier. “Typically, a landlord is...probably not of the mindset of ‘let’s make this a fantastic building so my tenants get the benefit, and they’ll understand why their leases are higher, because the energy costs are going to be lower,’” said the WMECO program manager. In fact, a manager at National Grid stated that “about 99 percent of the projects that use CDA are for owner occupied buildings and not for lease.”

While the CDA track works well for certain market segments, there are other sectors that do not appear to be well suited to the use of the CDA for new construction. Insights provided by certain PAs indicated that industrial and manufacturing projects do not tend to be built through the CDA. A program staff member from National Grid noted that they “shy away from industrial (projects) just because they don’t lend themselves to...building modeling. When someone’s building a new manufacturing process, it’s a totally different animal than if you’re dealing with HVAC and lighting systems.” This view was supported by an National Grid account executive, who said that manufacturing facilities offer “less of an opportunity than any commercial building” when it comes to using the CDA.

Finally our research found that new construction projects that are part of a national chain are not likely to use the CDA track either. Since these buildings use similar designs regardless of where

they are located, the CDA is not generally the approach the chains follow. The CDA does not fit the mold of the national chains' building designs.

4.3.7 CDA Marketing

As discussed in the “Barriers to CDA Participation” section above, one of the difficulties associated with the CDA is that most potential participants are not even aware that such a track exists for new construction projects. According to program staff and their customers, few, if any, marketing materials are available to inform customers about the CDA track. Design team members and a majority of CDA and non-CDA participants that we interviewed also noted few or no instances of receiving advertisements, brochures, or flyers describing the CDA.

According to interviews with the PAs, “word of mouth” communication between account executives and their large commercial customers is the main mode of marketing when it comes to the comprehensive track. The new construction program manager at National Grid stated that customers “have to hear about... [the CDA] ... from somebody from National Grid or from a professional who’s used the program before, because we don’t do a tremendous amount of advertising or marketing for it. There’s a little bit on our website about it, but they pretty much have to contact us or, again, somebody who’s worked for the program.” The program manager from NSTAR similarly indicated that there is not much advertising or marketing of the CDA as well. He said that the main way customers learn about the CDA is through “interactions with architects or account executives who ...set up meetings with clients in which either myself or someone from my team will go and present...the comprehensive design approach.” WMECO’s program manager concurred as well.

One design team member mentioned that PA staff used to reach out to design teams to find out what sort of projects they are working on and suggest incentive opportunities based on their feedback. However, this architect said this sort of outreach is not as common as it used to be.

Few of the design team firms reported using CDA as a marketing tool or ‘selling point’ in procuring clients. “We mention program opportunities to our prospective clients, but it is not a factor that helps the customer make a decision,” said one designer. While firms typically pitched their initial design presentation based on all available incentives, they did not consider themselves experts on program requirements and deferred to the technical assistance consultant in such matters.

WMECO’s 2009 Energy Efficiency Plan presents the marketing plan for the CDA or “lost opportunity” track for new construction by C&I customers. It states that this approach is

marketed “directly to architects, engineers, building owners, and developers by WMECO C&I Solutions Consultants, through direct contact with customers identified through trade publications, and by advertising in local trade publications.”²⁶ This reaffirms that the PA does not rely on printed marketing materials. Without such materials describing the program, it places the responsibility on the PAs to keep a look out for potential customers. The Sponsor cannot expect customers to be cognizant of the program and to seek out information. This was confirmed during our interviews with program staff and account executives. They stated that the account executive is usually the one who mentions it to their customers when they mention that they are embarking on a new construction project.

Our interviews found that while the account executive often makes the initial introduction to the CDA track, he or she usually does not provide many details and instead sets up a meeting between the customers and the program staff who work on implementing the CDA. According to the program staff, this is the role they serve. In fact, one technical staff member at NSTAR stated that he preferred that the account executives not provide any details about the CDA track. He has encountered cases where the account executive promised more savings than the CDA could deliver, and hence the customer was not pleased with the size of the incentives received.

4.3.8 Satisfaction with the CDA

Overall the CDA track received high praises from the participants interviewed. Participants who used the program were very satisfied, with over 80 percent (15 of 18 customers) planning on “absolutely” using the CDA for future new construction projects and for large major renovations, when applicable. Some customers said that the program has greatly improved over the past several years, and it makes sense to use the CDA when one has a “clean slate” because of the opportunities to optimize the building’s efficiency. For others, it is the preferred way to go, especially those projects that apply for LEED certification.

In general, participants said that they like the way the program drives comprehensive thinking about energy efficiency technologies, thereby transforming building practices in the new construction industry. They greatly appreciate the Sponsor/design team partnerships in the development phase of projects because these relationships highlight the Sponsor’s primary strengths – their energy efficiency staff expertise and support to the design team. The PAs have a great deal of energy efficiency knowledge and technical support services to offer its customers. “Utility’s technical support and cooperation allowed us to take advantage of some

²⁶ Ibid.

measures that would not have ordinarily been thought of,” said one customer. “They provide another set of eyes overseeing the project.”

CDA participants also expressed their satisfaction with the Sponsors’ detailed explanations of the program requirements, payback on the investment in energy efficient technologies, and incentives. “[The program staff] took us by the hand and walked us through the whole process,” said one participant. Another customer reported that “the account executive and utility staff consistently help us understand the current [CDA] process, what we can do, and educate us on the value of combining systems.”

There were a few aspects of the CDA track that the participants expressed some dissatisfaction with, though participants stated that these issues did not deter their participation. The first was the costs of energy modeling required to determine the appropriate combination of energy efficiency measures. Participants routinely mentioned that these costs were high, even though these costs were split between the customer and the Sponsors. Staff turnover was another area of concern. One participant said that his contact at the PA changed, thus leading to some difficulty in receiving his incentive after the project was completed. Another mentioned that the only area in which the Sponsor was lacking regarding the CDA was in providing a consistent representative.

4.4 A New Construction Comparison: Case Studies

The new construction comparison provides findings from in-depth interviews with CDA participants and non-participants, the building design team, and program staff. The purpose of this comparison is to gain an understanding of the conditions under which customers chose, or did not choose to participate in the comprehensive approach. This evaluation component characterized project-specific conditions that led to CDA versus non-CDA participation in the National Grid and NSTAR C&I New Construction and Major Renovation programs.²⁷ The evaluators included a total of twenty-four projects in the project-specific data collection activities in support of these case study comparisons. The projects were selected using a combination of the data available in the Sponsors’ tracking systems and input from PA program staff. Twenty projects were CDA-based and the remaining four were non-CDA projects that installed multiple prescriptive or custom applications for multiple end-uses.

²⁷ The manager at WMECO stated that it did not actively offer or use the CDA, but instead relied upon the Advanced Buildings track as a comprehensive approach to new construction energy efficiency.

Unlike a typical case study which provides a stand-alone analysis of a single project, our effort compared and contrasted the results obtained across the entire spectrum of in-depth interviews. To ensure comparability across projects, the analysis focused on the three business segments that accounted for most of the participation in the CDA program to date. However, it also included insights gleaned from the other segments. The objective of the analysis was to gain a deeper understanding of the decision-making process that goes into CDA customer participation. [Table 4-3](#) shows the types of business segments included in the in-depth interview analysis.

Table 4-3: Number of CDA Participant and Non-Participant Projects Analyzed Across Business Segments in New Construction Case Study

Business Segments	CDA Participant Projects	CDA Non-Participant Projects
Education: Colleges/Schools	10	2
Office, Large	4	1
Health	2	1
Storage-Conditioned	1	-
Retail-Groceries	3	-

4.4.1 CDA Case Study Analyses and Findings

This subsection presents the evaluation team’s observations and analysis of the overall CDA participant and non-participant comparison study. This analysis was based on a review of CDA project documents and in-depth interviews with customers and their design teams who used the CDA track and those who chose not to use the CDA track. The team examined participants’ motivations to implement a comprehensive package of energy efficiency measures and participate in the CDA track. Some of the topics covered in our analysis included:

- The decision-making process and circumstances that lead to CDA-specific or prescriptive/custom participation;
- What energy efficiency gaps remain if a project does not use the CDA and why they exist;
- The role of customer profiles (building size, occupancy, etc.) in determining whether projects use the CDA track or non-comprehensive track;

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- The role and timing of the program and program-affiliated actors;
 - The role of non-Sponsor market actors; and
 - Satisfaction with CDA track and non-CDA track delivery and building design and function.

4.4.1.1 Decision Making and Circumstances Leading to CDA or Alternative Track Participation

The in-depth interviews indicated that there are several circumstances and decision-making processes that lead customers to participate in the CDA versus the prescriptive, custom or Advanced Building (AB) tracks. These are discussed below.

4.4.1.1.1 Role of incentives and competition from other programs

It is clear that while the reduced energy savings (lower operational costs) are a selling point for participation in the CDA track, the main motivator in many instances is the incentive that helps defray the upfront capital costs of a project and overall energy usage costs. In-depth interviews with customers revealed that -- contrary to the belief of many of the PA staff and design team members that we interviewed -- the CDA does not always provide the largest incentives to customers.²⁸ Interviews with customers indicated that for two projects, the other C&I new construction tracks offer higher incentives for installation of the same energy efficiency measures and systems than the CDA track does. For example in one case, the customer began using the CDA for a given project. The customer's account executive provided a comparison of rebates available under the new construction approaches and based on his analysis, the AB provided a higher rebate payment. Note that this finding is based on the information provided on a single in-depth interview and the actual comparison of incentive amounts made by the account executive were not provided despite evaluator attempts to contact the account executive.

While the CDA offers customers the opportunity to optimize the energy efficiency within the whole building and maximize the energy savings in their new construction or large renovation projects, many C&I customers opt to use the AB track or a combination of the prescriptive and custom programs instead because of the higher rebates offered under these programs. One customer reported that one of their projects "started under the CDA but it made more sense to

²⁸ In general, the CDA does provide larger incentives. However in our research, two projects were found to receive higher incentives in alternative tracks.

use the AB track given the higher level of incentives offered for the same base of required information.”

Both CDA participants and non-participants noted that incentives also help reduce the payback period for a project and this provides the impetus to use energy efficient measures when pursuing new construction projects. All CDA participants and non-participants interviewed overwhelmingly stated that higher incentives would allow them to install more energy efficiency technologies, further reducing the energy usage of their facilities or buildings.

4.4.1.1.2 Technical Study Cost

While the energy modeling costs are considered a barrier to CDA participation for some PA customers, interviews with CDA participants conducted for this new construction case study review found that energy modeling does not appear to affect a customer’s decision to participate in future CDA programs - as long as the requirements are co-funded and the recommended design is reasonable. In most cases, the technical study costs are shared by the Sponsor and the customer. However, both CDA participants and non-participants stated that they would like to see lower modeling costs or have the modeling assessments completed by the PAs. This suggests that lowering the energy modeling costs could attract potential participants to use the CDA who were considering it for their building designs. “The energy modeling cost could be a little bit cheaper,” said one participant. “If the utility had a standard modeling software package to offer to their energy engineers rather than having to use an energy modeler ... that would reduce the overall cost to the customer and the utility.” A non-participant noted that the upfront modeling cost acts as a deterrent to participating in the CDA track. In general most participants reported that the technical study requirements, even though they took a fair amount of time and money, were comprehensive and worth the effort in the end.

4.4.1.1.3 Modeling Cost Analysis

Two of the four CDA non-participants noted that it was the energy modeling analysis results that influenced their decision to pursue non-CDA projects. In one case, these results showed that the project fell below the whole building energy efficiency minimum requirements to qualify for the CDA track, and in another, they highlighted higher rebates offered under the AB track versus the CDA track. The PAs are supportive of using the AB track as an alternative to the CDA since it also is a comprehensive approach to energy efficiency for new C&I construction. Without the AB track, the projects may not be able to use a comprehensive approach to energy efficiency thereby drastically reducing the energy savings that might be achieved.

4.4.1.1.4 Economic Market Conditions

Recent economic conditions have resulted in customers deferring construction projects or constructing fewer projects. For customers that participate in the CDA track during an economic downturn, the amount of the incentive plays an increasingly important role in the decision to participate. One customer noted that market conditions made them focus on their energy efficiency budget and as a result, incentives became very critical in their decision to install energy efficiency equipment in several non-CDA projects in 2009. The customer would not have participated otherwise. Another non-participant noted that their reason for using a combination of the prescriptive/custom tracks was based solely on management's decision to value engineer out several energy efficiency measures from the design. The customer did not want to make the capital investment in the CDA because of budget constraints.

4.4.1.1.5 Lack of Awareness of the CDA Program

Roughly 75 percent of the participants (representing a total of 15 projects) we interviewed did not recall receiving any marketing materials but noted that they were in contact with account executives. Of the four CDA non-participants we interviewed, only two were aware of the CDA track. One of the non-participants who is now familiar with the CDA track stated that "because I was not aware of the CDA at the time, and assumed that I would just be going through the regular prescriptive and customer applications, I didn't try to bring the utility onboard right at the beginning. And by the time the CDA came up, it was too late. It's been several years, but thinking back, I think that's where we missed that opportunity."

Another participant cited the need for CDA program staff and account representatives to make 'cold calls' to potential participants so they are aware the benefits of the program before the design phase.

4.4.1.2 Remaining Efficiency Gaps after Non-CDA Participation

One of the CDA goals is to find comprehensive projects that can take a whole-building approach, resulting in deep energy efficiency savings. For the CDA non-participants interviewed, the evaluation team cannot appropriately discuss any efficiency gaps due to the relatively small sample size (as shown in [Table 4-4](#)~~Table 4-4~~) and the variation in their projects.

Table 4-4: Non-CDA Participant Project Characteristics

Non-CDA Participants	Market Segment	Size (sq. ft.)	Business Type	Response to Q about Conducting Modeling Study Req'd for CDA
NSTAR, 2008	Commercial Real Estate - Lease	418,000	Office	Did not want to incur modeling costs
NSTAR, 2009	College/ University	480,000	Dorm/ Classrooms/Office	Commissioned the modeling study for one of the LEED requirements. We did a standard model versus designed model. Model influenced what was installed.
National Grid, 2008	College/ University	89,500	Science Bldg: Lab/ Classrooms/Offices	Model influenced what was installed. Brought EH&E (commissioning): in at early stage for entire project.
National Grid, 2009	Biotechnology/ Pharmaceutical	175,000	Research Laboratory/Office	Modeling study conducted by a vendor; would have done one regardless. Due to budget constraints did not install all recommended projects. Normally would have.

It should be noted that three of the four non-CDA participants conducted an energy modeling study. One of the non-participants completed the modeling study for LEED certification. The customer stated that they “were already pursuing efficiency. The model was basically just used for the LEED certification and actually understated the savings by probably a factor of two. It was good for us since the building was more efficient than modeled.” For the other two non-participants energy modeling was a critical component of their overall project. One of these non-participants ended up ‘value engineering’ out several recommended energy efficiency measures due to budget constraints. Two of the non-participants that commissioned this study did install all the systems/measures recommended and one of those actually went through the CDA process before switching to the AB track due to higher incentives.

For the commercial real estate market segment, there may be some missed efficiency opportunities due to lack of participation, since it is more difficult to recruit customers from this market sector into the CDA program. This is because much of the commercial real estate market develops projects to lease out building space. As discussed in a previous section, it is not in the building owner’s interest to adopt the highest energy efficiency equipment if he or she will not reap the benefits of it. However, there are some leased facilities that use the higher energy efficiency systems of the CDA as a selling point to differentiate themselves from their competitors.

4.4.1.3 Role of Customer Profiles in CDA versus Non-CDA Track Participation

Building size, market segment, and Leadership in Energy Environmental Design (LEED) certification have an impact on whether a customer participates in the CDA or chooses an alternative track (or even no track at all).

4.4.1.3.1 Customer Segments and Size in CDA

The bulk of participants we interviewed were, on average, representatives of companies with large facilities in the following sectors: Offices, Colleges/Universities, Schools, Biotechnology/Pharmaceuticals, and Storage-Conditioned. These segments have projects that are consistently over 100,000 square feet and want their buildings to be as green as possible. As mentioned earlier, PA staff stated that the market segments that do not seem to benefit as much from the CDA track include certain industrial facilities that do not find energy modeling costs effective due to their customized design.

The CDA track seems to work well for schools and universities because these types of buildings are intended to remain standing for a long period of time. It is therefore worth the investment of time and resources to use the CDA to maximize the energy savings benefits since they will be reaped far into the future. Schools and universities tend to operate in an environmentally conscious setting, which also makes the CDA track appealing.

4.4.1.3.2 CDA and LEED

Some customers said they saw the value of both the CDA program and LEED certification. Those customers that sought LEED certification were more apt to use the CDA because they both have similar technical requirements. However, the interviews also indicated that there needs to be an expansion of the types of technologies and efficiency measures that are rebated. One respondent stated that “the building was going to be LEED certified and we actually did the LEED requirements (items) parallel with the CDA.” Another participant noted that, “(the CDA) really was icing on the cake. We intended to make the building energy efficient as we could. We were pursuing LEED silver certification and we knew that working with utilities would be beneficial in making sure that we were optimizing our systems.” This customer indicated that the CDA did influence the choice of energy systems and building design as they went through the design stage.

4.4.1.4 Role and Timing of Program and Program-Affiliated Actors

In general, participants preferred to work regularly with PA technical staff during the design phase of a project since it would result in better integration of high energy efficiency technology systems and measures that would otherwise be missed. Incorporating energy efficiency technologies into the building design during the design phase of a project made it more likely it would be successfully completed using the CDA track.

From the customers' perspective, getting the PA staff involved early and having regular team meetings was extremely helpful and provided them with a wealth of information on various program options and processes (incentive levels offered, energy savings/payback scenarios, the value of combining various systems, current energy efficiency technology trends and industry activities), so they could make informed decisions during the planning and design stage. Some customers reported being in constant contact with their account executives, keeping them informed of upcoming projects and soliciting their early support.

"Timing was the major issue for us," said one non-participant. "We were a little slow in getting the local utility involved in the beginning of the project. In addition, with no experience with the CDA, we used the programs that had worked for us in the past – the prescriptive/custom programs." The customer said if they had known about the CDA track, their company would have used it for that particular project and they are now using the CDA on current projects.

4.4.1.5 Role of Non-Sponsor Market Actors

For some design teams using the CDA track for their customers' construction projects was mostly standard practice. They had a good relationship with the PAs and have learned about the CDA program via seminars and workshops sponsored by the PAs. They then in turn usually educated customers about the CDA program. The non-program market actors also played a role in notifying the PA of their customers' new construction projects and working with the program staff to see which approach would benefit the overall project most.

Overall, the CDA process was usually integral to the design team's decision-making process during the design phase of the project. Most design teams were open-minded and willing to accept and integrate the CDA and Sponsor-recommended energy efficiency technologies into their building designs. As discussed earlier, this was not necessarily the view shared by program managers and staff as discussed earlier. One respondent noted that "the CDA process is actually very helpful to the architects and engineers because it reinforces and keeps them aware of the new energy efficiency technologies that are out there."

4.4.1.6 Customer Satisfaction with Program Delivery and Building Design and Function

As discussed previously, a majority of CDA participants were very satisfied with their experience and would use this approach for future projects, when applicable. Working with a PA's program staff and their technical consultants during the design phase of a project definitely appealed to both CDA participants and non-participants. Several interviewees noted that it made building design much easier and helped optimize the energy efficiency of the buildings. Customers greatly appreciated the Sponsor/design team partnership in the development/design phase of projects because they benefited from the program staff's primary strengths – energy efficiency knowledge and technical support (providing program overviews and identification of various energy efficiency technologies and industry trends). As one customer noted, “we are hungry to learn about energy efficiency technologies. It's about reducing the carbon footprint and building greener buildings.” Another stated that the, “Utility's technical support and cooperation in the design phase allowed us to take advantage of some measures that would not have ordinarily been thought of. They provide another set of eyes overseeing the project.”

The application process worked reasonably well for 88 percent of the CDA participants that we interviewed. Based on their responses, the process was easy to work with and not time consuming. Working directly with the account representatives and technical staff and using reputable design firms that have worked with the PA in the past facilitated the integration of changes into the building design. However, two of the 20 interviewed customers that participated in the CDA track still do not have a clear understanding of how the process works or found the process either too lengthy or tedious.

According to most participants, the CDA process influenced the types of technology systems included in building designs and helped focus participants' efforts on incorporating higher energy efficiency technologies that provided the biggest energy savings. In most cases, the Sponsor's technical representatives provided guidance on the best systems options available for a given project and helped customers understand the benefits of various HVAC and lighting systems and their interactive effects. One customer noted that the CDA track has the opportunity to address capital and environmental contributions in terms of reduction in energy usage. The relationship developed with the PA provides a win/win situation for all parties. Another customer stated that the CDA process ensured that some of the systems stayed intact through some of the customers' value engineering process.

Participants said that while they were informed about the program through their account executive, more aggressive marketing should be implemented, with the cooperation of trade allies and industry groups.

4.5 Data Tracking Review

4.5.1 Overview of Tracking Systems for CDA and AB

The evaluation team conducted interviews with the lead information analyst from each of the Sponsors to characterize their respective tracking systems. [Table 4-5](#) compares the capabilities of these tracking systems and is followed by a brief overview of each system. The tracking systems are compared according to the following system capabilities:

- *Participant data:* These data include the tracking records of CDA project information regarding customer contact name, phone number, email, etc. This system capability refers only to the convenient reporting of participant names and does not include the contact information stored in project documentation; also describes to what extent capability is used by program staff;
- *Facility data:* These data include tracking records containing information describing building characteristics including square footage, building type, year built, facility use;
- *Design team data:* These data include information regarding firm name, lead contact, service type provided, phone number, email;
- *Measure-level data:* These data include records of installed measures with quantity and savings;
- *Reporting:* This category describes whether tracking system performs reporting functions or whether such functions are performed via another medium;
- *Upload documents:* This category describes whether the tracking system is capable of storing project documentation including memorandum of understanding, project application materials, technical assistance studies, and other project-specific documents. It also indicates to what extent this function is implemented by program staff;

- *Workflow management:* This category indicates whether the tracking system is capable of monitoring project status at critical junctures and notifying key staff members of upcoming or overdue milestones; and
- *Lead tracking:* This category indicates whether the tracking system provides consolidated information regarding potential customers such as new construction data (e.g. Reed Connect), “word-of-mouth” leads, permit documentation, local publications, etc.

This section also presents the findings of the interviews and prescribes a set of recommended actions for improving CDA tracking efforts.

Table 4-5: Comparison of Tracking System Capabilities

Capability	InDemand (National Grid)	eTRAC (NSTAR)	Custom Tracking (WMECO)
Customer Contact Data	Yes	Yes	Yes, but inconsistent
Facility Data	Yes	Yes	Yes
Design Team Data	Yes	Yes	No
CDA Measure-Level	Yes	No	Yes, but inconsistent
Reporting	Yes	Via CRM	Via Center Reporting
Upload Documents	Yes	Yes, but inconsistent	Yes, but inconsistent
Workflow Management	Yes	Yes	Yes
Lead Tracking	No	No	No

4.5.1.1 National Grid

National Grid’s energy efficiency tracking system, InDemand, manages program activity according to three principal functions: project documentation, workflow management, and payment processing. For project documentation, the tracking system manages energy savings data and project information. For CDA projects, customer contact information is accessible in the tracking data. Measure-level project detail and design team information is not included in the tracking data and instead can be found in project documents, such as the application. At the workflow management level, the system monitors project status at critical junctures, and notifies key staff members of upcoming or overdue milestones. With regards to payment processing,

InDemand initiates the authorization of incentives, which are disbursed via an independent payment system. InDemand is also used for reporting functions.

4.5.1.2 NSTAR

NSTAR's tracking system, eTRAC, has been in place since August 2006. The eTRAC system is a web-based Oracle application which employs customized modules to accommodate the various needs of different NSTAR programs. For each project, the tracking system displays tabulated information such as customer contacts, project summary, measures, and project milestones. Reporting functions are executed through NSTAR's Customer Relationship Management (CRM) system, OnDemand.

4.5.1.3 WMECO

In 2003, parent utility Northeast Utilities developed the Custom Tracking System to replace WMECO's Energy Conscious Construction (ECC) system. The Custom Tracking system is used exclusively for the C&I New Construction Program. Project status is described according to approval stage and up to 99 user-identified phases, each with a subset of milestones. At the phase level, the system tracks the status of key project actions such as *letter of agreement sent* or *onsite inspection*. Reporting functions are executed via the Center Reporting System.

4.5.2 Interview Findings

The evaluators asked the program staff members to describe the advantages and disadvantages of their respective systems in tracking CDA projects.

4.5.2.1 National Grid

According to an in-depth interview with a data tracking analyst at National Grid, an advantage of InDemand is the ability to upload any sort of project documentation such as a technical assistance study. Information such as customer contact data and measure descriptions are accessible through these electronic documents and can be accessed through a multi-user interface. On the other hand, measure-level information for CDA projects is not readily available without referencing project documentation. To do so requires additional effort and according to National Grid's senior information analyst this is a disadvantage of the tracking system. "The tracking system specifies 'CDA project' but doesn't capture what was installed," he explained. "The system only permits one measure end-use code per project, so more detail is not possible

for the current database structure. To access measure information, you have to reference a copy of the technical assistance study.”

While the lack of measure-level data is mitigated by access to project documentation, having measure-level data more accessible would have a couple of advantages. First it would allow the CDA staff to more easily track which end uses were addressed in the building and where additional energy efficiency opportunities might lie. It would also have a secondary benefit of helping program implementers and evaluators more readily determine whether the minimum CDA project requirements are met by a given project.

4.5.2.2 NSTAR

According to the information analyst at NSTAR, an advantage of the eTRAC system is its flexibility as a multi-user interface. “We have various staff members who need to access the system for different purposes,” he said. “With eTRAC, staff members, whether an account executive or an engineer, can determine a project’s status and find out who needs to address a specific action or milestone.” Such accessibility is crucial for any project in which various staff members such as program managers, technical representatives, and account executives need to access project information.

However, the information analyst at NSTAR also claimed that the tracking system could improve how it identifies CDA projects. “eTRAC has an indicator for CDA projects, but at the project-level it’s just listed as a custom project, so it’s not initially clear whether the project qualifies as CDA or a standard custom project,” he said. “As a result, the reporting of CDA activities is limited.” If Program Administrators expect to improve the documentation of CDA activities, the expansion of reporting to CDA projects would be an important first step. “We need to do a better job tracking technical assistance studies,” he said. Currently NSTAR technical assistance studies are not documented within eTRAC.

4.5.2.3 WMECO

The information analyst for WMECO’s Custom Tracking system touted the benefits of its workflow management function. Program staff can schedule projects and assign dates so that the system notifies them when items are due,” he said. While such capabilities are useful for program delivery, the system relies upon program staff to enter and set up notification items. If this is not done, the workflow management function is not realized.

Yet WMECO staff acknowledged there are flaws in how project data is entered into the Custom Tracking System. The database manager stated: “I don’t expect the program administrator to enter all the various data points. To do so, would require too much effort for each project. Currently, WMECO doesn’t have any staff members designated for data entry but such administrative staff would be very helpful in maintaining data quality.” While this issue does not imply an inherent fault in the tracking system, WMECO should consider such efforts to address data quality.

4.5.3 Recommended Actions

The evaluation team recommends the following actions for CDA tracking efforts:

- **Store electronic copies of project documentation.** The practice of uploading project documentation such as project application materials, letters of agreement and technical studies is very useful in the implementation and evaluation of program activities because it makes project information readily available to program implementers and evaluators in a centralized location. While all the Sponsors’ tracking systems are capable of storing project documentation, only National Grid’s system performed this task reliably. For NSTAR and WMECO projects, applications were accessible only through hard-copy folders and are not easily accessible by all parties.
- **Make CDA reporting more specific.** Some Sponsors administer the CDA track not as an independent track but as a subset of the custom track. While this relationship itself is not a problem, it makes it more difficult to conduct precise reporting on CDA activity. When reporting CDA activities, these tracking systems report all custom projects rather than a precise summary of CDA projects. It appears that some tracking systems cannot easily differentiate the subset of CDA projects from the entire population of custom projects. To make the summary of CDA activity more transparent, the Program Administrators should consider tagging CDA projects with a unique identifier or should devise a more convenient and precise method of reporting CDA activity.
- **Allow more accessible tracking of measure-level information.** Omission of measure-level data results from the holistic nature of CDA projects and tracking system design. The Sponsors’ tracking systems require that measure-level information be stored at the end-use level. The omission of measure-level data occurs when systems such as InDemand or eTRAC permit only one measure end-use per project. As a result, the multiple end-uses of a typical CDA project are not compatible with the tracking infrastructure and are therefore not recorded. While the measure information is available

through project documentation, it is not readily accessible. As noted above, having measure-level data more accessible would make it easier to identify untapped energy efficiency opportunities and confirm whether the minimum CDA project requirements are met by a given project.

- **Expand the scope of data tracking.** The Sponsors should aim to make tracking data as comprehensive as practically possible. Program delivery and evaluation efforts benefit from details regarding customer contacts, facility descriptors, and information regarding design teams and vendors. Currently, some of the Sponsor tracking systems do not capture the most basic information such as customer name and phone number. In order to access this information, staff must refer to project documentation; a process is less convenient than storing the data within the tracking system.
- **Address the need for data-entry support.** Interviews with the database managers revealed that inconsistencies and omissions in the tracking data often arose when staff members were “spread too thin.” Program staff members are often occupied with the duties associated with program delivery and have limited time to fulfill their data-entry duties. The consistency and integrity of tracking data can be greatly improved by designating additional resources such as administrative staff to support data-entry functions.
- **Incorporate the tracking of project leads.** Program staff could benefit from a tracking system that provides insight into the new construction market. The tracking system might consolidate new construction data (e.g. Reed Connect, CDC, Dodge) or might serve as a repository for the “word-of-mouth” leads gathered from the design community and local publications. One possible approach is to track new construction projects on a statewide basis and have an existing CDA staff member from each PA dispatched to follow new leads in their service territory. A centralized location for project leads would assist program staff in identifying and monitoring potential CDA participants. This recommendation was discussed with the database administrator at NSTAR who was skeptical of the ultimate worth of such a function. “We have considered adding the capability of downloading new construction information, but it hasn’t been a priority because if the program team has access to a separate new construction source, it’s not necessary,” he said. While integrating lead data with the tracking system might create a redundancy, the evaluation team found that program staff members were not even using the primary new construction data source. By providing ready access to new construction leads, program staff might be encouraged to use such data more often.

5. CDA Process Evaluation Findings and Recommendations

The goals of this process evaluation are to: 1) explore how well the CDA track captures potential energy efficiency savings in the commercial and industrial (C&I) new construction and major renovation markets; 2) identify barriers to customer participation; and 3) develop actionable recommendations to improve the effectiveness of the CDA. Section 4 summarized the major findings of the evaluation team's review of CDA data and in-depth interviews. This section presents actionable recommendations to improve participation in the CDA track and increase the track's contribution to portfolio energy savings.

5.1 Findings and Recommendations

Based on a review of the data sources and insights provided by program actors during in-depth interviews, the evaluation team developed a number of findings regarding the CDA track. These findings pertain to CDA-related topics such as implementation efforts, marketing approaches, barriers to customer participation, incentive structure, and the most prevalent market segments that participate in the CDA track. The following section outlines the findings and recommendations of this research.

Finding #1: One major barrier to customer participation in the CDA track is the upfront cost of completing a technical study. CDA participants indicated the difficulty with paying the technical study costs upfront. The costs are split between the PA and the customer, yet it is still an upfront cost that is incurred by the customer that would not necessarily be faced if a non-comprehensive track were used.

Recommendation #1: Reduce the costs associated with the energy modeling study required for the CDA or alter the payment arrangement so that it is less burdensome on the customer upfront. A possible solution would be for the PA to initially absorb the cost of the study, and then deduct the amount from the final incentive offer. This would relieve the customer of the burden of facing an upfront cost to participating in CDA. This proposal was discussed with one program manager, who suggested that the customer's cost liability for such a study was negotiable in cases where it was perceived to be a barrier.

Finding #2: Other barriers to using the CDA track include a lack of customer awareness about the CDA track and competition with alternative energy efficiency programs that may be simpler or faster to use. Discussions with PA staff, account executives, design team

members, customers, and technical consultants indicated that customers were less aware of the CDA than alternative non-comprehensive new construction programs. Customers do learn about the CDA from their account executives, but often this occurs after the building design phase is completed.

Recommendation #2: Use a variety of marketing methods to inform customers of the CDA track, including printed materials and communication via account executives. In the process, make sure to inform customers of the relative benefits of CDA over competing approaches that may be simpler to use, but result in smaller long term energy savings and offer lower incentives. By educating account executives about the details of alternative new construction programs and informing them of the benefits of using a comprehensive approach, they can pass this information on to their customers, who in turn may be more likely to use the CDA over other new construction approaches to energy efficiency. Reiterate this information in printed form for mass distribution in an effort to target potential CDA participants who have yet to begin the design phase of their projects.

Finding #3: Account executives are usually the first to hear about new construction projects that may qualify to use the CDA track. They are often alerted to projects when customers call to request new electrical service for buildings that are in the planning or building stages. Another way account executives find out about new projects is through trade publications and the Dodge database of new construction projects. Based on interviews with program staff, account executives have a general understanding of the CDA, but are not familiar enough with the details to fully describe the benefits of the track to potential participants.

Recommendation #3: Since account executives are usually the first to hear about new construction projects, the Sponsors should ensure that they are well informed about the CDA track so that they can explain the program requirements and benefits to customers when they are first in contact about a potentially qualifying project. Account executives are in a unique position to guide customers with appropriate projects towards the use of the CDA track since they interact most directly with potential participants in the commercial and industrial sector. Customers interested in pursuing energy efficiency solutions would instinctively turn to their account executives as the first step. For those projects where it is not too late to intervene, the account executives may be able to persuade customers to opt for the CDA track. Arming the account executives with details about the CDA provides them with an opportunity to inform and potentially attract new construction projects that can use a comprehensive approach to building design.

Finding #4: Often, account executives find out about projects that would benefit from the CDA approach after the design stage is complete. As stated in Finding #3, customers often do not inform their account executives about projects until it is too late for the CDA approach to be utilized.

Recommendation #4: Incorporate the tracking of project leads into a database so that program staff and account executives can learn about potentially qualifying CDA track projects in time for this approach to be used. Account executives do look to new construction databases such as Reed Connect and Dodge, but a centralized repository of information does not exist. This type of database would assist account executives in the identification and monitoring of potential CDA participants and would potentially increase participation in this track.

Finding #5: The PAs market the CDA track to customers through their account executives by relying on “word of mouth”. According to the new construction PA program managers we interviewed, customers usually hear about the CDA from account executives. Account executives serve as the main point of contact between customers and PAs, therefore they are responsible for informing their customers of relevant energy efficiency opportunities, such as the CDA track.

Recommendation #5: By focusing on educating potential design team members about the CDA through workshops and “lunch and learn” events, in addition to informing customers via account executives, Sponsors are more likely to have their customers learn of CDA track benefits. By engaging potential design team members in addition to marketing the CDA track to customers through account executives and marketing materials, the PAs have a better chance of getting customers to engage with the Sponsors early so that the comprehensive approach is a viable option. Customers cannot engage in building design without hiring a team of architects and engineers. It is important to get the buy-in of design team members so that they encourage their clients to use the CDA track.

Finding #6: Printed marketing materials are not the primary method by which the Sponsors inform potential customers and the design team community about the CDA. All program actors interviewed unanimously agreed that the presence of CDA marketing materials is limited. The PAs instead rely on the account executives to inform customers about the CDA when they are engaged in new construction or major renovation projects.

Recommendation #6: The PAs should increase their distribution of marketing materials to its customers and potential design team members to more effectively market the CDA

track. It would be worthwhile to invest in the development of CDA-specific brochures to mail out to potential participants, architects, and engineers so they are aware of the track prior to developing building plans. This marketing approach is recommended as a way to enhance the PAs' current CDA marketing strategy, which is to communicate through account executives and presentations made by program staff at trade shows and to design team members.

Finding #7: Participants are very satisfied with the CDA track and over 80 percent plan on “absolutely” using this approach for future new construction projects and for large major renovations, when applicable.

Recommendation #7: Create a database, or annual report, of past program participants to document all information about their CDA project. This will allow account executives to actively follow up with these participants on a regular basis to make sure that they do not miss an opportunity to use the CDA track for future projects. If a database is created, it can also be used to track inquiries made by customers about new construction program approaches so that these customers can be actively marketed to as well.

Finding #8: CDA participants are reasonably satisfied with the incentives received. However, they do note that they would prefer the rebate payment be broken up into smaller payments as interim project goals are met, rather than receiving most of the incentive after the construction phase is complete. They expressed an interest in receiving some of the incentive dollars as initial stages of the project are completed so that these funds could be used to help finance construction costs.

Recommendation #8: To address the CDA participants' desire to receive smaller incentive payments throughout the project, the evaluation team recommends dividing the rebate payment up into milestone payments over the course of the project.

Interviewed participants noted that it would be beneficial to receive more of the incentive payments upfront, as they could be used to help finance construction costs and would be especially useful given the current state of the economy. In order to minimize the risk of customers dropping the use of the CDA track mid-project, incentive payments should be paid over the course of the project as opposed to paying a majority of the incentive upfront.

Finding #9: The incentives available through the CDA are usually, but not always, larger than those offered through the other new construction program tracks. During interviews with CDA non-participants, the evaluation team did find two cases where incentives were actually larger under the alternative program tracks (one was through the AB track and the other

was through a combination of the prescriptive and custom tracks). In general, however, the CDA track provides the largest incentives of the new construction program tracks.

Recommendation #9: Rather than assuming the CDA will provide the largest incentives to customers, the PAs should evaluate the total incentives customers would be eligible to receive under each of the approaches. During brainstorming sessions, the program managers and staff should sit down with the customer and the customer's design team to make sure that not only is the CDA providing the largest energy savings for the customer's budget, but that the customer receives the largest incentives available under the program.

Finding #10: Certain market sectors, such as schools, universities, hospitals, supermarkets, and biotech/pharmaceutical companies participate in the CDA track more than others. Virtually all program actors agreed that these segments use the CDA track most for their new construction and major renovation projects. These segments appear more applicable to the CDA track as they tend to have larger projects for which the CDA is cost-effective, and are owner-occupied, making the investment in energy efficient measures worthwhile.

Recommendation #10: Target CDA marketing towards the market segments that have historically used and benefited from the CDA as a way to increase participation in this track. The CDA benefits certain market sectors more than others and one way to increase participation is to inform customers in those market sectors who are still unaware of the benefits offered through the CDA. Brochures describing projects specific to these sectors could be created and distributed to potential participants as a way to show how customers in the same lines of business benefited from addressing energy efficiency in a comprehensive manner. It is unlikely that customers in those market sectors that have not historically benefited from the CDA will find it worthwhile to use this track; therefore marketing to these customers may not result in much additional participation. These customers may be involved in projects that are smaller than those that qualify to use the CDA track and may instead be directed towards the use of the Advanced Building track, the traditional custom track or the prescriptive track as alternatives.

5.1.1 Additional Insights

Architects expressed that certain large customers with a local presence in the service territories of the PAs have likely used energy efficiency programs in the past and, as a consequence, have been exposed to the CDA track. Large experienced customers, according to the architects and technical consultants interviewed, are cognizant of the importance of involving the PAs in their projects in the early stages in order to take into account

the input of the program managers and staff regarding energy efficiency measures. Based upon their experience, large C&I customers know the importance of engaging with the PAs before the design stage of a project is completed in order to ensure that they have considered all cost-effective energy efficiency measures available for their buildings. This provides the PAs with an opportunity to ensure customers are aware of the CDA.

Participants stated that they were very satisfied with CDA track and over 80 percent (15 of 18 customers) plan on “absolutely” using this approach for future new construction projects and for large major renovations, when applicable. Several interviewees mentioned the important role the program managers, staff, and account executives played in alerting them to the opportunities to reduce energy usage. Others noted that one of the main advantages to using the CDA is the comprehensive approach to the installation of energy technologies.

One technical assistance firm specified the need for a project champion to ensure clear communication among the various parties involved in a CDA project. The evaluation team supports this as a recommendation to the PAs. The consultant stated, “During the design phase, all the equipment specifications are nice and rosy but sometimes during the construction phase, a contractor, who doesn’t know about the program, makes an equipment substitution. As a result, there is a lost opportunity and the incentive is reduced. The requirements of the program get lost in translation unless you have a project champion or an owner who is really involved and who reminds the various parties of their responsibilities in fulfilling program requirements...An easy way to improve the program would be to have a project champion to make sure that things don’t get lost in the construction phase.”

Streamline the processes related to the implementation and delivery of the CDA track.

The Sponsors’ CDA processes were acknowledged to have improved over time, yet there were multiple observations indicating that they still need to be further streamlined. A key complaint was the time required to get the PA’s review and approval for a design plan and application. Some projects did not participate because necessary approvals could not be obtained in time to meet the project schedule. Some felt the delay in design and application approval process was due to the limited staffing and resources of the Sponsors’ engineering review staff. The technical staff is well respected, and their input on projects is considered valuable by all program actors; however, they apparently are not available enough to always meet demand.

PAs should offer more diverse applications of systems and technology opportunities through the CDA track. Fuel switching and the inclusion of renewable fuels were recommended applications. This provides customers with a variety of implementation



possibilities and ensures incentives are not limited to a certain set of technologies. If the PAs observe an increase in participation through the CDA once these changes are made, then a missed opportunity will have been captured.

6. Advanced Buildings Track Comparative Study

6.1 Introduction

The Advanced Buildings track assists building owners and design teams in creating high performance and energy efficient commercial buildings. Advanced Buildings is a national program, but is sponsored locally by program administrators. The Massachusetts Program Administrators offer Advanced Buildings as a comprehensive new construction track, with incentives available according to square footage. The central component of this track is the *Core Performance Guide*, a training manual developed by the program's developer, the New Buildings Institute (NBI).

The Massachusetts Program Administrators noted that participation in the Advanced Buildings track was lower than desired. This study analyzes the current delivery model and compares it to similar efforts in Maine and Vermont to determine how participation and program effectiveness might be improved. This research examines customer participation in different programs and identifies differences in program implementation. The ultimate goal of this study is to identify the lessons learned and to present a set of program best practices.

Furthermore, this study does not account for the overall number of program options offered by each of the Program Administrators. Therefore, it is unclear at this time how the option to choose an alternative track such as CDA, prescriptive, or custom ultimately affects the customer's decision to participate in the Advanced Buildings track.

6.2 Methodology

This comparative study is based upon the information gained from in-depth interviews conducted with program implementation staff in Massachusetts, Vermont and Maine. Additional interviews were conducted at the regional and national levels with North Atlantic Energy Advisors, a firm which provides consulting services for the Maine program, and with the NBI.

[Table 6-1](#)

Table 6-1 summarizes the interviews conducted for this study. This study also incorporates the results of interviews conducted with Program Administrator staff, architects, and engineers as part of the overall Comprehensive Design Approach (CDA) process evaluation.²⁹

Table 6-1: Interviews Conducted for Advanced Buildings Study

Agency	Conducted
National Grid	2
NSTAR	1
WMECO	1
New Buildings Institute	1
North Atlantic Energy Advisors	1
Efficiency Vermont	1
Efficiency Maine	1
TOTAL	8

The study is also supported, to a lesser extent, by a review of program literature, program implementation plans, and tracking data that illuminate differences in participation rates across these programs. The study did not seek to acquire tracking data or project application materials from energy efficiency program implementers in Vermont and Maine. Due to the early stages of these programs, there are no publications or activity reports regarding program success and participation rates. As a result, participation rates are estimates, rather than precise figures.

The Advanced Buildings programs offered by Efficiency Vermont and Efficiency Maine, the independent energy efficiency program administrators in those states, were chosen for this comparison because these programs are reported to enjoy high participation rates. However, the nature of these entities as energy efficiency program implementers may limit the conclusions drawn from a comparison with the Massachusetts Program Administrators. Efficiency Vermont and Efficiency Maine, unlike the Massachusetts Program Administrators, have no direct association with a sponsor utility, but rather focus solely on energy efficiency.

This study compares and contrasts the Advanced Building programs offered by the Massachusetts Program Administrators with those offered in Vermont and Maine according to the following criteria:

²⁹ While the RFP's scope of work for the CDA process evaluation did require participant interviews, it did not require these for the Advanced Buildings evaluation.

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- Program delivery methods;
 - Reported program participation and penetration rates;
 - Effectiveness of marketing and outreach activities;
 - Market tracking systems;
 - Program successes;
 - Barriers to program participation;
 - Lessons learned; and
 - Best Practices.

6.3 Program Delivery

The Advanced Buildings program in Massachusetts is a component of the commercial new construction program portfolio which targets projects that are smaller in scale than CDA projects.³⁰ ~~Table 6-2~~ [Table 6-2](#) presents the year in which Advanced Buildings was first offered and the targeted building size for each program. The nature of each Advanced Building track varies among the Program Administrators according to size and the new construction environment in each service territory. The program manager for the NSTAR program pointed to economic factors as affecting the size mix of the participating buildings. “Over the past five years, because of the poor economy, we are seeing a greater number of smaller buildings and not so many buildings over 100,000 square feet,” she said. Due to these differences in the new construction environment, the targeted building size may vary between programs. This section examines the delivery strategy of the Advanced Building programs implemented by National Grid, NSTAR, and WMECO in comparison to the strategy of programs implemented by Efficiency Vermont and Efficiency Maine. Comparisons are made on program characteristics such as participation, incentive structure, staff roles, measure approach, and delivery channel.

³⁰ The CDA track is intended for new construction projects greater than 100,000 square feet. Advanced Buildings Core Performance is intended for new construction projects that are 70,000 square feet or smaller, but may be applied to any sized building.

Table 6-2: Program Overview

Program	Start Year	Targeted Bldg Size
National Grid	2006	20,000 - 100,000+
NSTAR	2006	20,000 - 100,000
WMECO	2008	10,000 - 100,000
Efficiency Vermont	2008	10,000 - 70,000
Efficiency Maine	2009	10,000 - 70,000

6.3.1 Completed Projects & Pipeline Projects

Table 6-3 compares the estimated participation levels of the various Advanced Buildings programs including both completed projects and projects in the pipeline through December 2010. Program staff provided participation data for National Grid, NSTAR and WMECO. For the Efficiency Vermont and Efficiency Maine programs, the participation figures are estimates based upon staff interviews and the project directory published by the New Buildings Institute.³¹

Table 6-3: Comparing Advanced Buildings Programs by Participation

Program	Projects Completed since Program Start	Projects Completed in 2010	Projects In Pipeline or Completed in 2011
National Grid	12	5	14
NSTAR	7	4	8
WMECO	2	2	1
Efficiency Vermont	10	6	6-10*
Efficiency Maine	4	4	10

*estimated

National Grid introduced its Advanced Buildings track in 2006, and since that time has completed twelve projects. During the past year, customer recruitment has been less successful despite continued program marketing efforts. Program staff reported that only “one or two percent” of those approached by the program proceed with an Advanced Buildings project and that it would be difficult for the program to meet savings goals.

³¹ “Project Directory & Case Studies,” New Buildings Institute. <http://www.advancedbuildings.net/tools-guidance/core-performance/case-studies-profiles>. 2010.

The NSTAR program has had some success with recent recruiting efforts. According to the program manager, “every person that we have spoken to about Advanced Buildings has signed up. We have been much more successful with the Advanced Buildings track than we have been with the CDA track.” While only four projects were completed in 2010, there are eight projects due for completion in 2011 and an additional fourteen *memoranda of understanding* (i.e. preliminary application documentation). However, NSTAR has been strict in selecting and maintaining participating customers and no projects were canceled or dropped in 2010. Since 2008, a total of seven Advanced Buildings projects have been completed by NSTAR.

WMECO’s program is relatively new and has modest participation numbers partly due to the size of the program territory and its lack of new construction projects. There are two projects completed to date, with one project in the pipeline for 2011. The program is not expected to meet its savings goals.

Efficiency Vermont initiated its Advanced Buildings track in 2008 but projects did not enter the pipeline until a full year of program outreach and customer training had been completed. In 2010, six projects were completed. Starting in 2011, Efficiency Vermont expects to complete six to ten Advanced Buildings projects per year, with a stretch goal of ten to fifteen projects. Out of a pool of 40 to 50 customers who expressed interest since the program’s inception, approximately half discontinued participation in Advanced Buildings and elected to participate in a traditional prescriptive or custom track instead.

Efficiency Maine launched its Advanced Buildings initiative in 2009. The program currently has approximately 14 projects in various stages of development. Four projects were expected to be completed by the end of 2010. Efficiency Maine markets its program directly to the design community and end-use customers and these efforts have produced a high success rate. Of the dozen architects who met with program staff, all but one has submitted a project through the Advanced Buildings track.

6.3.2 Incentive Structure

Each Advanced Buildings program offers incentives according to a simple formula based upon square footage. These incentives are listed in

[Table 6-4](#)

~~Table 6-4~~. In general, the Massachusetts Program Administrators offer more incentive money per square foot than Efficiency Vermont and Efficiency Maine. All programs offer additional

prescriptive and custom incentives for enhanced performance strategies, which extend beyond the core program requirements. Starting in 2011, all Massachusetts Program Administrators will offer a consistent \$1.50 incentive per square foot for electric and gas measures.

Table 6-4: Comparing Advanced Buildings Programs on Incentive Structure and Target Building Size

Program Implementer	Base Incentive per Square Foot	Targeted Building Size
National Grid	\$1.50	20,000 – 100,000+
NSTAR	Offices: \$1.56	20,000 – 100,000
	Schools: \$0.74	
	Retail: \$1.46	
WMECO	\$1.50	10,000 – 70,000
Efficiency Vermont	\$0.50	10,000 – 70,000
Efficiency Maine	\$1.00	10,000 – 70,000

Efficiency Vermont offers a base incentive of \$0.50 per square foot, which is the least among the comparison programs. An additional incentive of \$0.10 per square foot is available if the customer provides documentation of their *design process strategies* in advance. In most cases, this requires little additional effort because such documentation is readily available, especially for buildings which intend to pursue LEED certification. According to program staff, total incentive amounts for a typical project starts at \$15,000 to \$25,000.

Efficiency Maine offers \$1.00 per square foot, which is greater than the incentive offered by Efficiency Vermont but less than that offered by the Program Administrators. The Efficiency Maine program manager stated that the program could benefit from a greater incentive amount.

The National Grid program offers a base incentive of \$1.50 per square foot for electric measures. Nevertheless, a program staff member suggests that this incentive may not be significant enough to entice customers to participate. Also, National Grid targets larger buildings than most other implementers. The upper threshold for eligible building size is 100,000 square feet rather than the threshold of 70,000 square feet established as a “soft cap” by NBI. On one occasion, National Grid authorized a project with a size of 130,000 square feet.

Prior to adopting the MassSave incentive of \$1.50 per square foot, NSTAR implemented an incentive calculation that varies according to building type. Participating retail buildings and offices received the most incentive money per square foot, whereas schools received the least

incentive money. Program staff reported that total project incentives have ranged from \$18,000 to \$100,000.

The WMECO program, which typically works with smaller-scale buildings, offered a standard incentive of \$1.50 per square foot.

6.3.3 Program Activity by Market and Building Type

According to NBI, the Advanced Buildings Core Performance model is best applied in small office, retail, and school applications while benefits diminish with lodging, multifamily, and assisted living applications. In general, each Advanced Buildings program we studied follows these guidelines. The evaluators asked program managers which customer markets were most likely and least likely to participate in Advanced Buildings programs. [Table 6-5](#) summarizes their responses and the subsequent paragraphs provide additional detail. These responses are not intended to be comprehensive but merely indicative of the responses given by program staff.

Table 6-5: Comparing Advanced Buildings Programs on Activity Level by Market and Building Type

Program Implementer	Active Markets	Inactive Markets
National Grid	Schools, Universities, Health Facilities, Offices	Manufacturing
NSTAR	Schools, Public Assembly	Tenant-occupied buildings, Offices
WMECO	Office, School, Retail	Industrial, National Chains
Efficiency Vermont	Universities, Ski Resorts, Regional Grocery Chains, Airports, Office	Schools, Box Stores, Retail
Efficiency Maine	Office, Education, Public Assembly	National Chains, Box Stores

Universities and schools have proven to be an excellent fit for Advanced Buildings programs because these buildings are owner-occupied and designed with consideration for long-term benefits. According to the staff members of various programs, these customers demonstrate a greater willingness to pursue energy efficient construction and are more likely to take on the additional time required by program participation.

Many of the sectors targeted by the programs experienced inactivity due to low construction rates. Efficiency Vermont, for example, indicated a recent decline in the construction of local city school districts, rather than university. “Unlike Massachusetts, we have an established base of schools,” said the program manager. “There are some consolidation projects and some

renovation projects, but there is not much new construction for schools right now. The few school projects that we do have tend to be quite small – less than 30,000 square feet.”

The retail market has been difficult to access in the territories such as Efficiency Vermont, Efficiency Maine and WMECO where there are very few large retailers in these program territories. However, with regional supermarket chains Efficiency Vermont has had some success.

Most Advanced Buildings projects pertain to owner-occupied facilities. Program staff commented on the difficulty inherent in recruiting property managers and tenant-occupied buildings into the program because “when the tenant pays the energy bill, these building owners don’t have any incentive to be efficient.” There were, however, rare cases in which building owners were interested in energy efficient construction through Advanced Buildings with the intention to market the rental space as “green offices.”

6.3.4 Delivery Channel

Advanced Buildings simplifies the participation process by using standard assumptions for energy reduction and financial incentives, but requires that program staff become involved in the early design stages of each project. In theory, program opportunities are maximized when program staff members enter the design process as early as possible. There are two approaches to accomplishing this: 1) intercept the customer on a project-level basis, or 2) educate the design community on program benefits so that they can inform their customers of the program. Each approach has its supporters and skeptics.

The WMECO program recruits customers on a project-level basis and gives program presentations on an *ad hoc* basis. Proponents of the first method emphasize the importance of intercepting the customer during the conceptual design phase, if not earlier. The WMECO program manager commented:

Typically, when we get a new construction project, the customer is at the conceptual design phase and already has retained a design staff. At this stage, it is still possible to influence decision. If the program enters at a later stage, such as the schematic design, we are basically asking them for a change order, and by that time it is too late. Once the design is in place, they are not going to go back and redesign changes on account of the program.

A spokesperson for North Atlantic Energy Advisors also supported this customer-oriented approach and questioned the effectiveness of marketing the program through the design community. “A couple of years ago, the general belief was to sell Advanced Buildings through architects and engineers,” he said. “I believed it at the time, but I think the market has changed so that now you have to go to building owners and prospective owners. Advanced Buildings can be attractive to the subset of owners who are interested in green building, but are not necessarily looking for LEED certification.”

This customer-oriented approach, however, depends on the availability of efficiency-minded building owners and may have its limitations in other scenarios. The program manager at Efficiency Maine believed that the design community should be the target of program outreach. He stated:

In my opinion, there's little value in personally going to the customer. In Maine, we don't have lots of developers or large property owners with whom we can establish long-term relationships. The architects and engineers are the first point of contact for any project so they should be the ones who are aware of the project and should be selling the program. It's our approach to inform this architect about the program and let the architect say to the owner, "There's a program at Efficiency Maine that might be a good fit for your building, so let's see if these measures can be incorporated into our plans." That's the approach that we have taken at Efficiency Maine and I don't see why this approach wouldn't be the best approach in any jurisdiction.

The NSTAR approach emphasizes the importance of reaching out to the design community. Program staff visit the offices of local architects to present program offerings and to recruit projects. According to the NSTAR program manager, “*For a project to be successful, the program needs to enter very early in the design phase, and in order to do that, we need to be part of the design team. For this reason, the architect is the most important person to reach and to make embrace the process.*” This approach is supplemented by a reliance on word-of-mouth discussion of which customers have upcoming new construction projects.

In consideration of the advantages and disadvantages of each approach, perhaps the appropriate delivery method is a hybridized one. For example, the National Grid program embraces both the customer-oriented and the design community approach. The former method is implemented through a sales team of energy efficiency consultants (EECs) who use new construction leads to recruit customers who are engaged new construction. The

latter method is implemented through outreach activities at the offices of local architects and the annual *Build Boston* event.

6.3.5 Role of Account-Level Staff

While *PA* account management staff have many different responsibilities than those performed by account managers at the energy efficiency program implementers in Vermont and Maine, there are many similarities between the two job descriptions. In either sector, account managers are assigned a specific customer or customer segment and are expected to give personalized support throughout the participation process. At Efficiency Vermont and Efficiency Maine, however, energy efficiency is the principal focus of account-level staff.

Also, it is important to note that customer accounts with small loads (e.g. <200 kW) may not have a dedicated account executive. For this reason, the term *account management staff* is used to describe account executives and account staff who service customers with a relatively smaller load.

According to interviews with program managers and *PA* staff, account management acts as a liaison between the customer and program implementation staff but has a very limited role in actively marketing the track. If a customer expresses interest in the Advanced Buildings track, the account management staff member refers the candidate to program staff and arranges a meeting between the two parties. Account management has a limited role in the process that follows. *PA* program managers feel that while account executives should have a fundamental understanding of program offerings, they are not intended to serve as the face of the program.

This approach contrasts with the philosophy of Efficiency Vermont and Efficiency Maine, which encourage a good deal of marketing and outreach through the account managers. The account managers at these organizations have a narrower scope of duties compared to the Massachusetts account executives whose responsibilities also include transformer installations, grid connections, and customer outages. The role of staff at Efficiency Vermont and Efficiency Maine is limited to program-related duties. At these programs, the role of the account manager is similar to that of a sales representative of a product company. The account manager is expected to personally contact and perhaps visit potential customers and members of the design community in order to promote the program.

6.3.6 Advanced Buildings is a Comprehensive Approach

The energy savings attributed to Advanced Buildings projects are contingent upon fulfilling all 13 of the Core Performance requirements. According to an NBI spokesperson, “over the past few years there has been a long discussion with the Massachusetts PAs about how the program has the most value as a comprehensive program and the least value as a measure program.”

However, sometimes the implementation of Advanced Buildings in the Massachusetts model differed from the uniform design developed by NBI. On occasion, the Massachusetts Program Administrators have excluded certain measures required by the Core Performance guidelines. For example, a WMECO program manager stated: “If a particular measure precludes participation, the program can insert a clause to waive this measure requirement. For instance, we had a small school that had no mechanical cooling, so our contract waived the one cooling requirement.” While such exceptions are understandable, too many of these types of adjustments could undermine the fundamental uniformity of the program. According to a NBI representative, “the economics and savings of Advanced Buildings are based on buildings with central mechanical cooling systems.”

That being said, the Massachusetts PAs do recognize the importance of maintaining the integrity of the Core Performance requirements. “The customers really need to meet all 13 requirements because if they do not meet these requirements, the building isn’t getting enough savings and therefore the program cannot fully justify the incentive,” said a NSTAR program manager. However, in some cases, a non-comprehensive approach was taken because program staff was not able to intercept the customer and design team at an early stage.

Program staff in Vermont and Maine were vocal in their commitment to the comprehensive approach which NBI intended for Advanced Buildings. An NBI technical committee met in order to develop consensus regarding a consistent approach to program implementation. During these committees, Efficiency Vermont and Efficiency Maine expressed the view that partial enforcement of the Advanced Buildings requirements detracts from their programs in that savings are not fully realized. Speaking on behalf of these energy efficiency program implementers, North Atlantic Energy Advisors stated, “We think providing exceptions erodes the credibility of Advanced Buildings for all of us.”

6.3.7 Marketing Outreach

This section compares the marketing approach of the Massachusetts Program Administrators to the approach employed by Efficiency Vermont, which according to an NBI spokesperson, “is

doing the best in terms of Advanced Buildings implementation because of the state's commitment to outreach." Due to this perceived success, the Vermont model was chosen as a comparison point in identifying a set of established marketing tactics. Also, comments from Efficiency Maine are included where a supporting opinion is deemed appropriate.

6.3.7.1 First Tactic: Account Management

The first tactic in a successful marketing strategy is *account management*, which relies on staff communication with building owners who are established large electricity users and may have already participated in an energy efficiency program. National Grid has tried several ways of recruiting new customers through account management. The most common methods are accomplished via account executives, EECs (energy efficiency consultants) and a marketing department.

A PA account executive, however, stated that the leads are in most cases duplicative of past efforts and have not been effective in identifying new participants. "There's a big disconnect between the marketing department and the account executives," said the account executive. "I have received ten leads [from the internal marketing group] and every one of them is a customer that has already submitted an application and is currently working on a project. I'm ready to stop calling up my customers, because this process just is not working."

This description suggests that the marketing department's process of identifying potential customers is a closed loop, in which previously contacted leads are returned to the account executive. Recruiting efforts should be streamlined by removing current participants from the pool of leads.

According to Efficiency Vermont, it is the account manager's duty to recruit new customers and maintain contact with current customers. The account manager is assigned to customers according to market sector, and there is two-way communication between the program and customers. Sometimes, the account manager visits the customer to market program opportunities and sometimes these customers approach program staff to discuss a new construction project.

6.3.7.2 Second Tactic: Nurture Relationship with Design Community

The second marketing tactic employed by these programs involves establishing and maintaining an intimate working relationship with the design team community, which includes architects, engineers and contractors.

While the Program Administrators make it a priority to develop a personal relationship with members of the design community, interviews with architectural firms in Massachusetts indicated these efforts have declined in recent years. A representative from one design firm identified a widening communication gap between the firm and program staff. The representative stated, “A while ago, an NSTAR staff member used to come by and ask what projects we were working on and he might suggest some program opportunities. As a result, there was always contact with the program staff. But now, that just doesn’t happen anymore.”

“In Vermont, they have a more significant staff, and they have a much different approach to marketing the program,” said one program manager. “In their community, they have the option of walking down the street and visiting the offices of a few local architects. They talk regularly and are able to develop relationships.” While this description may represent a somewhat idealized notion of how the Vermont model operates, it deserves consideration by the Massachusetts Program Administrators.

The Vermont model places a great deal of importance upon this relationship because, aside from the customer, the design team has the most influence on the selection of building equipment. In most cases, program staff is not present during the earliest stages of project development when new construction programs have the greatest opportunity to influence efficiency. In this sense, the design team is the “lynch-pin” between the customer and an effective implementation strategy. An informed design team is positioned to recommend program participation and may thus act as a proponent of the program even if program staff is not yet involved. A representative from North Atlantic Energy Advisors agreed, saying, “A committed design team can turn customer intentions into actions.”

This is not to suggest that Vermont does not ever encounter resistance from the design team community. Program staff indicated that participants are sometimes ambivalent about including another consultant in the design process and may feel that such intervention is superfluous. Efficiency Vermont, however, felt that its status as an independent entity is an advantage in this respect because the organization is not associated with the multiple duties of a utility or the sales interests of a vendor. The program is viewed solely as an independent advocate of energy efficiency who can authoritatively weigh-in on the choices being made by the design team.

The importance of two-way communication again plays a role in customer recruiting. “If we do our job effectively, the architects call us back for their next project and they recommend us to that building’s owner,” said the program manager for Efficiency Maine. He described the process:

Leads generally come from the architects and engineers, either through our occasional follow-up calls or them just being aware of the program. When they have a project come in, they pick up the phone or send us an email saying ‘I’ve got another project that I’d like to talk to you about.’ The architects who have already done projects are coming back to us even sooner with more projects, showing that it’s not a painful process for them. This is a testament to how successful the process has been.

The program manager attributed this success to his prior position within the design community. “I have a lot of existing relationships with these architects,” he said. “Even if we don’t have a personal relationship, in most cases I have worked with them on a project in the past. So now that I’m with Efficiency Maine, I’m able to speak their language and recognize what issues they might have with the program before they even occur.”

6.3.7.3 Third Tactic: Presentations and Follow-up

Outreach relies heavily on presentations to deliver the program’s message to key market actors. “Lunch and learn” presentations were a major part of the marketing efforts conducted by the National Grid and NSTAR programs. National Grid also regularly attends the annual *Build Boston* event to present to the design community. Program staff did not, however, attribute specific projects to participation in this event.

WMECO, on the other hand, employed a less aggressive approach to program outreach through presentations. This program gives presentations upon the occasion that a customer has already decided to move forward with an energy-efficient building plan. This method of presentation assumes a significant amount of initiative on the customer’s part.

All of Efficiency Maine’s projects were recruited through a free one-hour “lunch and learn” presentation to the local design community. The presentation was registered with the American Institute of Architects (AIA) and was valid for one credit towards the association’s continuing education requirement. Efficiency Maine indicated that all of the attendees later submitted an application for an Advanced Buildings project.

Staff members of various programs stated that following up with presentation attendees was as important as the presentation itself. Program managers indicated that customers and architects might initially show interest during the presentation but this sentiment later subsides once they turned their attention to the demands of their new construction project. To retain interest, they suggested making follow-up phone calls and visits a high priority for program staff. It was

suggested that program staff should make follow-up phone calls and visits a high priority in retaining interest.

6.3.7.4 Fourth Tactic: New Construction Data & Publications

A fourth tactic involves culling participant leads from Dodge Reports, BidClerk, Construction Data Company and various government permitting agencies. Some programs also rely on newspapers and business journals.

In Massachusetts, program managers seemed reluctant to use data services and prefer newspaper articles as the primary information resource. “We keep our ears open for new major construction and renovation projects by seeing an announcement in the newspaper and then an account executive or conservation staff member will make an initial contact to suggest participation in an efficiency program and to set up a meeting with program staff,” said a WMECO representative. “Also being an electric company, we reach out to customers when they come to us to upgrade their service.”

In Maine, new construction data is quite centralized as there is only one publication, *Maine Biz*, which comments on the state of the new construction market. While many programs rely upon culling leads from the local media, this method has its limitations. “We keep an eye out in the paper and we might read about a project moving forward,” commented one Efficiency Maine staff person. “But the problem with Dodge data and culling the newspapers and local permits is that by the time the project is published in these media, it’s too late to go back and make the changes necessary to qualify for Core Performance.”

[Table 6-6](#) presents in simple form the marketing approach of each program as described in the preceding paragraphs. This table summarizes the responses of interviewed staff members and may not represent an inclusive summary of all methods. The marketing approach of the energy-efficiency program implementers is characterized by an emphasis on outreach to the design community and a close relationship between customers and account-level staff. The Massachusetts Program Administrators also engage in these activities, but to a lesser extent.

**Table 6-6: Comparing Advanced Buildings Programs
Summary of Marketing Approach**

Program	Account Management	Delivery Channel	Presentations	NC Source Data
National Grid	Account Execs, EECs, & Marketing Department	Design Community & Customers	Lunch-and-learn, Build Boston	Newspaper
NSTAR	Account Executives	Design Community & Customers	Lunch-and-learn, Build Boston	Newspaper
WMECO	Limited role of account executives	Customers	Made upon an as needed basis to customers	Newspaper, Account Executives, service upgrade
Efficiency Vermont	Staff visits customers	Design Community & Customers	Visit offices of architects	Limited use of BidClerk, Dodge, & CDC data
Efficiency Maine	Account managers make follow up calls	Design Community	Lunch-and-learn, AIA	Maine Biz

6.4 Evaluation Findings

The major findings of this process evaluation are presented in terms of program successes, implementation barriers, other findings and additional insights. These conclusions are based upon the results of interviews with program staff and design teams.

6.4.1 Program Successes

This section discusses some of the aspects of Advanced Buildings program design or delivery that the interviewees have deemed successful.

6.4.1.1 Transparency of Incentive Structure

The transparent incentive structure has demonstrated benefits over the menu-driven approach of incentives available through the traditional prescriptive and custom tracks, according to some of the interviewees. Instead of spending time pricing equipment and calculating incentives, program staff can present the customer with a fixed per-square-foot incentive at the very first meeting. The customer immediately knows what the opportunities are, and is able to make an informed decision regarding participation.

According to program staff, the transparency of the incentive process makes the Advanced Buildings track more customer-friendly than other tracks which require more complicated calculations. One program manager compared Advanced Buildings with the CDA track. “People know up front what the incentive and energy savings are going to be,” he said. “With the CDA track, the process is more time consuming because there is a lot of back-and-forth and changes to the inputs on the energy models. On one hand, the CDA has greater synergies and opportunities for savings, but on the other hand, Advanced Buildings is a much simpler process.”

6.4.1.2 Convenience of Format

Program managers applauded the Advanced Buildings track on account of its simple and easy-to-understand format. The WMECO program manager compared the convenience of Advanced Buildings to the more demanding CDA track:

In instances where the prospective builder doesn't have a background in energy efficiency, I can explain Advanced Buildings and let the design parameters work in the background. The CDA, on the other hand, requires a leap of faith on the customer's part because when program staff explains the interactivity between chillers and air distribution handlers with controls, I feel like the owner is thinking 'I really don't know what you're talking about.' With Advanced Buildings, I can show the customer the Core Performance Guide and the research in which it is grounded. The CDA lacks this credibility. I suppose each track has its place, but I would like to see Advanced Buildings be the flagship track.

6.4.1.3 Value of Program Resources Distinguished from Other Programs

The format of Advanced Buildings distinguishes this program from other offerings and communicates the value of program services to customers. The modeling protocol used in the development of the Core Performance Guide is particularly attractive because owners of small-scale commercial buildings often have difficulty in justifying the high cost of modeling relative to the total cost of their buildings.

Furthermore, the standard engineering services provided by program staff appear to be particularly useful to participants. According to one NSTAR representative: “the review performed by our engineers works really well because they provide a detailed report to the customer and design team. The report gives them a clear idea of what they are supposed to be doing, and whether or not they are meeting the criteria set forth by NBI.”

6.4.1.4 Other Success Factors

The interviewees mentioned several other factors that are successful characteristics or indicators of success for Advanced Buildings programs. These include:

- The existence of a national program platform with NBI backing;
- The program design of Advanced Buildings is accessible and has great potential for achieving high levels of market penetration compared to the CDA which achieves deeper savings but is more complex and thereby less attractive for the bulk of new construction projects. At the same time, Advanced Buildings is comprehensive with respect to achieving savings using an array of technologies, and poised to achieve deeper savings than traditional prescriptive and custom program offerings; and
- The Advanced Buildings program is applicable to a diverse set of markets by building type and building size.

6.4.2 Barriers to Participation & Implementation

During the course of the interviews, program staff was asked to identify what barriers might inhibit customers from participating in an Advanced Buildings program. These barriers may impede the customers' decision-making process or may hinder the activities of program implementers. The following paragraphs describe how each of the following barriers impact program participation. In order of significance, the principal barriers are:

- Lack of program awareness;
- Economic environment;
- Inciting customers to action and maintaining interest;
- Identification of target market;
- Burden of cost and time commitment; and
- Early engagement of design team.

Conversations with staff members at the various New England programs revealed assorted elements of program design that contribute to program success and the barriers which impair

program implementation. In consideration of these elements, the evaluation team recommends the following set of actionable best practices. These best practices represent a synthesis of the observations of implementation staff and the recommendations of the evaluation team.

6.4.2.1 Barrier: Lack of Program Awareness

Some interviewees reported that customers in Massachusetts are not well informed of the services offered by Advanced Buildings. “There is a lack of comprehension about program opportunities and what the real benefits of participation are,” said one WMECO staff person. Some interviewees claimed that customers are not just unaware of program opportunities, but even unaware of the program’s existence. They reported that, in most cases, prospective participants are being introduced to Advanced Buildings for the first time when staff makes initial contact. “It would be really helpful, if customers were able to recognize the Advanced Buildings brand before being approached by the program,” said one program manager.

According to interviews with program staff, there is a need for more awareness not just on a local level, but also on a national or regional level. Program managers were quick to point out the success and ubiquity of LEED certification in contrast to the lesser-known Advanced Buildings program. However, because Advanced Buildings programs are implemented by local entities, as opposed to the USGBC, it might be unreasonable to expect Advanced Buildings to have marketing resources comparable to the national LEED brand. While it is important to extend the reach of the program, the Program Administrators are challenged by the need to maintain a balance of resource allocations. “Of course, there are always improvements to be made in marketing, but marketing is so expensive that you don’t want to spend so much that you have less incentive money to give to the customers,” said one program manager. “Ideally, the message has to be not only effective, but also communicated in a way that doesn’t cost a lot of money.”

However, feedback from interviews suggests that awareness is fairly strong among the Massachusetts design community. One architect stated, “Given the emphasis on LEED and increased efficiency and design, most engineers and architects are already well versed in these new construction programs.” Promotional efforts through organizations such as AIA, and the annual Build Boston event appear to have been worthwhile. Also, programs should continue to explore opportunities for partnering Advanced Buildings with the AIA Continuing Education System.

6.4.2.2 Recommendation #1: Foster Personal Relationships with Design Teams and Customers

An effective implementation plan leverages the strong awareness among the design community to expand awareness at the customer level. A vital component of this strategy is an established rapport between the design community and specific individuals at the program office.

The evaluation team recommends the intimate approach used by Efficiency Maine staff. “We let the customer and design community know that they will be dealing with only one or two people,” said the Efficiency Maine program manager. “We don’t want the customer to be in a situation where he might call an 800 number and get connected to one of 20 engineers with whom he is not familiar. Our program assigns one or two individuals to a project and lets them be the face of the program so that they can be proactive in communication.”

It should be noted that customers of the Program Administrators have several lines of personal communication open to them, including an account manager, program staff, and program engineers. Open channels of communication are important not just because they assist the customer during the application process, but also because in developing a personal relationship, program staff are more likely to hear of new projects.

6.4.2.3 Recommendation #2: Take Advantage of Green Marketing Opportunities.

An effective implementation plan takes advantage of the favorable environment of “green building.” Efficiency Vermont, for example, supports the construction of Advanced Buildings with press releases, letters of recognition and NBI certification plaques. These elements of green advertising are particularly attractive to institutional customers, such as universities, who place significant value upon their public image. In Massachusetts, however, none of these green marketing strategies were observed among the implementation activities.

Efficiency Vermont program staff also said that they find it beneficial to extend public recognition to participating design firms, who welcome the opportunity for “green” advertising. While customers in Massachusetts might be considered less inclined to “green building” than the customers in Vermont, the design firms in Massachusetts are much larger and perhaps more advanced in energy efficient technologies than are their peers in Vermont.

Also, program staff should develop the synergies that exist between the *Core Performance Guide* and the requirements for LEED certification. All the measures listed in Chapters 1 and 2 of the *Core Performance Guide* are required for the energy LEED certification. Program staff

should use these common requisites as leverage to recruit participants to Advanced Buildings. Program staff noted that the Advanced Buildings platform works well with customers who want to build an efficient building but perceive the LEED requirements as too onerous. In this respect, Advanced Buildings has appeal as a “fall-back” option to LEED certification. In fact, the U.S. Green Building Council officially adopted Core Performance as a prescriptive path for LEED and buildings can qualify for up to five LEED points.³²

6.4.2.4 Barrier: Economic Environment

Considering the economic conditions at the time of this study, most program managers reported a downturn, if not a standstill in the new construction market. National Grid estimated that new construction projects had declined by 50 percent in the past several years. “With the current economic conditions, there is no new construction at all,” said one WMECO representative. “We are especially affected because our service territory doesn’t include many large cities.” Even with the availability of incentives, the ability of builders to pursue energy efficient design is challenged. “With this economy, the budgets of customers have been stressed to the point where they don’t want to spend any extra money to stray from their original budget,” reported one program manager.

6.4.2.5 Recommendation: Emphasize Importance of Long-Term Savings

While there is no remedy for the downturn in new construction, it is possible to mitigate the budgetary concerns of customers. A successful program design may benefit from shifting the emphasis from incentives to long-term savings. Sometimes, incentives are not enough for a customer to assume the additional time and responsibility required to participate in Advanced Buildings. Incentives, while substantial in dollar terms, may not have the desired influence if the incentive is weak relative to the entire cost of the project. A \$100,000 incentive may bear little influence in the design of a new construction project costing tens of millions of dollars. The real appeal of Advanced Buildings is that by following the core strategies, such a customer might save another million dollars in energy savings over the lifetime of the building.

6.4.2.6 Barrier: Inciting Customers to Action and Maintaining Customer Interest

According to a North Atlantic Energy Advisors representative, one of the greatest barriers to participation is “turning intentions into action.” Despite an initial interest in Advanced Buildings,

³² Advanced Buildings Core Performance: How Does Core Performance Relate to LEED,” New Buildings Institute, <http://www.advancedbuildings.net/advanced-buildings-core-performance>, 2010.

builders sometimes balk at the commitment required by the participation process. Design firms have been known to abandon the Advanced Buildings track to pursue a design that promises quicker and more familiar results. “There are a lot of design firms that ‘talk the green talk,’ but they don’t want to do the extra work required,” said one program manager.

While presentations to customers and the design community is a reliable method of program outreach, the impression of these presentations is often short-lived. The evaluation team found that program outreach was ineffective in the long-term without consistent program interaction. One program manager explained the difficulties associated with maintaining interest among the design community:

We did a round of lunch-and-learns, but later the architects forget about it. This incentive program is at the bottom of the designer’s priority list because it does not provide them any revenue but only more work for the same amount of money. Our staff calls them every few months just to check in and remind them that the program is there. We will say something like, ‘Do you have any new projects coming up?’ Three out of ten times, the architect says, ‘We do have a project coming up but I had forgotten about the program’ or ‘I didn’t have the time to call you.’

6.4.2.7 Recommendation: Maintain Interest with Follow-Up Communications

A North Atlantic Energy Advisors representative reported that it is important for program staff to take a proactive approach in maintaining customer and design team interest. He explained:

Program staff can’t afford to wait for the owner or design firm to call when the critical steps are being made. Staff has to stay on top of the project and do its own duty to ensure that the owners and design team are staying on track. Program staff has to engage the owners and make them enthusiastic about the program. If staff does this correctly, the owners will push the design team to make sure the project gets done right. The owners are really the ones who can push the design team, because they’re the ones paying the bill.

There is a fine line, however, between maintaining follow-up communication and pestering the customer or design team. Program reminders should be brief and merely serve to remind the design team of their options. “If the program can stay in their minds, without being annoying, it’s really beneficial to recruiting projects,” said the program manager at Efficiency Maine.

Also, while design teams may receive incentives for participation in the CDA track, there is no such provision made for design teams that participate in Advanced Buildings. The Program Administrators might consider offering such incentives for design team who put in additional work on account of the Advanced Building track. The effectiveness of such incentives, however, is not yet known.

6.4.2.8 Barrier: Identification of Target Market

National Grid indicated that it has been difficult for the program to gain traction because “it is very hard to determine who the players are.” The program manager identified this issue as one of the most significant barriers faced by the program. “A customer could be anyone from a dentist to a national firm,” he noted. “The customer could be someone from Massachusetts or someone from out-of-state. There’s no clearly defined audience of whom you’re trying to attract.” If the program cannot clearly identify the target market, it is difficult to target outreach efforts and as a result the core message suffers.

6.4.2.9 Recommendation: Improve Lead Tracking

A cohesive system of documenting and monitoring the status of program leads is important to the success of program implementation. For example, Efficiency Maine employs Efficiency Reporting & Tracking (EFFRT), an online database, to track project leads, contact and status descriptors. Among the Massachusetts Program Administrators, program staff did not use such a method of tracking prospective customers. In the case of National Grid and NSTAR, information such as customers contacted, outreach efforts, and lead status are not linked to their respective tracking system, InDemand or eTrack. According to program managers, the progress and status of project leads is documented in a spreadsheet, which is typically not shared among various levels of staff. Staff at National Grid is rumored to have access to the Reed Connect service, but the evaluation team found no evidence of its usage in implementation efforts. Furthermore, the program managers identified ‘word-of-mouth’ as an important, if not the most important, aspect of engaging new leads and maintaining contact. When the documentation of program leads suffers, the potential for lost opportunities increases. Program staff should rectify this by implementing a more comprehensive and accessible system for documenting interactions with prospective customers.

Also, design firms can be part of the solution to this issue, for these firms make the first contact with the customer and identify participants on the program’s behalf.

6.4.2.10 Barrier: Burden of Cost & Time Commitment

Despite the relatively large incentives offered by National Grid, program staff reported that some customers are reluctant to assume the additional time and cost required by participation. The WMECO program reported similar issues. “Even though the incentive is greater with Advanced Buildings than it is with the traditional prescriptive track, customers are deterred by the amount of time required of the building owner and design professionals,” said the WMECO program manager. “More time is required, not just in terms of learning about the program, but also in implementing the additional measures. Many building owners are not willing to make this commitment.” The manager of another program stated, “unless a customer is branding themselves as a green building or constructing as a demonstration buildings, the energy savings and incentive amounts are just not enough.”

6.4.2.11 Recommendation: Minimize Customer Burden

One of the greatest deterrents to program participation has been apprehension regarding the application process. Therefore an effective implementation strategy should make it well known to customers and design firms that staff will be available to assist in filling out application forms and understanding program requirements.

The Efficiency Maine staff said they made ease-of-use a selling point for potential customers. “Making the program as accessible as possible is our program’s number one priority,” said one staff member. “We want the process to be as easy as possible. We figure out in advance what the architects might get hung up on, what might scare them away from the program so that we can address the issues early and make the program as flexible as possible.”

The Efficiency Maine program makes it clear to prospective customers that the burden of paperwork will not fall upon them but upon program staff. “No additional work is required,” explained the program manager. “A big part of my conversation with customers and architects is that if the building plans contain the required information, then I don’t need anything else. I don’t need the customer or design team to put together any additional documentation if it is clearly detailed in the drawings and specifications.”

Some interviewees also said it was important that the customer does not incur additional expenses as a result of program participation. “Unlike LEED, which requires lots of paperwork and thousands of dollars in additional services, we do not offer all that much money in terms of incentives,” noted one Efficiency Maine program staff member. “It would be counterproductive

for the architect to go back to the owner with service charges that exceed the offered incentives.”

6.4.2.12 Barrier: Early Engagement of Design Team

Another great challenge of program implementation is establishing participation in the earliest stages of the design process. Ideally, program staff should intercept the customer and design team during the of conceptual design phase of the project, if not earlier. If the program enters at a later phase, such as the schematic design phase, the ability of the program to influence decisions declines substantially. The crux of this challenge pivots upon the relationship between the program staff and the design community.

Recommendation: Take Advantage of AIA Continuing Education Requirements

An excellent method of engaging the design community is to take advantage of the American Institute of Architects (AIA) continuing education requirements. The AIA requires members to fulfill continuing education obligations in order to maintain their credentials. In order to attract design firms, some implementers offer Advanced Buildings seminars which are paired with continuing education courses valid for credit towards the continuing education requirement. Under the current MassSave platform, attendees may earn four AIA Learning Units but are required to pay \$199 per session.³³ It is unlikely that this small fee dissuades interested parties from attending. Nevertheless, the Program Administrators should consider waiving this fee in order to increase participation among harder-to-reach firms.

6.4.3 Other Findings

During the course of the interviews, it became apparent that the intended practice of Advanced Buildings sometimes differed from the actual experience of implementers. Program staff and members of the design community offered their perspective of the objectives and requirements of the program. Some of these findings are inherent to the Advanced Buildings platform, while others are grounded in comparisons between the Advanced Buildings track and the CDA track.

6.4.3.1 Finding: State Energy Code and Skepticism of Baseline Assumptions

The benefits of the Advanced Buildings program have been scrutinized due to the fact that NBI has not updated the *Core Performance Guide* since July 2007. Since that time, recent

³³ “Advanced Buildings Seminars,” <http://www.masssave.org/professionals/training-and-certifications/advanced-buildings-seminars.aspx> , The RCS Network, 2010.

advancements in code requirements, standard practices, and a more widespread acceptance of energy efficiency measures have detracted from the savings attributed to Advanced Buildings participation. The New Buildings Institute claims that adherence to the *Core Performance Guide* “results in energy savings of at least 20 to 30% beyond the performance of a building that meets the prescriptive requirements of ASHRAE 90.1-2004.”³⁴ Some program actors have stated that these savings estimates are misleading because this ASHRAE standard is less stringent than prevailing standard practices.

For example, a technical consultant for National Grid stated: “if the building is in a state that doesn’t have an energy code, 20 percent savings is possible. Massachusetts, however, already has an energy code, so a more reasonable estimate would be savings of 10-15 percent.” This engineer specifically identified the prescriptive lighting as already being required by the current state energy code. National Grid staff acknowledged that such duplications do lessen the potential for energy savings.

In response to the discrepancy between state code and the requirements of the *Core Performance Guide*, some programs have altered the program guidelines to suit their code environment. According to program staff, National Grid has made the lighting measure requirements more rigorous and requires that Advanced Buildings lighting be 15 percent greater than Massachusetts state code rather than what is listed in the *Core Performance Guide*. In a similar manner, Efficiency Vermont adopted a customized *Vermont Edition* of the *Core Performance Guide* in response to the state’s stricter insulation requirements.

6.4.3.2 Recommendation: Anticipate Advancements in Code and Standard Practice

An effectively designed program anticipates recent advancements in energy efficiency rather than evolving alongside such developments. NBI has not been diligent in maintaining Advanced Building requirements that exceed building code to a satisfactory degree. The Program Administrators have been active in pushing NBI to keep their product ahead of the model codes. The Program Administrators should continue to push NBI to maintain program requirements well ahead of recent code developments and standard building practices.

³⁴ *Core Performance Guide*, New Buildings Institute, July 2007, page 11.

6.4.3.3 Finding: Experience of Design Teams Varies

One of the interviewees did suggest that the architects and engineers who work on Advanced Buildings projects are not necessarily of the same caliber as those who work on CDA projects. A Program Administrator staff member commented:

With the smaller buildings that participate in Advanced Buildings, the work is often done by small-scale, part-time architects and engineers or sometimes by people who are at the end of their careers rather than on the cutting edge of technology. Sometimes the experience of these firms is outdated and in other cases these firms are energetic upstarts who have very little experience altogether. Quite often, these firms aren't even aware of how to attain state code, yet alone Advanced Buildings. Much of the effort our utility puts into a project, is just teaching people how to build to code, and this is effort that we don't get credit for.

6.4.3.4 Recommendation: Present Advanced Buildings as a Learning Opportunity for Design Firms

If this description is accurate, there is a great opportunity for the program to establish an ongoing partnership with these design firms. The program can advertise the expertise brought by experienced program staff as a means of attracting design teams to working with the program. If design firms perceive Advanced Buildings as a valuable and useful learning experience, they might be more inclined to put in the extra time and effort required by program participation.

6.4.3.5 Finding: Delicate Nature of Working with Design Team

The relationship between program staff and the design team is a delicate one. Through experience, program staff members have learned to tread carefully when negotiating different design ideas. For example, one program manager indicated that program staff should never attempt to suggest changes during the later design stages. "One of the behavioral aspects that I've learned is that you always want to make the architects and engineers look good in front of the client," he explained. "You never want to say 'I have a better idea,' you want to say 'Your architect has been working with the program and together we've come up with a great idea.'"

6.4.3.6 Recommendation: Discuss Ideas with Design Team Before Presenting Them to the Customer

The actions of program staff have shown that it is best to work out any suggestions or changes to the design plan prior to engaging the customer in significant decisions regarding energy efficiency measures. Such consideration is useful in maintaining the support and cooperation of the involved design firms.

6.4.3.7 Building Type as a Criterion

In general, the Massachusetts model uses square footage to determine whether a project should proceed through Advanced Buildings or through the CDA track. Although the *Core Performance Guide* is intended for buildings 10,000 to 70,000 square feet, a spokesperson for NBI stated that square footage should not be the only factor in determining if a project is ideal fit for Advanced Buildings. He stated that sometimes building type can be an equally determining factor. He gave the example of “box” retail stores. For this building type, he argued that the same principles implemented for a small box store apply to a larger box store and the *Core Performance Guide* is applicable in either case, regardless of whether or not the building meets the recommended square footage criteria.

6.4.3.8 Recommendation: Maintain “Soft Cap” on Building Size

Program staff has been receptive towards accommodating a wide range of buildings types, regardless of whether or not the building exceeds stipulated size guidelines. Advanced Buildings is offered as an option even for those building greater than 100,000 square feet so that customers are never reluctantly pushed towards the CDA track as the result of size requirements. It is the responsibility of NBI to issue some guiding principles regarding how such offers or exceptions should be framed.

6.4.3.9 Large Retail Customers

In any program territory, the few large national retailers who do have new construction projects typically have their own design plans, which may be as efficient as or more efficient than program guidelines. While many large retailers are known to commence a new construction project with their own energy efficient design in hand, there are certain box stores, particularly those specializing in office supply, which have gained a reputation for using the cheapest and simplest designs. According to one program manager, these customers have great potential for savings and should receive more attention in recruiting activities.

6.4.3.10 Recommendation: Investigate “Box” Retail Stores as a Potential Customer Segment

It is the responsibility of NBI to investigate the compatibility of non-traditional customers with Advanced Buildings program requirements. It is recommended that NBI examine the designs of various large retailers with respect to code requirements to identify any buildings that are performing below their potential efficiency. If certain big box stores are not using an efficient building design, program staff should investigate the contributing factors and explore opportunities for program participation. Program implementers can exploit these inefficient building designs and possibly tap into a new customer segment.

6.4.3.11 Common Platform

There are some inconsistencies in how Advanced Buildings is implemented throughout different states and territories, including Massachusetts. “In theory, Advanced Buildings is supposed to be presented in a consistent manner, but NBI has had trouble figuring out the program platform and this has caused some frustration,” said one program manager, “Even though there are several utilities implementing Advanced Buildings in Massachusetts, the different programs frequently work with common architects. When one utility markets the program one way and another utility does it differently, the message to the customer becomes confused.”

While the Massachusetts Program Administrators and Efficiency Maine brand the track *Advanced Buildings*, Efficiency Vermont brands the track *Core Performance*. NBI intends the term *Advanced Buildings* to describe the portfolio of resources of which the *Core Performance Guide* is the cornerstone. Such nomenclature would support Efficiency Vermont’s name choice, rather than that of the other programs. However, these programs support their choice of *Advanced Buildings* because they feel the designation successfully conveys the message of elevated energy strategy, whereas the *Core Performance* might suggest a “bare minimum” energy strategy.

While inconsistent branding and terminology among different implementation areas do not breed marketing problems within an implementation area, they do create a difficult environment in which to create a regional or national awareness.

6.4.3.12 Recommendation: Consider the Benefits of a Common Platform

As more programs enter the energy efficiency landscape, it is important to create a strong common platform that minimizes confusion and maximizes visibility. Under the MassSave

initiative, the Massachusetts Program Administrators have already taken the first steps in creating such a platform. It is unlikely, however, that various implementers will come to a consensus because there are obvious difficulties in making uniform the Advanced Buildings platform. “You can't ask somebody to change their branding,” commented a representative with North Atlantic Energy Advisors. “Maine is certainly not going to go backwards. Vermont isn't going to go backwards. But as the program grows to a more nationally recognized brand there is a growing element of confusion.”

While it is assumed that the MassSave platform is working with the Massachusetts Program Administrators to attain uniformity in implementation, design and marketing, the evaluation team feels that this objective is worth restating in the specific context of program branding.

6.4.4 Additional Insights

This section presents additional insights which merit consideration but do not require prescriptive recommendations. These items reflect the current state of program design and the factors resulting from the current program environment.

6.4.4.1 Nature of Implementation Staff

As part of this study, it is important to consider that customers may perceive independent energy efficiency program implementers differently than how they perceive energy efficiency programs implemented by their local PA. Efficiency Vermont and Efficiency Maine feel that their position as a quasi-government entity is an advantage over utility/PA-run programs. An interview with Efficiency Maine indicated that the neutral character and small size of their program is an advantage in developing customer relationships. The program manager commented:

Although major decisions have to be cleared through Efficiency Maine Trust, I do believe that we have more flexibility as an independent implementer and a smaller entity. As a non-profit organization, we are a partner in the design process, and we are not just someone whom the customer faxes paperwork. I've been the lead on the Advanced Buildings program since it has been launched, so the customers see me as the face of the program. I make myself personally available to them. I'm someone who will go out to the office, sit with them and help them fill out the application.

This program manager was especially qualified to comment in this way based upon having direct experience in Massachusetts. He said:

I worked in Massachusetts for a number of years before I came to Maine and I can say that it is definitely a different environment. There are so many more players, and things move a lot faster. As a result, it's harder to establish the deep sense of teamwork with the design community that we have in Maine. It's not that architects in Massachusetts have a bad attitude towards efficiency programs; it's just that they have more on their plate and there is more expected from them. In Maine, I think there is more willingness for all parties to take the time to meet and discuss program benefits. Whereas in Massachusetts, the utilities may not even get in the door with the design community because an architect says that he doesn't have the time for an efficiency program.

In Massachusetts, program implementation combines the efforts of the program manager, PA engineers (which are both members of the energy efficiency implementation group), and account executives. In some cases, 3rd party technical consultants, the same firms who prepare the technical study for the CDA track, are retained for the review of design specifications. One firm, who works with National Grid and NSTAR, described this role by saying, "While modeling is not required for Advanced Buildings, our firm performs a review of the design and we 'hold the hand' of the design team to make sure that they stick to the design requirements and don't miss anything. If the design team has any questions, we also advise on these technical matters." Several architectural firms corroborated this important relationship between the technical consultant the design community.

6.4.4.2 Circumstances of Small-Scale Programs

On account of its territory size and customer base, the WMECO program faces different challenges than the programs of larger PAs such as National Grid and NSTAR. First of all, the WMECO program staff is fairly small. The program manager executes most marketing efforts and services and is assisted on occasion by a handful of other staff members. Also, WMECO does not actively promote a CDA track because virtually no buildings meet the track's size requirements. The program manager further explained:

The CDA track no longer seems necessary now that WMECO offers Advanced Buildings. The sophisticated model analysis offered by the CDA, was not terribly useful to the customer even though it was interesting to us. It didn't lead to any further opportunities for savings. In theory, I suppose we could still offer the CDA to WMECO customers, but in practice, the Advanced Buildings track is the only real option for those who do not proceed through the traditional prescriptive track.

Considering the lack of new large C&I projects, it is appropriate that WMECO continues to emphasize the Advanced Buildings option, even if such emphasis occurs at the expense of the CDA track.

6.4.4.3 Shared Vision between Program and Design Team

Advanced Buildings is most successful when program staff engages design teams which share the program's vision of energy efficiency. The program benefits from the cooperation of progressive architecture firms that are already informed of the most innovative measures and are looking to design the best possible buildings for their client. Most often, these design firms work for clients who intend to occupy the building on a long-term basis. Likewise, program efforts have proven to be less effective in projects where the developer intends to build as quickly as possible and then sell the property.

6.4.4.4 Modesty of Program Objectives

Program managers noted that there is an inherent conflict between the Advanced Buildings program's standardized approach and increasing saturation in the market for energy efficient technologies and systems, much of it driven by upgrades in building codes. "The program doesn't provide enough to be exciting," a National Grid staff member stated. "Because state code keeps advancing so fast, it's hard to find simple, repeatable measures that you can count on to get significant savings out of all building types." The program manager attributed this complication to a direct conflict between program objectives and an aggressive state energy code. "When we started the program, there were a lot of simple measures that could be taken to produce savings," he said. "Today, there's no more simple ways to save energy, whereas we're also expected to keep the program simple. We're being faced with greater complexity required to get more savings and now we're at a point with the codes, where it's nearly an impossible task."

6.5 Summary

The Advanced Buildings platform is a worthwhile effort in recruiting customers to the new construction programs offered by the Massachusetts Program Administrators. As an alternative track to the more time-intensive CDA track, it offers accessibility without sacrificing the benefits of a comprehensive design. The participation barriers described in this study are not insurmountable and may be addressed through increased program outreach and the development of relationships within the design community. By adhering to the aforementioned recommendations, program implementers can take advantage of these opportunities.

6.5.1 Looking Forward

As new construction programs are restructured under the MassSave platform, the evolution of Advanced Buildings will present new challenges. One PA staff member explained why:

Prior to this year, each utility could act alone in developing an implementation approach. But now the utilities have to agree upon a uniform approach and present it to the Department of Energy Resources. We are experiencing a learning curve in that we have a lot of utilities working together for the first time. It's going well, but the process of putting together recommendations and presenting them to the Department of Energy Resources is very time consuming.

Despite these challenges, it is important to acknowledge the benefits of a statewide program in terms of uniform marketing tactics and a streamlined program delivery among the Program Administrators in Massachusetts.

Furthermore, the Commonwealth of Massachusetts recently adopted a stretch code for commercial buildings based on the Core Performance Guide. In November, the commercial section for the 2012 International Energy Conservation Code (IECC) was approved, largely based upon the protocol detailed in the *Core Performance Guide*.³⁵ According to an NBI spokesperson, “these endorsements strengthen the Advanced Buildings program and magnify its position in the building community”.

³⁵ “Historic Changes to Commercial Building Energy Codes Will Drive Energy Efficiency,” New Buildings Institute, www.advancedbuildings.net/news, November 2, 2010.

7. Cross-Cutting Analysis of Portfolio Program Tracks – Comprehensive Design Approach and Advanced Buildings

7.1 Introduction

In an effort to improve the C&I new construction energy efficiency programs delivered by the Massachusetts PAs, this section explores how the Comprehensive Design Approach (CDA) and Advanced Buildings tracks can be coordinated to provide better energy efficiency program coverage for the new construction market in Massachusetts. Despite a difference in project size requirements and differences in the procedural steps to participating in each, the CDA and Advanced Buildings tracks possess many similarities including similar program objectives with regard to energy efficiency, common customer base targets, and similar program actors. The goals of these tracks are also the same: 1) maximize energy and demand reduction in new construction projects and 2) influence energy efficiency best practices in the commercial design sector. Each track has a unique way of addressing these goals; however the PAs and their customers could benefit from an exploration of the potential synergies that exist between the tracks and how they can be exploited to increase overall participation by C&I new construction customers.

7.2 Program Synergies

In implementing these two program tracks, there exist certain common elements that, when improved, can boost the effectiveness of not just one track but both tracks, and perhaps produce a result greater than the sum of its parts. The findings and recommendations presented earlier in this study show how the implementation of each track might be improved; in this section, the evaluation team looks at best practices and provides suggestions for incorporating these practices. The following items are not necessarily program synergies now, but serve to illustrate what the synergies between the two programs could be.

Lead Generation. A cohesive system of documenting and monitoring the status of program leads is important to the success of program implementation. Program staff often identified ‘word-of-mouth’ and newspaper articles as the principle sources of discovering new leads. These methods, however, do not provide information to the Program Administrators in time to intervene and introduce the CDA and AB tracks. In documenting leads and communications

with prospective customers and design firms, it is only fitting that such a system address the needs of the CDA and Advanced Buildings tracks simultaneously. For program implementation efforts, it is useful to have a central repository to track project leads, contact and status descriptors to be shared among various levels of staff. Such a system might store information regarding ‘word-of-mouth’ leads or perhaps information gleaned from new construction data resources and local publications or trade associations. Also, the information gained from design firms can be part of such an initiative, as these firms often make early contact with customers and identify participants on the program’s behalf.

Information that is useful to track for lead generation and ultimately for customer participation in one of the comprehensive tracks includes: project timeline, project stage, project design team members and technical assistance consultants, the prime general contractor, program offerings presented to the customer by the PAs, the customer’s receptiveness to the offerings, next steps, and coordination with PA staff bringing service to the new building.

Joined Marketing Efforts. Currently, the CDA and Advanced Buildings tracks are marketed as separate options in program marketing literature. There is an opportunity to strengthen the overall program message by consolidating these two different tracks into a single marketing initiative. This can be done in addition to marketing them as separate tracks, so as to make sure that customers who are interested in a specific track can look to track specific marketing materials. Such a message clearly states to the customer that, “If you are constructing a new building then the program has something for you.” This type of message is effective, regardless of the customer’s level of commitment or type of buildings being constructed. In terms of print advertising, PAs might consider a brochure that lists all the track options and is marketed to the general new construction market rather than a specific track. Account management staff can provide general brochures that focus on informing customers that the Program Administrators can find energy efficiency opportunities for their projects.

In order to create a far-reaching marketing campaign, a multi-pronged outreach strategy should be employed. The message to customers should focus on the overall point that the PAs can find the ideal energy efficiency track when customers embark on a new construction project. Rather than providing a brochure specific to the CDA or Advanced Buildings track, the program messaging to the design community should delve into the differences between the comprehensive tracks in order to help them understand the level of effort required on their part when projects are built under each track. This form of outreach should be carried out by PA staff through individualized presentations at the offices of architects and engineers, “lunch and learn”

events hosted by the PAs at their offices, and workshops and seminars at trade shows attended by members of the design team community.

Part of the message to all the program actors should include the fact that a comprehensive approach to energy efficiency can be adopted but does not necessarily require the level of commitment required to use the CDA. In these cases, Advanced Buildings can serve as an alternative option for those customers who show interest in the CDA track but ultimately decide that it requires too time and upfront investment due to the cost of the technical study. For these customers, the Advanced Buildings can be presented as a simplified option to comprehensive energy efficiency.

Account Management Staff as Recruiting Channels. Interviews with program staff and design team members indicated that account management staff could be better positioned and informed to manage customer inquiries and to be more active in recruiting customers. For example, one architect complained that account staff are unfamiliar with program details. If the account staff are not clear regarding the particulars of each program and/or are not learning of projects early enough to influence and inform customers, it is difficult to expect the customers to gain an understanding of the comprehensive tracks.

There is an opportunity for the PAs to provide training to their account staff regarding the CDA and Advanced Building tracks. These staff members are especially pivotal because they have the most contact with customers and therefore are in the unique position of guiding customers towards the most appropriate building track. In order to position account staff as recruiters, the PA implementation staff should educate the account staff about the tracks and how to best determine which one is most suitable for their customers. Account management staff and program implementation staff should work together in directing customers towards the track that best fits their objectives.

7.2.1.1 Role of 3rd Party Consultants/Technical Assistance

In Massachusetts, program implementation combines the efforts of the program implementation staff and engineers, and account management staff. In some cases, 3rd party technical consultants, the same firms who prepare the technical study for the CDA track, are retained for the review of design specifications. One firm, who works with National Grid and NSTAR, described this role by saying, “While modeling is not required for Advanced Buildings, our firm performs a review of the design and we ‘hold the hand’ of the design team to make sure that they stick to the design requirements and don’t miss anything. If the design team has any

questions, we also advise on these technical matters.” Several architectural firms corroborated this important relationship between the technical consultant the design community.

These independent technical consultants seem to have an important role in the implementation of CDA, particularly in the matters of explaining program requirements to the customer and the design team and performing design review at various stages of the application process. These technical assistance consultants have been described as “holding the hand” of the customer and design team throughout the participation process. If this program actor has been so influential in the implementation of the CDA, this role should be expanded into Advanced Buildings, where the services of such a firm would benefit the program as a stand-in for when program staff cannot be present. Also, there is benefit in expanding the role of technical consultant firms to include customer recruiting. The prospect of additional business under the program would be sufficient incentive to motivate these firms. These firms are in a position to detect leads because they provide services to participating and non-participating builders.

7.3 Positioning of the CDA and Advanced Buildings Tracks

This evaluation revealed a number of common traits across the comprehensive tracks, as elaborated below. This section not only highlights these commonalities, but also focuses on using the lessons learned from this evaluation to optimize delivery of the new construction program portfolio, and the CDA and Advanced Buildings tracks in particular. At the foundation of the C&I new construction market is finding the right track for the customer and making sure that the account management staff recommend the track that best suits their customers’ needs. While there are benefits to offering a new construction portfolio of programs to customers, it also invites some degree of confusion on the part of the customer and other program actors as to how these programs interact, how they might complement one another, and which track best serves the customer given his or her objectives with regard to energy efficiency.

Soft Cap. The size of the project building is a principle discerning factor in determining whether the customer participates in the CDA or the Advanced Buildings track. However, some projects that fall into the size guidelines specified for Advanced Buildings have instead used the CDA option, and vice versa. The PAs maintain a “soft cap” on such size requirements, thus giving the new construction program staff the opportunity to meet the needs of a wide range of customers. Interviews with PA managers and staff as well as an examination of projects carried out under both tracks revealed that the size requirements are not “requirements”, but rather guidelines or suggestions as to which track might be more appropriate.

The flexibility of this “soft cap” may not always be apparent to the customer, however, and perhaps the PAs should communicate this flexibility. Such an issue might be obvious to program staff, but perhaps not so apparent to the customer, especially the customer who has a 100,000 square foot building and may not want to put in the effort for the CDA track. As noted in the report, the requirements to participate in the CDA track will sometimes require more time to develop a comprehensive approach to energy efficiency than the customer is interested in investing.

Similar Target Markets and Customer Characteristics. The target customer markets are quite similar for the Advanced Buildings and the CDA tracks as they are both designed to comprehensively address energy efficiency in the commercial and industrial new construction markets. Based on the findings of this evaluation, the predominant market sectors that built their new construction projects through these tracks included schools and universities, biotech facilities, supermarkets, and retail facilities. Market sector specific outreach by the PAs about comprehensive energy efficiency approaches can be utilized and past projects can be used to highlight how each of the tracks have benefitted customers in these specific markets.

Target of Marketing Efforts. An effective implementation plan should carefully consider the most appropriate target markets for program marketing efforts. As stated in the recommendations section of the CDA process evaluation, the PAs would benefit from focusing their marketing, education, and outreach of the comprehensive tracks for new construction to the design team community, since the architects and engineers in this community develop close working relationships with their clients who are the potential participants of these tracks. Because these two tracks overlap, coordinated program outreach that converges in the offices of design firms is an attractive and effective method of spreading program awareness. Program staff members can take advantage of the opportunity to present both the CDA and the Advanced Buildings tracks as complementary resources that their customers (i.e., clients of the design team community) can benefit from. This is especially important for new construction programs in which the early engagement of the design team correlates with successful program activity.

Directing customers to the program that best fits their needs. Based on the findings of this evaluation, one strategy is to have the customer present the goals for their new construction project and then have their account management and program implementation staff determine the most appropriate track. Because these tracks are marketed to similar groups of customers, the decision to participate in the CDA or Advanced Buildings track can often be shifted from the customer to the Program Administrator. Program staff demonstrates a firm understanding of

each track, and along with information on the desires of their customers, are often best equipped to determine whether the CDA or the Advanced Buildings track is optimal for a given project. Customers and design firms, on the other hand, are not typically adept in understanding the nuances in each of the program tracks, but rather know best what their objectives are for their project. The program is best served by attentive account management staff who listen to their customers' desires and then steer each customer to an appropriate track. In order to meet this goal, account management staff need to be trained in understanding the nuances of each track. This would streamline the application process and minimize customer confusion regarding the different tracks.

Mitigate customer confusion. One strategy that the Program Administrators would consider when evaluating a customer's project is to provide the customers with an overview of what each approach would require of them as far as time and resources are concerned and what the long term energy savings would be from each. This would be appropriate for those projects that are on the cusp of qualifying for the CDA track and on the larger end of projects that use the AB track. In cases such as these where the PAs are unable to make a clear recommendation, customer decision making is needed, and the PAs shift into a support role in the decision making process and out of the role of decision making regarding the appropriate program track. Customers may not be sure which track is most appropriate for them; therefore the PA staff can enlighten them based on preliminary cost-effectiveness analysis of the measures being considered for the project. This sort of insight can only come from collaboration between the customer, design team, and the Program Administrators.

Economic Environment. In many cases, the current economic environment has reduced the budget flexibility of customers who are constructing new buildings. Interviews with program staff have also suggested that the economic environment favors the construction of small-scale buildings over large-scale buildings. For example, one program manager stated, "Because of the poor economy, we are seeing a greater number of smaller buildings and not so many buildings over 100,000 square feet." If this observation is accurate, there may be some value in presenting the Advanced Building track as a more budget-friendly resource for customers with limited financial flexibility.

8. Preliminary Interview Guide for Overall Program Administrators and Staff

MA LCIEC - DRAFT

Project #6B – CDA Process Evaluation

August 2010

[This interview guide contains questions our evaluation team plans to ask of overall program administrators and their staff to gain an understanding of the comprehensive design approach (CDA) that is available to customers who construct new commercial and/or industrial buildings or perform major renovations of existing structures. To reduce interview length for interviewees with cross-cutting responsibilities who may have already been interviewed for other parts of the LCIEC evaluation, we have divided our questions into those that will be asked of “overall” program administrators at the managerial level, and those that will be asked of “specific” program staff who are responsible for carrying out the day to day activities related to participating projects. After gaining an overall understanding of the program from the overall program administrators, more specific questions will be asked of program staff in order to understand program operation details. General questions that will be directed towards “Overall” program administrators will be preceded with an [O] and the more specific questions designed for program staff/managers will be indicated with an [S]. It should be noted, that this guide may depart from the following outline in order to maintain the flow of conversations.]

Name _____

Utility (circle one) National Grid NSTAR WMECO

E-Mail _____

Phone _____

Date _____

Introduction

My name is <NAME> and I work for Itron's Consulting and Analysis Group. We have been hired by the Massachusetts Energy Efficiency Program Administrators to conduct a process evaluation of the comprehensive design approach (CDA) track of the <UTILITY PROGRAM NAME>. As we understand it, this track is designed to incorporate energy efficiency measures into new construction and major newly renovated building projects at the beginning stages of building design so as to take advantage of any energy efficiency synergies that may exist.

[<UTILITY PROGRAM NAME> = Design2000plus for National Grid, Construction Solutions for NSTAR, and Energy Conscious Construction for WMECO]

One of the first steps in our work is to interview program administrators in order to develop as complete and accurate a picture of your program and the CDA as we can. This information will be used to inform future interviews we conduct with program participants, design team members, and other utility staff who have participated in the program.

Role of Interviewee [O/S for all questions]

- 1.1 What is your position/title at <UTILITY>? How long have you held this position?
- 1.2 What are your primary responsibilities?
- 1.3 Which C&I energy efficiency program(s) and/or program tracks are you involved with? (Probe specifically for program names such as Design 2000plus, Construction Solutions, and the Energy Conscious Construction Program; the track types are CDA, custom, prescriptive, and ABT).
- 1.4 Which of these programs includes the CDA track? Which includes the Advanced Building Track? (Note: if interviewee is ONLY responsible for the Advanced Building Program, finish this section and then move to Section 6 and 7)
- 1.5 For the CDA and/or ABT – What are your roles?
- 1.6 With whom do you work at <UTILITY> to implement the CDA and ABT? (Get names, phone, and e-mail contact information)

General Program Description and History of the CDA Track

- 2.1 [O/S] Can you describe how the comprehensive design approach is utilized by <UTILITY> and how it is incorporated into your <UTILITY PROGRAM NAME> program?

[<UTILITY PROGRAM NAME> = Design2000plus for National Grid, Construction Solutions for NSTAR, and Energy Conscious Construction for WMECO.]

- 2.2 [O/S] What is the objective of the CDA?
- 2.3 [O/S] How does the CDA differ from prescriptive and custom tracks?
- 2.4 [O/S] [IF NOT ALREADY PROVIDED THROUGH THE DATA REQUEST] Can you provide us with a copy of your most current program plan as well as the marketing materials you provide to customers?
- 2.5 [S] How do customers hear about this track in <UTILITY PROGRAM NAME> (i.e., how is it advertised)?
- 2.6 [S] What type of marketing materials does your firm distribute to inform potential participants and design team members about the CDA? How about marketing materials for the ABT?
- 2.7 [S] How do customers sign up to participate?
- 2.8 [S] How many years has the CDA been included in the <UTILITY PROGRAM NAME>?
- 2.9 [S] How many CDA projects are completed through the program per year, on average?
- 2.10 [S] Has this number been increasing or declining over the past five years?
- 2.11 [S] About what percentage of the customers that you have approached in the past about using the CDA actually have chosen to do so?
- 2.12 [S] Has the program been meeting its energy and demand savings goals to date? How many participants in the past year or two and how much savings?
- 2.13 [S] Why or why not?

CDA Program Operation [S for all questions]

- 3.1 Are there any particular market sectors or building types that are key targets for CDA participation? How about market sectors or building types that do not make suitable candidates for the CDA?

-
- 3.2 [IF YES AND NOT ALREADY MENTIONED] What are these sectors and/or building types your utility focuses on recruiting?
- 3.3 For those customers who have already chosen the CDA track, what do you think are their motivations for making this selection?
- 3.4 Are there any generalizations you can make about the types of customers, market sectors, or building types who are more likely to choose the CDA track?
- 3.5 [IF NOT ALREADY MENTIONED] Does the program target the healthcare sector? [FOR 4.5, 4.7, 4.9 AND 4.11 IF THE INTERVIEWEES ASK WHY THEY ARE BEING ASKED ABOUT THESE PARTICULAR MARKET SECTORS OR BUILDING TYPES, SAY SOMETHING LIKE: "BASED ON OUR EXPERIENCE EVALUATING OTHER CDA/NEW CONSTRUCTION PROGRAMS, WE THEORIZE THAT THESE MARKET SECTORS/BUILDING TYPES ARE BETTER CANDIDATES FOR A CDA APPROACH."
- 3.6 Why or why not?
- 3.7 [IF NOT ALREADY MENTIONED] Does the program target the public sector (i.e. schools and government buildings)?
- 3.8 Why or why not?
- 3.9 [IF NOT ALREADY MENTIONED] Does the program target office buildings?
- 3.10 Why or why not?
- 3.11 Have you tried to influence national chains to use the CDA?
- 3.12 [IF NOT ALREADY MENTIONED] Because national chains usually have common designs across regions and stores, we would expect that it would be difficult to recruit them to the CDA. Have you found this to be the case?
- 3.13 Do you have any sense as to what percentage of the buildings/facilities that are participating in CDA projects are owner occupied?
- 3.14 Do you attempt to use designers (i.e., architects and engineers) to recruit customers to use the CDA?
- 3.15 How are building designers recruited to participate in the program?
- 3.16 How do account executives typically find out about new construction or major renovation projects?
- 3.17 How early in the project development process do account executives approach customers about their new construction or major renovation projects in order to encourage them to consider using the CDA?
- 3.18 Can you describe the prevailing barriers to participation that discourage your target market actors (customers, design team, etc.) from becoming involved in the CDA? [ASK FOR EACH MARKET ACTOR GROUP SEPARATELY]

-
- 3.19 How qualified are your account representatives to identify potential CDA projects?
 - 3.20 How qualified are your account representatives to successfully market the CDA track and its benefits to their customers?
 - 3.21 Do your account representatives have the right knowledge and tools to follow through with participants as they interact with the design team and incorporate energy efficiency measures selected through the CDA? If yes, probe with, “What do you think are the right tools and knowledge?” If no, probe with, “What tools or knowledge do you feel they are missing?”

Assessment of CDA Program

- 4.1 [O/S] What elements of the CDA are working well? [IF NOT ALREADY MENTIONED, PROBE FOR MARKETING AND OUTREACH, TIMING OF CONTACT WITH CUSTOMERS, INTERACTING WITH TRADE ALLIES, FINANCIAL ASSISTANCE, and PAPERWORK]?
- 4.2 [O/S] What elements of the CDA need improvement?
- 4.3 [O/S] For the elements of the overall program that are not working as well, how could these problems be remedied?
- 4.4 [O/S] In general, do you think the program is effectively structured? Why or why not?
- 4.5 Have you noticed efficiency gaps between those new construction projects that use the CDA and those that do not?
- 4.6 [S] What do you think the marginal benefit of adopting energy efficient improvements through the CDA is relative to making these improvements on a piecemeal basis?
- 4.7 [S] What is the range of incentives paid out to customers who participate in the program?
- 4.8 [O/S] Is there any additional information about this program that we should know about to help us in our evaluation of this program?

Thank Respondent and end interview

[Complete the following two sections if respondent is involved in the Advanced Building Track effort]

General Program Description and History of Advanced Building / Core Performance Program

- 5.1 [O/S] [IF NOT ALREADY PROVIDED THROUGH THE DATA REQUEST] Can you provide us with a copy of your most current program plan as well as the marketing materials you provide to customers?
- 5.2 [S] How many years has the Advanced Building Track been in operation?
- 5.3 [S] How many customers have participated in via the ABT?
- 5.4 [S] In what other tracks/programs can an Advanced Building customer also participate (e.g., custom, prescriptive, CDA)?
- 5.5 [S] How do you track customer participation?
- 5.6 [S] How many Advance Building projects are completed through the program per year, on average?
- 5.7 [S] Has this number been increasing or declining over the past five years?
- 5.8 [S] How do customers hear about this program track?
- 5.9 [S] How do they sign up to participate?
- 5.10 [S] About what percentage of the customers that you have approached in the past about using this program actually have chosen to do so?
- 5.11 [S] Has the program been meeting its energy and demand savings goals to date? Why or why not?

Advanced Buildings / Core Performance Program [S for all questions]

- 6.1 [IF INTERVIEWEE INDICATES THEY DO NOT HAVE PRIMARY RESPONSIBILITY FOR THE PROGRAM'S ADMINISTRATION] Who is responsible for the program track's administration? Could you provide this person's contact information?
- 6.2 Please briefly explain how the Advanced Buildings / Core Performance Program is implemented? [PROBE FOR MARKETING/RECRUITMENT PRACTICES, PROGRAM TRACKING, INCENTIVE PAYMENT, VERIFICATION]
- 6.3 [IF NOT ALREADY MENTIONED] What types of buildings and customers does the program target?
- 6.4 What is the range of incentives paid out to customers who participate in the program?

-
- 6.5 On average, how many prescriptive measures does each project include?
 - 6.6 What are the most common measures or end-uses adopted by participants (e.g., lighting, HVAC)?
 - 6.7 How do the incentives offered through Advanced Buildings / Core Performance Program differ from the typical prescriptive and custom incentives offered?
 - 6.8 What is the incremental cost of the energy efficiency improvements over standard efficiency made per project?
 - 6.9 What are the most significant barriers to customer recruitment in the program?
 - 6.10 Who provides the Core Performance training?
 - 6.11 [IF NOT ALREADY EXPLAINED] Is the training the responsibility of one party or is the responsibility shared among NBI and your utility?
 - 6.12 How does the Advanced Buildings / Core Performance Program interact with the other programs offered by your utility?
 - 6.13 How closely does your utility work with the New Buildings Institute (NBI)?
 - 6.14 [IF NBI INVOLVEMENT IS MENTIONED] In what capacity does NBI provide assistance?
 - 6.15 What elements of your program are working well?
 - 6.16 What elements of your program need improvement?
 - 6.17 Are you familiar with Vermont and Maine's similar programs?
 - 6.18 [IF FAMILIAR WITH VT and / or ME PROGRAMS] Are you aware of differences in how the Vermont and Maine programs are implemented or marketed compared to your own?
 - 6.19 [IF YES] What are these differences?
 - 6.20 [IF YES] How do you think these differences might affect program outcomes?
 - 6.21 Is your State's Advanced Building / Core Performance program different than those in any other states?
 - 6.22 [IF YES] How is it different?
 - 6.23 [IF YES] How do you think these differences might affect program outcomes?
 - 6.24 Is there any additional information about this program that we should know about to help us in our evaluation of this program?

Thank Respondent and end interview

INTERVIEW GUIDE FOR TECHNICAL STAFF

MA LCIEC Project #6B – CDA Process Evaluation – September 2010

This guide is based on the approved Program Administrator Interview Guide and has been tailored to address technical staff.

[This interview guide contains questions our evaluation team plans to ask of technical staff at the utilities to understand the role they play in projects that are using the comprehensive design approach (CDA) that is available to customers who construct new commercial and/or industrial buildings or perform major renovations of existing structures. Interviews of program administrators and staff have been completed before approaching technical staff members for their input regarding the CDA and the process by which it is implemented. It should be noted, that this guide may depart from the following outline in order to maintain the flow of conversations.]

Technical Staff Member's Name _____

Introduction

My name is <NAME> and I work for Itron's Consulting and Analysis Group. We have been hired by the Massachusetts Energy Efficiency Program Administrators to conduct a process evaluation of the comprehensive design approach (CDA) and Advanced Building Track for new construction and major renovation projects in the commercial and industrial sectors. We would like to understand the role you play on projects using the CDA or AB as a technical staff member.

Role of Interviewee

- 1.1 What is your position/title at <UTILITY>? How long have you held this position?
- 1.2 What are your primary responsibilities?
- 1.3 Which C&I energy efficiency program(s) and/or program tracks are you involved with? (Probe specifically for New Construction Programs for the commercial and industrial sectors; the track types are CDA, custom, prescriptive, and AB).
- 1.4 What are your roles for the CDA and/or AB, specifically? Who do you work with (i.e., design team members, customers, program managers/staff, account executives)?
What are you responsible for in these relationships?

- 1.5 How does your role differ on a CDA project versus a custom project? How about for an AB project versus a prescriptive or custom project?
- 1.6 When the utility program managers and staff meet with customers to discuss the benefits of CDA, are you usually in attendance? What sort of information do you provide to the customer and design team?
- 1.7 With whom do you work at <UTILITY> to implement the CDA and AB? (Get names, phone, and e-mail contact information)

2. History of CDA Projects

- 2.1 How many CDA projects do you work on per year, on average? How about AB projects?
- 2.2 How long have the CDA and AB been in place?
- 2.3 Have the number of projects been increasing or declining over the past two years?
- 2.4 About what percentage of the customers who start their projects using CDA end up completing their projects through the CDA? How about through the AB?
- 2.5 Has a customer ever expressed interest in the CDA track only to drop out and pursue the custom or prescriptive track instead? Or, perhaps did not pursue any track at all? Do you recall the names of these customers and the contact people?

3. Energy Savings for CDA, AB, and New Construction Programs

- 3.1 From your experience, how much of an effect does the inclusion of interactive effects of installed measures have on energy savings?
- 3.2 Do your savings estimates ever differ from those developed by the design team? If so, is there a process in place to arrive at a single estimate?
- 3.3 Which building types benefit the most from CDA, based on your estimates of energy savings?

4. Assessment of CDA and AB

- 4.1 What elements of the CDA are working well? How about AB?
- 4.2 What elements of the CDA need improvement? How about AB?
- 4.3 For the elements of the overall approaches that are not working as well, how could these problems be remedied?

-
- 4.4 What are the most significant barriers to customer recruitment to using the CDA?
 How about AB?

Thank Respondent and End Interview

INTERVIEW GUIDE FOR ACCOUNT EXECUTIVES

MA LCIEC CDA TASK #6B – September 2010

Name _____

Utility (circle one) National Grid NSTAR WMECO

E-Mail _____

Phone _____

Date _____

Introduction

My name is <NAME> and I work for Itron's Consulting and Analysis Group. We have been hired by the Massachusetts Energy Efficiency Program Administrators to conduct a process evaluation of the comprehensive design approach (CDA) track of the <UTILITY PROGRAM NAME> program. I have already spoken with, <PA Name>, the program administrator most familiar with the CDA, who provided your name.

1. Background and Participant Recruitment

- 1.1 What is your exact job title?
- 1.2 Could you briefly describe your job responsibilities?
- 1.3 Do you serve a specific sector of customers (e.g. geographic region, industrial, commercial, etc)?
- 1.4 Do you market the CDA track to your customer accounts?
1.4A [IF YES] What is your recruiting approach?
- 1.5 Do you market the Advanced Buildings/Core Performance track to your customer accounts?
1.5A [IF YES] What is your recruiting approach?
- 1.6 How do you typically find out about new construction or major renovation projects?
[NOTE: POSSIBLE ANSWERS: NEWSPAPER ARTICLES, INTERNET, WORD-OF-

- MOUTH, CUSTOMER INQUIRY FOR SERVICE, PERMIT PROCESS, DODGE DATA]
- 1.6A At what stage of development are the projects when you find out about them?
- 1.7 Do you track 'leads' for potential customers?
- 1.7A [IF YES] How do you do this (probe for spreadsheet, database, etc.)?
- 1.7B [IF YES] Would you be willing to provide us with this list?
- 1.8 Do customers ever contact you about the CDA track?
- 1.8A [IF YES] How do customers find out about the CDA?
- 1.9 Do customers every contact you about the Advanced Buildings Track?
- 1.9A [IF YES] How do customers find out about this track?
- 1.10 When you hear about a new construction or major renovation project, at what stage in the project development process do you approach customers about them possibly using the CDA track?
- 1.11 How about for the Advanced Buildings/Core Performance track?
- 1.12 Do you set up meetings between your customers and new construction program staff most familiar with the CDA track?
- 1.12A [IF YES] About how many of these meetings do you set up in a typical year?
- 1.12B [IF YES] How do your customers respond to these CDA informational presentations? Do they find the presentation useful?
- 1.13 About how many customers are participating in the CDA track in a given year in your territory?
- 1.13A Could you provide a contact name, title, phone number, and email address for each project?
- 1.14 About what percentage of the customers who start off in the CDA track end up completing a CDA project?
- 1.15 [IF B14 < 100%] What are some typical reasons why customers would not complete a project with the CDA track?
- 1.16 What are some typical reasons why customers would choose not to participate in the CDA track in the first place?
- 1.17 You just discussed the process for recruiting CDA projects. Would this process be different for the Advanced Buildings/Core Performance track?
- 1.17A [IF YES] How would it be different?
- 1.18 About how many customers are participating in the Advanced Buildings/Core Performance track in a given year?
- 1.18A Could you provide a contact name, title, phone number, and email address for each project?

-
- 1.19 About what percentage of the customers who start off in the Advanced Buildings/Core Performance track end up completing a project in this track?
 - 1.20 [IF B19 < 100%] What are some typical reasons why customers would not complete a project with the Advanced Buildings/Core Performance track?
 - 1.21 What are some typical reasons why customers would choose not to participate in the Advanced Buildings/Core Performance track in the first place?

2. Identification of Program Participants

- 2.1 Which customer markets or segments do you think are a good fit for CDA track?
- 2.2 Why do you say this?
- 2.3 What customer markets or segments do you think are a poor fit for the CDA track?
- 2.4 Why do you say this?
- 2.5 Which customer markets or segments do you think are a good fit for Advanced Buildings/Core Performance track?
- 2.6 Why do you say this?
- 2.7 What customer markets or segments do you think are a poor fit for the Advanced Buildings/Core Performance track?
- 2.8 Why do you say this?
- 2.9 An introduction from an account executive would be very helpful in making customers familiar with our evaluation objectives. Would you be willing to contact each of these customers to let them know that we will be calling them in the near future?

3. General Thoughts

- 3.1 What are your general thoughts about the CDA track?
- 3.2 What are some of the strengths of the CDA track?
- 3.3 What are some of the weaknesses of the CDA track?
- 3.4 What are your general thoughts about the Advanced Buildings/Core Performance track?
- 3.5 What are some of the strengths of the Advanced Buildings/Core Performance track?
- 3.6 What are some of the weaknesses of the Advanced Buildings/Core Performance track?

Thank Respondent and End Interview

INTERVIEW GUIDE FOR DATA TRACKING PERSONNEL

MA LCIEC CDA TASK #6B – September 2010

- 1.1 What is the name of the tracking system and who developed it?
- 1.2 How does your utility track CDA project information?
- 1.3 Could you provide utility tracking data? We are interested in the prescriptive, customer, AB and CDA program tracks, particularly in the date range from about 2009 to present. We are interested in completed new construction projects with the following data:
 - A. completed projects
 - B. measures installed
 - C. participant name, title, phone number
 - D. address
 - E. tech representative & contact info
 - F. relevant dates
 - G. savings
 - H. project documents (pdf)
- 1.4 Could you provide data that demonstrates how the utility first identifies potential projects (Dodge data?) and whether they become active program participants?
- 1.5 How does the tracking system store data? (e.g. custom or access database, spreadsheet)
- 1.6 Who has access to the tracking system? Account Execs, program managers? Do they have write access or read-only? Can they send forms to a central location?
- 1.7 What sort of project data does the system capture? Does the current system capture lead generation and correspondence between the customer and utility staff? Would you be willing to provide us this information?
- 1.8 Does the tracking system capture information regarding the pipeline for potential new construction projects? (i.e. lead generation, new construction data, Dodge data, etc) Where does this information come from and how is it captured?
- 1.9 Does the tracking system capture customer characteristics such as business type, square footage, etc?

-
- 1.10 How does the system track program goals and energy savings?
 - 1.11 How does the system track the progress of a project from initial contact to completion?
 - 1.12 Does the tracking system contain customer files such as program application forms, signed contracts, invoices, etc?
 - 1.13 Could you provide the tracking data, customer participation data, applications in an electronic format or access to the tracking DB? Would it be possible to do the same for a sample (30 projects?) of prescriptive/custom tracks?
 - 1.14 Does this tracking system meet the needs of the CDA track?
 - 1.15 What are the advantages & disadvantages of this tracking system?

INTERVIEW GUIDE FOR PARTICIPATING DESIGN TEAM: ARCHITECTS, ENGINEERS, DEVELOPERS, AND TECHNICAL CONSULTANTS

MA LCIEC CDA Task #6B – September 2010

[This interview guide presents questions our evaluation team plans to ask of a design team when they are constructing a new commercial and/or industrial building or performing a major renovation of an existing structure. The goal of the interview is to determine: 1) how the interviewee became involved with the program; 2) the extent of the interviewee's involvement; 3) recruiting practices, if any; and 4) the nature of the interviewee's participation in the program.]

Introduction

My name is <NAME> and I work for Itron's Consulting and Analysis Group. We have been hired by the Massachusetts Energy Efficiency Program Administrators to conduct a process evaluation of the comprehensive design approach/track covered by the following programs:

NSTAR – Construction Solutions
National Grid – Design2000 Plus
WMECO – Energy Conscious Construction

An important element of the process is to discuss the program with members of the design team in order to characterize how the design team collaborates with utility staff, utility account representatives, the customer, and other parties integral to the completion of the project. The information discussed during this interview is for evaluation purposes only and will not be shared with any of your competitors.

1. Background

- 1.1 How did you first become involved with the Comprehensive Design Approach (CDA) for the utility programs mentioned above? (Describe CDA, if they do not recognize, then switch to non participant guide)

-
- 1.2 Are you involved with any of the Advanced Buildings Core Performance programs offered in Massachusetts? If so what is your involvement and approximately how many customers have you worked with for these efforts?
 - 1.3 Why do you think your client decided to participate in the CDA (and / or AB) track?
 - 1.4 We are really trying to get a feel for which market segments the utilities should go after to recruit participants for the CDA. Are there market segments you think make more sense to recruit? Why? Are there market segments for which you think the CDA is not appropriate?
 - 1.5 At what stage in the building process does your firm typically get involved [e.g. conceptual stage, schematic design, installation]?
 - 1.6 Could you briefly describe your clients' firms in terms of size, number of employees, and market niche?
 - 1.7 Have you worked with clients who qualified for incentives or services under the CDA process but chose to participate in a prescriptive or custom program instead? If so, why did the client chose to implement projects in a piecemeal manner rather than through a comprehensive design approach?
 - 1.8 Have you worked with clients who qualified for incentives or services but chose not to participate in ANY program at all? If so, why did the client not want to participate in a program?

2. Marketing & Recruiting

- 2.1 How did you learn about the current incentives and services offered in Massachusetts?
- 2.2 Do you use the CDA process and rebates as a means of recruiting new clients? Why or why not?
- 2.3 Have you ever seen marketing materials, such as brochures or fact sheets, describing the CDA? Did you provide them to your clients? Were they useful?
- 2.4 Would you say that customers typically know about these incentives and services, or are you bringing these features, especially of the CDA, to their attention?
- 2.5 At what point in the project process do you begin to talk about energy efficiency or the utilities programs with your clients? [PROBE THE INTERVIEWEE FOR A TERM TO DESCRIBE THE PHASE OF THE PROCESS. POSSIBLE TERMS THEY MIGHT USE: RFP/PROPOSAL, PROGRAMMING/PRE-DESIGN, CONCEPTUAL DESIGN, SCHEMATIC DESIGN, DESIGN DEVELOPMENT, CONSTRUCTION DOCUMENTS, CONSTRUCTION, OCCUPANCY]

3. Burden of Program Requirements

- 3.1 How well do the CDA requirements mesh with your new construction projects?
- 3.2 For a typical project, how much additional time does the CDA process require from your firm? [TO NORMALIZE RESPONSES, TRY TO GET ESTIMATES IN TERMS OF % INCREMENTAL TIME FOR CDA PROJECTS VS. NON-CDA PARTICIPATION]
- 3.3 Are there any modifications to the programs that Massachusetts utilities might make to better support the design and construction of energy efficient facilities?

4. General Feedback & Satisfaction

- 4.1 What do you view as the primary strengths of the CDA track of [UTILITY NC PROGRAM]?
- 4.2 What are some areas where the CDA track of [UTILITY NC PROGRAM] could be improved?
- 4.3 In general, what strategies would you recommend that the Massachusetts utilities use to get more new construction projects on the CDA track?
- 4.4 Is there anything else regarding the CDA process that you would like us to know before we finish?

THIS COMPLETES OUR INTERVIEW – THANK YOU SO MUCH FOR YOU HELP TODAY.

INTERVIEW GUIDE FOR NONPARTICIPATING DESIGN TEAM: ARCHITECTS, ENGINEERS, DEVELOPERS, AND TECHNICAL CONSULTANTS

MA LCIEC CDA Task #6B – September 2010

This guide is based on the approved Program Administrator Interview Guide and has been tailored to address technical staff.

*This interview guide presents questions our evaluation team plans to ask of design teams when they are constructing a new commercial and/or industrial building or performing a major renovation of an existing structure through a utility program **that qualifies, but does not rely on the CDA**. The goal of the interview is to determine: 1) if the interviewee is familiar with the CDA (if so, how did he/she hear of it and what is the interviewee's opinion of it); 2) whether the interviewee has had clients who participated in utility programs; 3) the degree of involvement in their clients' projects; and 4) what can be done to encourage design team members to direct their clients towards CDA.*

Introduction

My name is <NAME> and I work for Itron's Consulting and Analysis Group. We have been hired by the Massachusetts Energy Efficiency Program Administrators to conduct a process evaluation of the comprehensive design approach/track covered by the following programs:

NSTAR – Construction Solutions
National Grid – Design2000 Plus
WMECO – Energy Conscious Construction

We are interviewing members of project design teams in order to characterize how they collaborate with utility staff, utility account representatives, customers, and other parties integral to the completion of CDA projects. We are also interviewing architects, engineers, developers, and technical consultants who are working on new commercial and/or industrial buildings or performing a major renovation of existing structures through utility programs that do not use the CDA. The information discussed during this interview is for evaluation purposes only and will not be shared with any of your competitors.

1. Interviewee Background and Familiarity with EE Programs

- 1.1 What are your primary responsibilities?
- 1.2 Could you briefly describe what type of work you specialize in?
- 1.3 What are the primary products and services provided by your firm?
- 1.4 Which market sectors do your clients typically come from?
- 1.5 How important is energy efficient building design to your clients?
- 1.6 Have you heard of the Comprehensive Design Approach (CDA) for the new construction/major renovation utility programs mentioned earlier?

1.6A. [IF YES] How did you hear about it?

PROMPT – if unfamiliar with CDA - *The Comprehensive Design Approach represents an important delivery channel, which works to maximize the achievable energy and demand savings in newly-constructed or newly-renovated large commercial and industrial (C&I) buildings by taking a holistic approach to energy efficiency. Instead of making these improvements on a measure-by-measure basis, the CDA is exhaustive in that it recommends all known cost-effective energy efficiency opportunities at the time of building design and construction.*

If 1.6 = YES, CONTINUE. ELSE SKIP TO “NOT KNOWLEDGEABLE ABOUT CDA” SECTION

2. Knowledgeable About CDA

- 2.1 Have you ever seen any marketing materials from the utilities describing the CDA?
 - 2.1A. [IF YES] What marketing materials have you seen?
- 2.2 Have you spoken to any utility staff member about the CDA?
 - 2.2A. [IF YES] What was the nature of this interaction? [PROBE FOR OCCASION FOR INTERACTION (E.G. TRADE SHOW) AND CONTENT OF DISCUSSION]
- 2.3 What is your opinion of the CDA relative to the other energy efficiency programs offered by the Massachusetts utilities?
- 2.4 Have you ever recommended the CDA track to any of your clients?
 - 2.4A. Why or why not?
- 2.5 Have you worked with clients who qualified for incentives or services under the CDA process but chose to participate in a prescriptive or custom program instead?

- 2.5A. [IF YES] Why did the client chose to implement projects through these programs rather than through a CDA?
- 2.6 Are there certain sectors or segments that lend themselves better to CDA than others?
- 2.6A. [IF YES] Which sectors or segments?

SKIP TO SECTION – DESIGN TEAM PROJECT INVOLVEMENT

3. Not Knowledgeable About CDA

- 3.1 Would you say that your customers typically know about energy efficiency incentives and services?
- 3.1A. [IF YES] How do they typically find out about these?
- 3.2 Has your utility ever contacted you regarding energy efficiency programs?
- 3.2A. [IF YES] What was the nature of this interaction? [PROBE FOR OCCASION FOR INTERACTION (E.G. TRADE SHOW) AND CONTENT OF DISCUSSION]
- 3.3 Have any of your customers participated in utility energy efficiency programs?
- 3.3A. [IF YES] Which utility programs were these?
- 3.4 After hearing about the incentives offered by the CDA program track, would you be interested in promoting the CDA to your clients?
- 3.4A. Why do you say this?

[SKIP TO 6]

4. Design Team Project Involvement

- 4.1 How do you typically get involved with a new construction or a major retrofit project?
- 4.2 At what stage in the building process does your firm typically get involved in a new construction project [e.g., conceptual stage, schematic design, installation]?
- 4.3 During the past five years, approximately how many projects have you worked on that have qualified for incentives or services under any energy efficiency programs?
- 4.4 What are the advantages to participating in a program track such as the CDA?
- 4.5 What are the drawbacks to participating in a program track such as the CDA?
- 4.6 Have you worked with clients who qualified for incentives or services under a utility energy efficiency program, but chose not to participate in ANY program at all?

4.6A. [IF YES] If so, why did the client state that it did not want to participate in such a program?

5. EE Programs as Recruiting Tools

- 5.1 Would you say that customers typically know about these energy efficiency incentives and services, or are you bringing these programs to their attention?
- 5.2 At what point in the project process do you begin to talk about energy efficiency or the utility's programs with your clients? [PROBE THE INTERVIEWEE FOR A TERM TO DESCRIBE THE PHASE OF THE PROCESS. POSSIBLE TERMS THEY MIGHT USE: RFP/PROPOSAL, PROGRAMMING/PRE-DESIGN, CONCEPTUAL DESIGN, SCHEMATIC DESIGN, DESIGN DEVELOPMENT, CONSTRUCTION DOCUMENTS, CONSTRUCTION, OCCUPANCY]
- 5.3 Do you use the utility energy efficiency programs and rebates as a means of recruiting new clients?
- 5.3A. Why or why not?

6. General Feedback

- 6.1 Do you have any advice on how to get the word out to professionals such as yourself about the CDA incentives and services?

THIS COMPLETES OUR INTERVIEW – THANK YOU SO MUCH FOR YOUR HELP.

Thank Respondent and End Interview

INTERVIEW GUIDE FOR PARTICIPATING AND NONPARTICIPATING CUSTOMERS:

MA LCIEC CDA Task #6B – October 2010

This interview guide will be used for both CDA participants and potential CDA participants who did not participate in the CDA track (nonparticipants). The participant questions will be asked of customers who are using the CDA when they constructed a new commercial and/or industrial building or performed a major renovation of an existing structure. While these customers are ultimately the final decision makers regarding the construction of their buildings, they also take into account the information provided to them by design team members they hire. The goal of the interview is to determine: 1) how they heard about CDA; 2) what made them choose to use the CDA; 3) when in their project cycle they involved the utility; and 4) their level of satisfaction with the CDA. For nonparticipants, we are interviewing customers in order to characterize why they chose not to complete their projects under the CDA and to determine how they differ from CDA participants.

Name/Title _____

Company _____

Phone _____

Introduction

FOR PARTICIPANTS:

My name is <NAME> and I work for Itron's Consulting and Analysis Group. We have been hired by the Massachusetts Energy Efficiency Program Administrators to conduct a process evaluation of the comprehensive design approach (CDA) covered by your utility's New Construction C&I Programs. You were likely informed by your utility representative that we would be contacting you to talk about your experience with the CDA.

An important element of the process is to discuss with customers their reasons for using the CDA, how they first learned of the CDA, and what their levels of satisfaction are with this approach to new construction or major renovation of commercial and industrial structures.

FOR NON-PARTICIPANTS:

My name is <NAME> and I work for Itron's Consulting and Analysis Group. We have been hired by the Massachusetts Energy Efficiency Program Administrators to conduct a process evaluation of

the New Construction C&I Programs offered by your utility. Specifically, we are evaluating the Comprehensive Design Approach, which is used to maximize the energy and demand savings in new construction projects by taking a whole-building approach to energy efficiency.

We seek to determine customer awareness of this approach, why customers chose not to complete their projects using CDA, and in what ways the program can be modified to increase customer participation.

1. Background and Familiarity with CDA

- 1.1 What is your job title?
- 1.2 Please briefly describe your responsibilities in this position?
- 1.3 Please characterize your firm in terms of size and type of business?
- 1.4 Please describe the newly constructed (or renovated) building in terms of square footage and how it is being used. [IF NECESSARY, CLARIFY ADDRESS FROM PROJECT FOLDER]
- 1.5 Are you familiar with the CDA available through [UTILITY'S] New Construction C&I program?

PROMPT – if unfamiliar with CDA - The Comprehensive Design Approach represents a delivery channel, which works to maximize the energy and demand savings in newly-constructed or newly-renovated large commercial and industrial buildings by taking a whole-building approach to energy efficiency. Instead of making these improvements on a measure-by-measure basis, the CDA recommends all known cost-effective energy efficiency opportunities at the time of building design.

- 1.6 [This information should be available prior to interview, but this question will be asked of all for confirmation] Our records show that your company used the CDA process at [ADDRESS] – is this correct?
- 1.7 Are you familiar with the CDA available through [UTILITY'S] New Construction C&I program?

IF 1.7 = YES, CONTINUE.

IF 1.7 = NO, SKIP TO “NON-PARTICIPANT INTERVIEW”.

2. Decision-Making Process

- 2.1 Who is responsible for making decisions regarding energy-efficiency at your company?
2.1A. [IF THIS DECISION IS LEFT UP TO HIRED MEMBERS OF A DESIGN TEAM]
How does the design firm present energy options to you?
- 2.2 What elements of the CDA led your company to decide to use it in your new construction/major renovation project?
- 2.3 How did you first become aware of the CDA? [POSSIBLE ANSWERS – DO NOT PROMPT – INCLUDE UTILITY STAFF MEMBER OR ACCOUNT REP, MARKETING MATERIALS, ARCHITECT, ENGINEER, UTILITY WEBSITE, MANUFACTURING REP, CONSTRUCTION MANAGER, ENERGY MANAGER, ETC.]
- 2.4 Was it difficult to reach a decision whether to use CDA for your project?
- 2.5 What were some of the considerations you made in making this decision?
- 2.6 Were other alternatives considered?
2.6a. [IF YES] What were these alternatives?

3. Level of Interaction

- 3.1 At which stage of the project's design process did your firm first become involved with utility program staff? [NOTE: POSSIBLE ANSWERS MIGHT INCLUDE CONCEPTUAL, DEVELOPMENTAL, SCHEMATIC, DESIGN PHASE, ETC.]
- 3.2 Please describe the typical nature of your interactions with program staff and utility account representatives when working on your CDA project?
- 3.3 What sorts of details about the energy savings and the measures were discussed?
- 3.4 How often are you in contact?
- 3.5 Was the utility staff helpful in explaining how the CDA works?
3.5A. [IF YES] What in particular was explained well?
3.5B. [IF NO] In what areas was assistance lacking?
- 3.6 Did the utility staff compare the differences between using the CDA versus a prescriptive or custom approach for your project?
3.6A. [IF YES] What differences were pointed out?
- 3.7 Did your firm work with an independent technical consultant to provide modeling results, estimates of energy savings, and/or other services?
3.7A. [IF YES] Did the consultant have any influence on the design of the building? [NOTE: FREQUENTLY USED CONSULTANTS INCLUDE DMI, ANDELMAN & LELEK, EINHORN YAFFEE PRESCOTT, OR R.G. VANDERWEIL]
- 3.8 Did your firm pay for all of the costs associated with modeling, or were the costs shared by the utility?
- 3.9 How did this affect your decision to participate in CDA?

4. Recruiting, Marketing & Incentives

- 4.1 Have you ever received marketing materials, such as brochures or an email, describing the CDA?
 - 4.1A. [IF YES] What type of materials did you receive?
 - 4.1B. [IF YES] Who provided them to you?
- 4.2 Do you use the CDA incentives as a means of reducing your cost of new construction, reducing your energy use, or both?
- 4.3 How have recent market conditions (i.e., poor economy) affected the role that incentives play in your decision to install energy-efficient equipment?
- 4.4 Are you satisfied with the amount of the incentive you received for the CDA project?
- 4.5 Why or why not?
- 4.6 What kind of changes to the incentives and services offered through the CDA do you think could help improve customer participation [NOTE POSSIBLE RESPONSES MIGHT INCLUDE, INCENTIVE STRUCTURE, INCENTIVE TO OFFSET OWNER'S FIRST COST, INCENTIVE FOR ADDITIONAL DESIGN TEAM EFFORT, ETC.]?

5. Building Design

- 5.1 Did the CDA process influence the design of your building?
 - 5.1A. [IF YES] In what way?
- 5.2 What was the influence of the utility's technical representative/engineer on the building design?
- 5.3 Does working closely with the utility during the design process of a new building appeal to you?
 - 5.3A. Why (or why not)?
- 5.4 What firms made up your design team?
- 5.5 Who were your primary contacts at these firms?
- 5.6 How did you choose the design team?
- 5.7 Were other firms considered, but not chosen?
- 5.8 What was your design team's attitude towards the CDA process?
- 5.9 Did your design team try to persuade you to opt for a more traditional new construction track such as prescriptive, custom, or Advanced Buildings?

6. Burden of Requirements

- 6.1 How would you describe the application process for the CDA track?

- 6.2 How reasonable were the requirements of the application process?
- 6.3 How well did the CDA requirements mesh with your building design? [IF NOT ALREADY MENTIONED, PROBE FOR HOW CDA REQUIREMENTS MESHED WITH BUILDING SIZE, TYPE OF MEASURES]
- 6.4 What are some of the barriers that might prevent a firm such as yours from participating in the CDA? [NOTE: POSSIBLE RESPONSES MIGHT INCLUDE MARKET FORCES, MGMT/DECISION MAKER ATTITUDES OR BUSINESS MODELS, PROGRAM APPLICATION, PAYBACK, PAPERWORK, APPROVAL PROCESS, OR OTHER FEATURES OF THE PROGRAM]?
- 6.5 Have you ever had a project that qualified for incentives or services under the CDA but instead chose to participate in another track such as prescriptive, custom or Advanced Buildings?
 - 6.5A. Why do you choose to avoid the CDA in this (these) case(s)?
- 6.6 In terms of money and time required, how would you describe the engineering and modeling study required for the CDA?
 - 6.6A. Would these requirements affect your decision to participate in a future CDA project?

7. Satisfaction

- 7.1 What do you view as the primary strengths of the CDA process?
- 7.2 What are some areas where the CDA process could be improved?
- 7.3 What types of changes or enhancements to the program could [UTILITY] make to encourage your participation?
- 7.4 Do you have experience with custom, prescriptive, or Advanced Building energy efficiency programs for new construction or major renovation?
 - 7.4A. [IF YES] How does your experience with each of these programs compare to CDA?
- 7.5 Would you consider using the CDA track for a future construction projects? Why or why not?

8. General Feedback

- 8.1 Do you have any recommendations on how the utility might better support the design and construction of energy efficient facilities?
 - 8.1A. [IF YES] What are these?
- 8.2 Do you have any advice on how to get the word out to other building owners about the CDA incentives and services?
 - 8.2A. [IF YES] What do you advise?

- 8.3 Is there anything else regarding the CDA that you would like us to know before we finish?
- 8.3A. [IF YES] What else should we know about?

THIS COMPLETES OUR INTERVIEW – THANK YOU FOR YOU HELP.

9. NON-PARTICIPANT INTERVIEW

- 9.1 Have you ever received marketing materials, such as brochures or an email, describing the CDA?
- 9.1A. [IF YES] What type of materials did you receive?
- 9.1B. [IF YES] Who provided them to you?
- 9.2 Did your firm use an energy efficiency program/track for your new construction/major renovation project? [INTERVIEWER SHOULD REFER TO TRACKING DATA BEFOREHAND TO CONFIRM PARTICIPATION IN ANOTHER TRACK]
IF 9.2 = YES, CONTINUE.
IF 9.2 = NO, SKIP TO “NO TRACK”.
- 9.3 Which energy efficiency program/track did your firm use?
- 9.4 Why did you decide to participate in this energy efficiency program/track rather than the CDA?
- 9.3A. [IF NOT ALREADY MENTIONED] What about the CDA dissuaded your firm from participating in it?
- 9.4 Were you satisfied with your experience with this program/track?
- 9.5 How did you receive information about the incentives and services of the program/track you used? [NOTE: POSSIBLE ANSWERS MIGHT INCLUDE UTILITY, DESIGN TEAM, ETC.]?

10. Building Design: Non-Participant

- 10.1 What firms made up your design team?
- 10.2 Who were your primary contacts at these firms?
- 10.3 Does working closely with the utility during the design process of a new building appeal to you?
- 10.3A. Why (or why not)?
- 10.4 What was the attitude of your design team towards the application process of the CDA versus your chosen track?
- 10.5 Did you commission or consider commissioning the modeling study necessary for the CDA?

IF 10.5 = YES, ASK 10.6. ELSE SKIP TO 10.8.

- 10.6 Did the results have an influence in your decision to pursue this track versus the CDA?
- 10.7 Would reducing the modeling study cost affect your decision to participate in the future?
- 10.8 How have recent market conditions (i.e., poor economy) affected the role that incentives play in your decision to install energy-efficient equipment?
- 10.9 Given the information provided to you about the CDA, would you consider using it in the future for a potential new construction project?
 - 10.9A. [IF NO] Why not?

THIS COMPLETES OUR INTERVIEW – THANK YOU FOR YOU HELP.

11. Non-Participant: NO TRACK

- 11.1 Are you aware of energy efficiency incentives and services offered for new construction and major renovation projects in Massachusetts?
 - [IF NO, SKIP TO 11.3]
- 11.2 Did you consider participating in a program?
 - 11.2A. [IF YES] Which ones?
 - 11.2B. [IF NO] Why did you decide not to participate in any program?
- 11.3 Has your utility ever contacted you regarding energy efficiency programs?
- 11.4 Have you ever received marketing materials such as brochures or emails?
- 11.5 How much contact do you have with someone from your utility, such as an account executive or program staff member?
 - 11.5A. [IF THEY HAVE SOME CONTACT] How would you describe the relationship?
- 11.6 Have you participated in utility energy efficiency programs before?
 - 11.6A. [IF YES] Which programs/tracks?
- 11.7 Does working closely with the utility during the design process of a new building appeal to you?
 - 11.7A. Why (or why not)?
- 11.8 Would you be willing to pay for the modeling and engineering study necessary for the CDA application?
 - 11.8A. [IF YES] How much would you be willing to pay?
 - 11.8B. [IF NO] If the utility paid for half of the cost of the study, would you be willing to pay the other half?

11.8C. [IF NO] IF the utility was willing to pay for the full cost of the modeling and engineering study, would you be willing to have such a modeling and engineering study conducted?

11.9 After hearing about the incentives offered by the CDA, would you consider participating in the program for your next new construction project?

11.9A. Why or why not?

THIS COMPLETES OUR INTERVIEW – THANK YOU FOR YOU HELP.