Process Evaluation Report

THE CADMUS GROUP, INC.

Newfoundland Power: Process Evaluation

Prepared for
Newfoundland Power

Prepared by
The Cadmus Group, Inc. / Energy Services
720 SW Washington Street, Suite 400
Portland, OR 97205
503-228-2992

February 2, 2011

Prepared by:
David Sumi, PhD
M. Sami Khawaja, PhD
Eric Rambo, PhD
Randy Spitzer, MBA

Corporate Headquarters:
57 Water Street
Watertown, MA 02472
Tel: 617.673.7000
Fax: 617.673.7001

An Employee-Owned Company
www.cadmusgroup.com

720 SW Washington St.
Suite 400
Portland, OR 97205
Tel: 503.228.2992
Fax: 503.228.3696

Contents

Executive Summary

Conservation and Demand Management Program Overview

The takeCHARGE Energy Saver rebate programs are the offerings of the Conservation and Demand Management (CDM) five-year plan (*Five- Year Energy Conservation Plan: 2008-2013)*. The programs are jointly offered by Newfoundland Power and Newfoundland and Labrador Hydro. According to the plan, the objectives of the programs are to "support a long term goal of development of a conservation culture and sustainable reduction in electricity consumption." Implementation of the programs began as scheduled in 2009, thus now placing the programs at the very start of the third year of the five-year plan.

These programs were selected by the utilities to deliver energy-efficiency savings to customers over the five-year plan interval (as described in Section 1). However, Newfoundland Power and Newfoundland and Labrador Hydro expect that program offerings will evolve during this period. It is anticipated that this process evaluation will contribute to the evolution of these offerings, and to planning of future programs.

takeCHARGE Programs Process Evaluation

Newfoundland Power has these related objectives for this process evaluation:

- Mapping the process of these programs (program logic models)
- Assessing the program processes
- Identifying market perceptions of the programs (from trade allies)
- Performing peer comparisons and best practices for similar programs
- Identifying barriers to participation (from trade allies, and indirectly from customers)
- Obtaining recommendations for program and process improvements

The overarching goal for the process evaluation was to assess the effectiveness of the programs, with an emphasis on determining which aspects of the program processes are working well and which need to be modified to optimize delivery and cost-effective energy impacts. These three methods formed the evaluation approach, and all were integral elements of the process evaluation:

- Conducting interviews (most in-person and some by telephone) with program staff and retailers/contractors.
- Reviewing program documents and related materials.
- Relying fairly extensively on Cadmus' experience working with programs and evaluation research in other jurisdictions and provinces.

Program Staff's Overall Assessment

Nearly all interviewees agree that the programs have successfully addressed many of the obstacles that typically face the initial start-up period (the first one or two years) for these types of programs. There was general agreement on several important accomplishments during the first two years of the CDM programs, and these program strengths are recognized in the assessments (provided in detail in Section 2).

Program Accomplishments

Program management, implementation, and planning/evaluation staff cite some notable accomplishments of the CDM programs, including the following:

- There was broad agreement that the near-term goals were achievable and confidence that the longer-term goals are also achievable. The programs are currently doing well against their annual goals.
- There was consensus that the program designs align well with the intended customer bases. Similarly, incentive levels were widely viewed as appropriate for stimulating participation, although changes will likely be needed going forward.
- Program satisfaction among participating customers is thought to be very satisfactory, especially as compared to the government programs, which tend to be viewed as overly bureaucratic (less customer-friendly).
- The level and quality of marketing and outreach efforts were widely regarded as appropriate for the programs as well as effective.
- Coordination between Newfoundland Power and Newfoundland Labrador Hydro was seen to be working well. Staff members at Newfoundland Labrador Hydro stressed the strong, positive relationships with staff members at Newfoundland Power, and they indicated that this will provide an important basis for the balance of the five-year CDM Plan.

Program Challenges

The main critiques raised in interviews with program staff concern the following:

- The programs did very well in urban markets, but rural areas were "very challenging."
- Some concerns were expressed that the goals/objectives for the CDM programs were not sufficiently developed and that there is a need for a more comprehensive CDM planning framework.
- Particularly challenging participation barriers were noted for the insulation program. Two critical issues for customers were these: (1) the difficulty of finding contractors to do very small projects at a reasonable price, and (2) encountering contractors who used insufficient installation because they were not familiar with best-practice standards.
- The original potential study was constrained by very limited primary data collection, so this needed to be addressed in future CDM program planning.

Retailer and Contractor Overall Assessment

Interviews with 12 retailers/contractors elicited overall satisfaction and enthusiasm for the CDM programs, although they noted some perceived shortcomings.

Program Strengths

The retailer and contractor interviews cited the following as strengths of the programs—areas where the programs are clearly successful:

- Residential program retailers and contractors consistently reported that the incentive levels were about right.
  - Some retailers noted that they particularly liked the thermostat double rebates and, in one case this, allowed the retailer to work with the distributor to cover nearly the entire cost of the measure.
  - One windows retailer said that the amount of incremental cost covered by the program incentive was the most important factor in increasing market demand.
- The residential program retailers reported much satisfaction with both the marketing material (POP displays, stickers, brochures) and the in-store exhibits and events. While these retailers also tended to be very appreciative of the training provided to their sales staff, some noted that with sales staff turnover, "Keeping staff educated is a challenge."
- One lighting retailer emphasized the effectiveness of the "lunch and learn" training sessions he had participated in at hospitals and a university.

Program Challenges

Retailers and contractors also noted some challenges, particularly with respect to the Commercial Lighting program, as follows:

- Lighting retailers/wholesalers tended to report that the commercial lighting program is a "tough sell" and indicated two primary reasons: (1) the program needs to be driven harder by utilities and the provincial government, and (2) there is some cynicism about electric rates.
- Lighting retailers tended to report that the takeCHARGE programs as designed are well suited to residential customers but less appropriate for the commercial (lighting) customers. These retailers stressed there was "inadequate promotion of commercial lighting as compared to the residential programs."

The Potential Study as a Basis for Program Planning

From an overall perspective, based on a comparison with other studies, Cadmus finds the Marbek potential studies to have been conservative in estimating the potential for energy savings. In looking at particular measures, however, the case is mixed.

- For commercial lighting, the rate of uptake projected in the Marbek studies appears to be higher than what is currently being achieved.

- In the case of residential shell measure upgrades, we could not be sure that the potential estimates were based on a realistic estimate of current penetration of efficient measures.
- Conversely, we think it likely the Marbek residential study underestimated the share of energy for space heating because it underestimated the size of dwellings.

To project savings into the future, potential studies must make numerous simplifying assumptions. As detailed in Section 2, we have probed the assumptions where we could and found a few cautions; however, we do not conclude there were any fundamental flaws in the study.

Future Evaluation Research and Overall CDM Planning

This report provides an overview of a proposed evaluation approach within the residential and commercial sectors for the current CDM programs and through the remaining three years of the CDM plan (*Five-Year Energy Conservation Plan: 2008-2013)*. It contains some broad strategies for each sector, with a primary emphasis on residential initiatives involving dwelling envelopes and products related to electric space heating and ventilation. The report also offers program-specific evaluation project recommendations. In addition, Section 3 identifies some planning considerations for the following:

- An overall process for evaluation
- An example conceptual framework for overall CDM planning
- A summary of recent Cadmus research on cost-effectiveness screening.

Recommendations

This list summarizes Cadmus' recommendations, and an elaboration on these recommendations is provided at the end of Section 2.

- A more comprehensive CDM planning framework is needed. (Section 3 of this report contains suggestions for both overall CDM planning and future evaluation research.)
- A more rigorous evaluation of the programs' target markets is needed. (This need is discussed in Section 3.)
- The extent of do-it-yourself installation of residential measures is unknown for the CDM residential programs, but best practices in other similar programs seek to assert some quality control over non-professional installation (and sometimes over professional installation of insulation and windows). This is a future evaluation issue addressed in Section 3 of this report.
- Primary data collection efforts are needed to identify empirically the program-specific market barriers. There is an absence of baseline data on existing markets.
- Program performance targets need to be updated. (See Potential Study review in Section 2.)
- The incentive levels require ongoing review and modification. (Program-specific suggestions are provided in Section 2.)
- Retailer and contractor training need to be expanded.

- The diversity of lighting fixtures and bulbs/lamps that qualify for rebates in the commercial program needs to expand. Also, LED streetlights should be considered as a program offering.
- Expansion of program measures for both residential and commercial sectors would help the takeCHARGE programs conform to best practices in other provinces.
- To help move the more geographically isolated Newfoundland markets, the programs need to test other marketing strategies that facilitate linking customers to contractors.
- The recommendations contained in Appendix A address best practices in online marketing/outreach approaches. These recommendations will help maximize the effectiveness of the already well-executed interactive exposure.
- The current program tracking databases need to be augmented to support future impact evaluation projects.
- The current audits being conducted on a percentage basis should be entered into a formal, reportable tracking system. (Currently, they are handwritten and not entered.)
- Joint adoption of an overall CDM planning framework would improve coordination between Newfoundland Power and Newfoundland and Labrador Hydro.

Introduction

The takeCHARGE Energy Saver rebate programs are the offerings of the Conservation and Demand Management (CDM) five-year plan (*Five Year Energy Conservation Plan: 2008-2013)*. The programs are jointly offered by Newfoundland Power and Newfoundland and Labrador Hydro. According to the plan, the objectives of the programs are to "support a long term goal of development of a conservation culture and sustainable reduction in electricity consumption." Implementation of the programs began as scheduled in 2009, thus now placing the programs at the very start of the third year of the five-year plan.

This report presents the findings of a process evaluation of the programs. Process evaluations focus on identifying improvements or modifications to produce more cost-effective programs. This evaluation examined the following takeCHARGE programs:[1]

- Insulation Rebate Program
- Thermostat Rebate Program
- Energy Star® Window Rebate Program
- Commercial Lighting Program

These programs were selected by the utilities to deliver energy-efficiency savings to customers over the five-year plan interval. However, both utilities expect that program offerings will evolve during this period. It is anticipated that this process evaluation will contribute to the evolution of these offerings and to planning of future programs.

The program descriptions, which are provided in this section, contain an explanation of the development of the programs, the program theories (logic), and a summary of program marketing approaches. This information is followed by a discussion of the objectives of the process evaluation and the methodologies that were used.

CDM Program Descriptions and Implementation

Residential Programs

The Residential Insulation program, a revised continuation of the earlier "Wrap Up for Savings" program, targets both home retrofit and new construction (for electrically heated homes). Thus, the main savings opportunities for this program come from either discretionary actions taken by customers to solve a perceived problem or a need that tends to be influenced primarily by installation contractors.

[1] The program portfolio also includes the Industrial Customer Custom Projects program, based on custom engineering proposals, that is not included in this evaluation.

The program has two key objectives:

- To achieve savings in space heating energy by increasing the insulation level in basements, crawl spaces, and walls and attics.
- T o encourage the development of a skilled and available contractor/provider infrastructure that has an economic self-interest in providing and promoting home retrofit services.

This combination of contractor skill and interest and customer education is designed to lead to both near- and long-term energy savings.

The Residential Windows and Thermostat programs also target electric space heat savings. Energy Star-qualified windows and programmable (and high-performance) thermostats are consolidated here because of their similar program delivery strategies, costs, and estimated energy savings. (However, we have prepared separate program logic schematics.) Each program involves partnering with relevant trade allies such as home builders, retailers, and renovation industry contractors.

Although saturations of both products are thought to be relatively low in Newfoundland (approximately 10 percent of sales), Cadmus anticipates that over time, as market share increases, incentives will decrease or be eliminated altogether. The theory is that efforts to work with various members of the program infrastructures—combined with consumer education and marketing—will eventually increase customer demand for these products by establishing their value and benefits. Also, as the program market share increases over time and partnerships with manufacturers develop (as for qualifying windows in Newfoundland), program incentives may be expected to decrease.

Commercial Program

According to the five-year CDM plan, the Commercial Lighting program is designated to be a point of entry to the commercial efficiency and conservation market. With a focus on lighting, it is aligned with the largest area of opportunity for this sector, based on the commercial potential study. The Commercial Lighting Program is expected to be delivered for three years, after which delivery will be integrated with future commercial sector offerings.

During the first two program years, the focus of the program was to provide incentives for upgrades from regular T8 systems (lamp plus ballast) to high-performance T8s. For program year 2011, Energy Star LED exit sign lights will be added to the eligible measures.

About Program Logic Models

Logic models help document key assumptions made in designing programs. They depict the main activities performed to achieve the participation rates needed to reach program goals, and they identify the key performance indicators (KPI) for the programs they describe. Such models provide a useful foundation for testing actual outcomes against the original program logic and assumptions, and they document program changes going forward.

Based on a review of background materials, Cadmus' evaluation team developed baseline logic models for each program, using them to clarify the team's understanding of the programs. The

logic models are similar for all programs because the programs themselves are similar in structure and function.

One significant difference is the role of contractors in the installation of measures. Specifically, the residential programs do not require installation by certified contractors because many residential customers prefer to install measures themselves. Nevertheless, home improvement contractors are expected to have a significant role in the Windows and Insulation programs, although the role of contractors in promoting those programs is not clearly delineated at this time. For the Commercial Lighting program, lighting contractors and other trade allies play a very significant role.

Figures 1 through 4 show the program logic models.

Figure 1

Newfoundland Power –Thermostat Logic Model

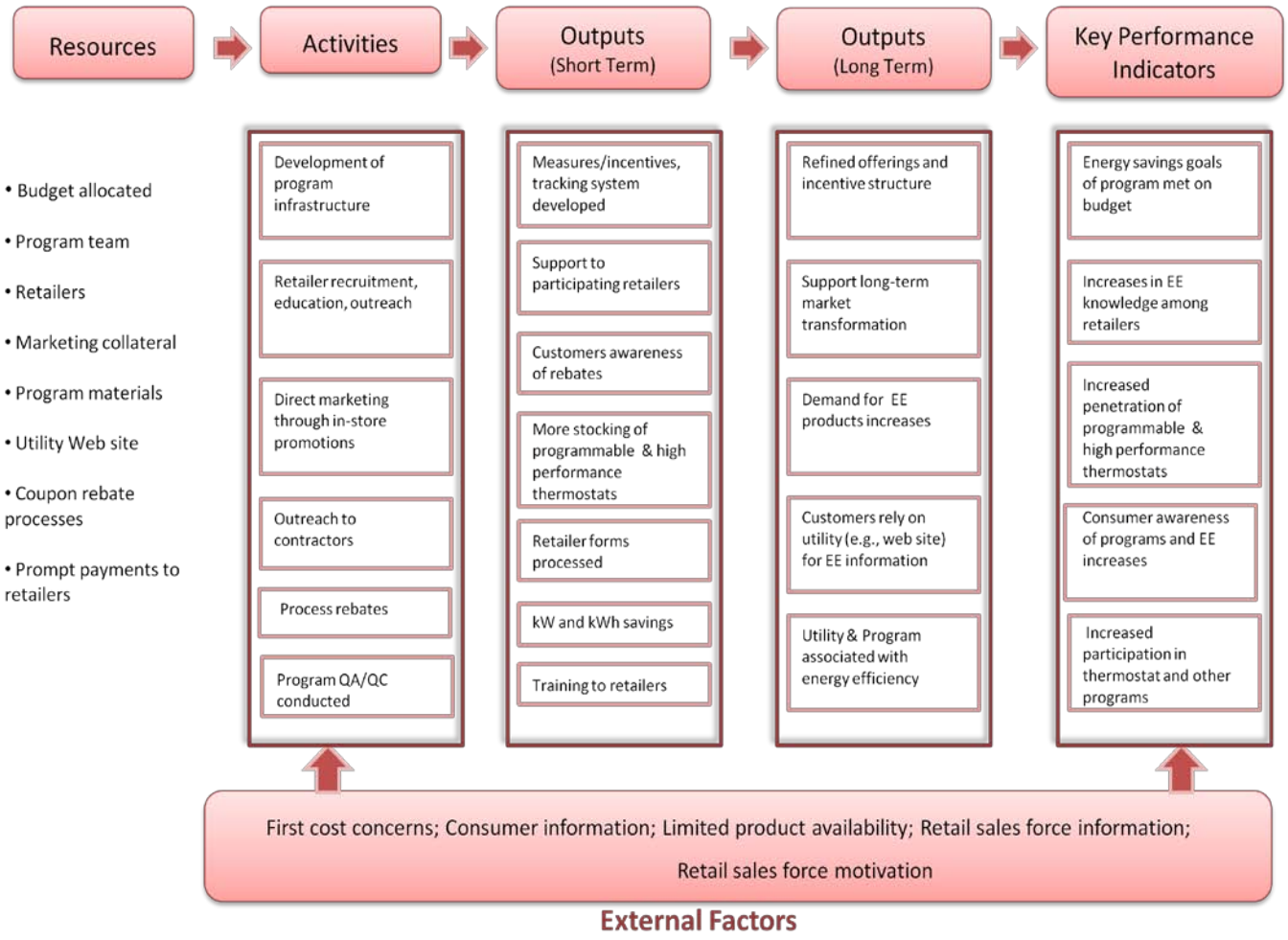


Figure 2

Newfoundland Power – ENERGY STAR® Windows Logic Model

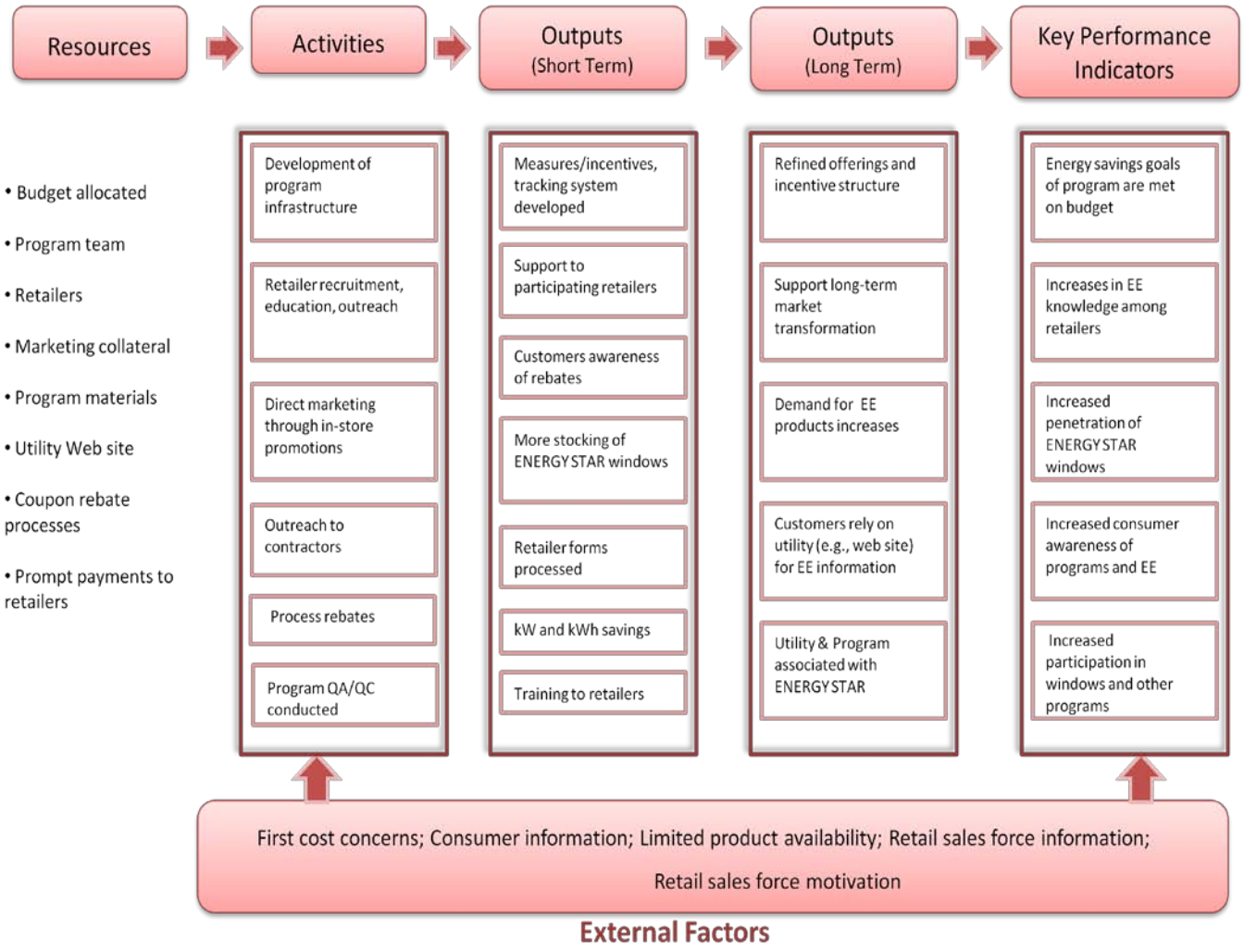


Figure 3

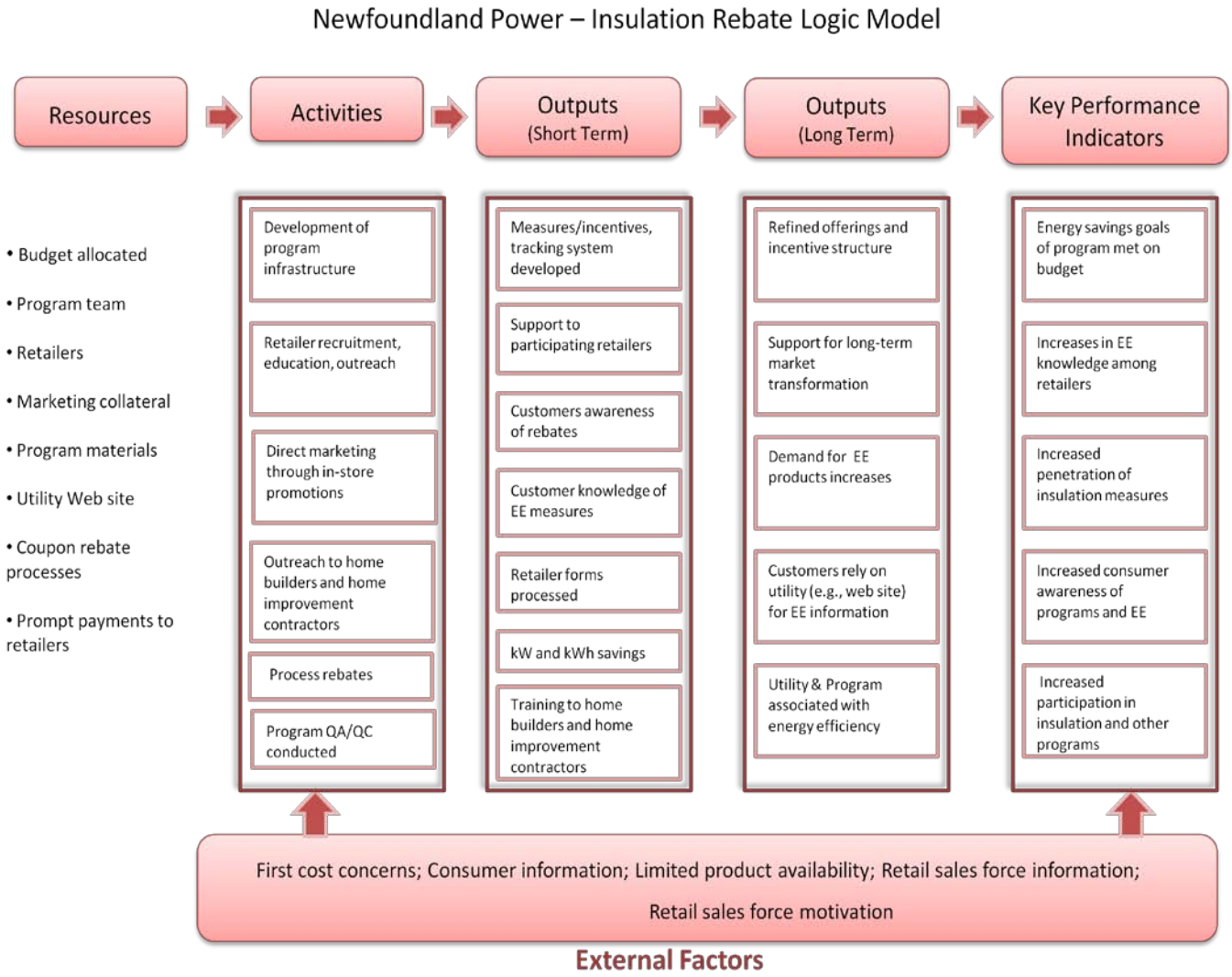
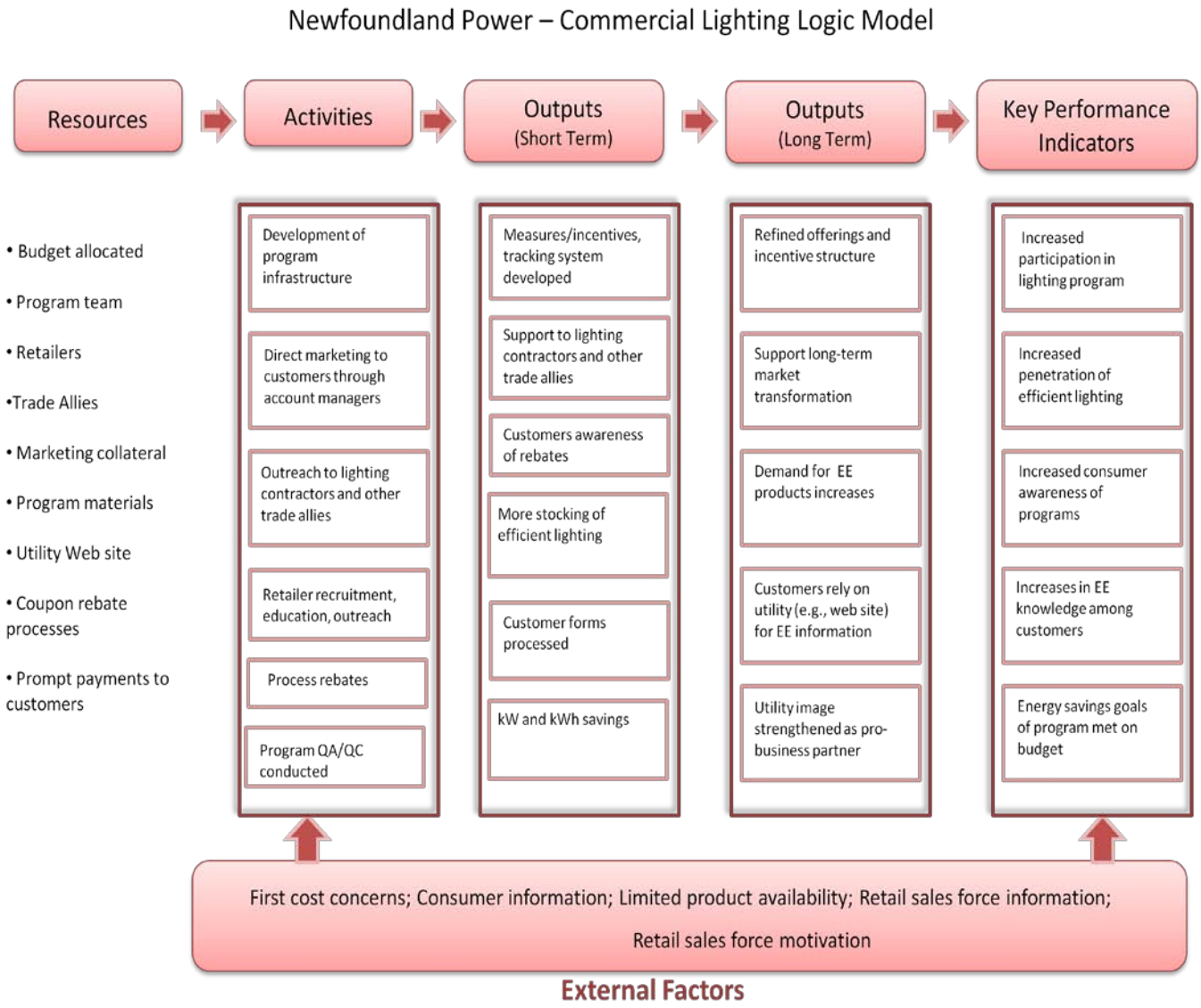

Newfoundland Power – Insulation Rebate Logic Model
Resources
Activities
Outputs (Short Term)
Outputs (Long Term)
Key Performance Indicators
• Budget allocated
• Program team
• Retailers
• Marketing collateral
• Program materials
• Utility Web site
• Coupon rebate processes
• Prompt payments to retailers
Development of program infrastructure
Retailer recruitment, education, outreach
Direct marketing through in-store promotions
Outreach to home builders and home improvement contractors
Process rebates
Program QA/QC conducted
Measures/incentives, tracking system developed
Support to participating retailers
Customers awareness of rebates
Customer knowledge of EE measures
Retailer forms processed
kW and kWh savings
Training to home builders and home improvement contractors
Refined offerings and incentive structure
Support for long-term market transformation
Demand for EE products increases
Customers rely on utility (e.g., web site) for EE information
Utility & Program associated with energy efficiency
Energy savings goals of program met on budget
Increases in EE knowledge among retailers
Increased penetration of insulation measures
Increased consumer awareness of programs and EE
Increased participation in insulation and other programs
First cost concerns; Consumer information; Limited product availability; Retail sales force information; Retail sales force motivation
External Factors

Figure 4



About Key Indicators

The key indicators of program success come from processed rebates. The number of rebates processed represents the rate of participation, and these can be tracked against targets. Rebate forms should contain sufficient information that participation by sector can be tracked.

Ex ante estimates of savings assigned per measure or per building are used to track energy savings. These *ex ante* values should be checked periodically through evaluation studies (such as billing analysis or site metering studies) to validate savings assumptions. Customer surveys can be used to assess penetration of measures, including natural growth occurring outside the program. Surveys can also gauge changes in customer awareness of and attitudes toward the thermostat program and energy conservation in general.

Interviews with retailers and trade allies can help assess their awareness of, knowledge of, and attitudes toward the program. These interviews can also reveal reasons why retailers and trade allies either do—or do not—promote the program with their customers.

Periodic surveys of nonparticipating customers and trade allies can help target changes in programs.

About Program Marketing

Marketing of the takeCHARGE programs has entailed a variety of approaches including advertising through these media: local newspapers, radio, TV, and the Websites and the takeCHARGE Website (http://www.takechargenl.ca/). Key messages of the program marketing have focused on: (1) awareness of the programs and how to participate; and (2) benefits of participation. The objectives have been to select advertising methods that drive participation ***and*** direct customers and upstream market actors to the takeCHARGE Website.

Other marketing and outreach methods include working directly with retailers at in-store events, and providing training via workshops to retailers linked specifically to the residential programs' eligible products. (Considerable retailer/distributer training is also done with commercial lighting market actors.) More training related to all four programs is anticipated in 2011.

Newfoundland Power conducted a retailer survey to understand better the likely receptivity to the residential programs. This survey also addressed the suitability of partnering (that is, did a sample of retailers sell program-relevant products?). Cadmus' review of the survey results suggested ample interest in the programs and revealed useful information from the retailers concerning their aspects of their sales of program-sponsored products.

Website Marketing Efforts

Our review of the Website determined that the additional collateral obtained there provided consistent and recognizable formatting and messaging.

Interactive elements took advantage of multimedia and social media opportunities. The videos, including TV commercials, used real people in authentic situations, which translated well to potential participants.

Additional Internet advertising uses multiple sites, which has resulted in the takeCHARGE brand becoming well known in the province. (See Appendix A for a review of the takeCHARGE online exposure, as well as detail regarding future online and social networking possibilities.) .

Objectives for the Process Evaluation

Newfoundland Power's RFP for this process evaluation contained a number of related objectives:

- Mapping the process of these programs (program logic models)
- Assessing the program processes
- Identifying market perceptions of the programs (from trade allies)
- Performing peer comparisons and best practices for similar programs

- Identifying barriers to participation (from trade allies, and indirectly from customers)
- Obtaining recommendations for program and process improvements

Thus, the overarching goal for the process evaluation is to assess the effectiveness of the programs, with an emphasis on determining which aspects of the program processes are working well and which need to be modified to optimize program delivery and cost-effective energy impacts.

Evaluation Methodologies

The following methods formed the process evaluation approach, and each was an integral element:

- Conducting interviews in-person and by telephone with program staff and retailers/ contractors.
- Reviewing program documents and related materials.
- Relying fairly extensively on Cadmus' experience working with programs and evaluation research in other jurisdictions and provinces.

For this report, Cadmus also consulted with an external reviewer who is currently providing energy savings verification services to the Nova Scotia Utility and Review Board.

Staff and Retailer/Contractor Interviews

The staff and retailer/contractor interviews were the initial task. Cadmus conducted a total of 25 interviews with program staff and retailers/contractors involved with the programs. The interview guides, one for program staff, another for retailers/contractors, and a nonparticipant trade ally guide, are appended to this report.

Table 1 presents a breakdown of the completed interviews and the program(s) with which the interviewee is involved.

Table 1: Interviews by Program

Utility Staff or Contractor Name	Program(s)
Lorne Henderson, Newfoundland Power	All
Sherina Wall, Newfoundland Power	All
Peter Upshall, Newfoundland Power	All
Karen Hancock, Newfoundland Power	All
Arthur Jackman, Newfoundland Power	All
Edgar Lopez, Newfoundland Power	All
Simone Browne, Newfoundland Labrador Hydro	All
Elaine Cole, Newfoundland Labrador Hydro	All
Wade Lucas, Newfoundland Labrador Hydro	All
Corinne Roberts, Newfoundland Power	All
Heather Carter, Newfoundland Power	All
Blair Vey, Newfoundland Power	All

Utility Staff or Contractor Name	Program(s)
Kristy Woodford, Newfoundland Power	All
Michele Brophy, Kent Building Supplies	Residential
Mary Welsh, Eastern Siding Windows & Doors	Window Rebate Prog.
Jackie Bishop, Rona	Residential
Jack Parsons, K&P Contracting; Heat Seal Ltd.	Residential
Chris Reid, Guillevin International Co.	Comm. Lighting
Jeff Piercey, Nedco	Comm. Lighting
Jeff Williams, PowerSmart Solutions Inc.	Comm. Lighting
Al Spurrell, Octagon Development Corp.	Window Rebate Prog.
Jackie Penton, Notre Dame Agencies Ltd.	Residential
Shawn Dixon, GrayBar	Comm. Lighting
Sheldon Colbourne , ERCO Homes	Residential
Phil Ryan, Donovan Homes	Non-participant

Organization of the Report

Beyond the program descriptions, logic models, and evaluation objectives and methods presented in this section, the remainder of this report presents the findings and recommendations for the process evaluation.

- Section 2 provides assessments of the programs based on the staff and retailer/contractor interviews. It also contains our review and analysis of the potential study (a crucial foundation of CDM program planning and development) and our recommendations for process evaluations.
- Section 3 presents our recommendations for future evaluation research, as well as some considerations on other aspects of CDM planning and evaluation.
- Appendix A provides a best-practices review and assessment of the takeCHARGE programs' social media monitoring and outreach potential.
- Appendix B contains a proposed customer survey instrument.
- Appendix C contains the staff interview guide.
- Appendix D contains the trade ally interview guide.
- Appendix E contains the nonparticipant trade ally interview guide.

2. Assessments of the Programs

This section of the report examines the process evaluation of the takeCHARGE programs from the perspectives of the utility program planning and implementation staff and retailers/contractors involved with the programs. Overall, this assessment identifies the programs' primary strengths and weaknesses and suggests program improvements. Respondents gave their perspectives on topics such as goals and objectives, implementation, program design and participation, marketing and outreach, tracking, and other program elements (see interview guides in Appendix C).

Also in this section is our review of the potential study and the reports on the customer end use survey conducted for Newfoundland Power, in addition to comparisons with peer utility programs and discussion of best practices for the CDM programs. The section concludes with our recommendations for opportunities to improve the programs.

Program Staff Overall Assessment

Program Accomplishments

Nearly all agreed that the programs have successfully addressed many of the obstacles of start-up conservation programs, including:

- The near-term goals are achievable and there is confidence that longer term goals are also achievable. The programs are currently doing well against their annual goals.
- The program designs align well with the intended customer bases. Similarly, incentive levels were widely viewed as appropriate for stimulating participation, though changes will likely be needed going forward.
- Program satisfaction among participating customers strong, especially compared to the government programs which customers view as overly bureaucratic.
- The level and quality of marketing and outreach efforts are appropriate and effective.
- Coordination between Newfoundland Power and Newfoundland Labrador Hydro is working well, and these positive relationships will help ensure program success for the balance of the five-year CDM Plan.

Program Challenges

The main critiques raised in interviews with program staff concern the following:

- The programs are doing very well in urban markets, but the rural areas are "very challenging."
- Some concerns were expressed that the goals/objectives for the CDM programs were not sufficiently developed, and that there is a need for a more comprehensive CDM planning framework.
- Particularly challenging participation barriers were noted for the insulation program, where it can be difficult for customers to get contractors to do very small projects at a reasonable

price, and under-insulation by contractors who are not sufficiently aware of best-practice standards.

- A view was expressed that the original potential study was constrained by very limited primary data collection.

Retailer and Contractor Overall Assessment

Interviews with 12 retailers/contractors elicited their overall views of the programs' strengths and challenges. These comments tended to vary by residential and commercial programs, with the commercial program appearing to face stronger challenges according to these respondents.

Program Strengths

The retailer and contractor interviews cited several strengths of the programs— areas where the programs are clearly successful, including:

- The incentive levels were about right. Some retailers noted that they particularly liked the thermostat double rebates, and in one case this allowed the retailer to work with their distributor in order to nearly meet the entire cost of the measure. One windows retailer said that the amount of incremental cost covered by the program incentive was the most important factor in increasing market demand.
- Retailers reported the marketing materials (POP displays, stickers, brochures) and the in-store exhibits and events are well done. They also appreciated the training provided to their sales staff, though they noted that with sales staff turnover, "Keeping staff educated is a challenge."
- One lighting retailer emphasized the effectiveness of the "lunch and learn" training sessions he had participated in at hospitals and a university.

Program Challenges

- Retailers and contractors also noted some challenges, particularly with respect to the Commercial Lighting program, as follows:
- Lighting retailers/wholesalers tended to report that the commercial lighting program is a "tough sell" indicating two primary reasons: (1) the program needs to be driven harder by utilities and the provincial government, and (2) some cynicism about electric rates.
- Lighting retailers tended to report that the takeCHARGE programs as designed are well-suited to residential customers—but not so much for the commercial (lighting) customers—stressing that there was "inadequate promotion of commercial lighting, compared to the residential programs."

Assessment of Specific Aspects of the Programs

- This section of the report elaborates on specific aspects of the CDM programs based on the staff and retailer/contractor interviews. This assessment is organized by the topics around which the interview guides are structured. When these observations are considered to be

areas of potential program improvements, elaboration is provided under the heading "Potential Program Implications."

Roles in Delivering the Programs

- Newfoundland Power staff members are organized around the primary program delivery responsibilities, where one important "market-facing" distinction is supply chain responsibilities. Program delivery is critically dependent on each program's supply chain.
- Newfoundland Labrador Hydro has a much smaller staff working on the takeCHARGE programs. This staff is organized around these activities: (1) administration of budgets, reporting, planning, and liaison; (2) marketing and outreach; and (3) program technical review and analysis.

With respect to the roles of retailers/contractors there are some variations in processes.

- For the residential programs, interviewees indicated that the rebate application usually is submitted by the end-user to the program . However, in some cases the contractor doing the product installation submits the application.
- For lighting, the approved retailers sell the program-eligible products and then invoice takeCHARGE. (Again, the rebate application is submitted to the program by either the end-user or the contractor installing the product.) One lighting retailer indicated that his group does the application paperwork. Another noted that the program incentive allows him to offer rebates to customers (lighting installation contractors) as a line item on his invoices reflecting a discount (he does the application). Retailers/contractors participating in the program said they also devote time to answering the questions of end-users about the products.

Program Goals and Objectives

Across the interviews, numerous program goals/objectives were reported. The following organizes this information as either strategic goals (longer term) or near-term objectives.

Strategic Goals

- Improve dwelling envelopes and control of temperature set points.
- Build program delivery infrastructure. (Formulate the development of CDM programs and development of capacity to plan, deliver, and evaluate programs.)
- Obtain sufficient resource management
- Coordinate with stakeholders. (This includes coordinating utility goals with the strategic goals from the provincial government, where there is currently no expectation that power generation will be deterred by the CDM programs.)
- Learn about the markets that the programs target
- Foster a culture change in the province with respect to energy efficiency and conservation

- Reduce greenhouse gas emissions, because oil-fired generation is on the margin (where program effects may have some impact)

Near-Term Objectives

- To achieve energy savings (with TRC > 1 and RIM > 0.8).
- To meet customer service objectives
- To provide customer education and increase awareness among customers of their ability to conserve
- To change the energy efficiency and conservation culture at Newfoundland Power

Interview Responses Regarding Goals and Objectives

About the Overall Response

A key generalization across staff is broad agreement that the near-term goals are achievable and confidence that the longer term goals are also achievable.

The programs are currently doing well against their annual goals. Newfoundland Labrador Hydro staff indicated that the programs were doing very well in urban markets, but were finding the rural areas "very challenging." An opinion offered by Newfoundland Labrador Hydro staff indicated that the longer term goals/objectives were really "expectations," and that what are defined as targets are "what we hope to get for the current year."

Some concerns were expressed that the goals/objectives for the CDM programs were not sufficiently developed and that there is a need for a more comprehensive CDM planning framework. One staff person indicated a current focus on the EnerCan energy management framework to assist in program planning.

About Target Markets

The target markets across the current CDM programs have not changed since program inception. The staff interviews also considered target markets for the programs within the context of goals and objectives. Target markets for the residential programs were identified with these descriptors:

- must have utility account
- must be new homes or renovations
- owners are preferable to renters
- year-around residences (unless a second residence meets the 15,000 kWh usage threshold)

The Idea Factory, a local marketing firm, provided additional demographic specificity to Newfoundland Power by that included these criteria: adults 25-54 (with core attention to 35-54 age group); home ownership; children under 18 in the household; and, household income > $50,000.

Target markets for commercial lighting are seen as being potentially broader, in part because of the technology-driven program design. In practice, however, the program has defined the market as being larger institutional loads rather than small commercial accounts.

While the markets described above are end-user target markets, one staff interviewee stressed that the target markets for the programs as currently designed are the agents who sell the products, so that the programs must convince retailers to promote the programs' products and services. One suggestion for increasing participation was to partner even more effectively with the biggest retailers and builders and, in general, to develop more relationships with trade allies. It was remarked that this will entail "having enough in the program for them to get them on-board."

Some Newfoundland Power staff expressed the opinion that the programs should try to reach all customers with some program offer(s). This view was expressed more assertively by staff of Newfoundland Labrador Hydro. A related planning framework goal expressed was the need to evaluate the target markets: "What we're getting; what we're not getting."

About Market Barriers

Interview discussions of market barriers included the question, "Have the programs identified market barriers?" Program planners noted that market barriers have not been developed empirically, but instead adapted from other examples of program logic for similar programs.

- One barrier commonly mentioned by staff was the administrative burden of applying for the rebate. This barrier was also cited by retailers/contractors.
- Additional participation barriers noted were specific to the insulation program (difficult for customers to get contractors to do very small projects as a reasonable price; under-insulation by contractors who are not sufficiently aware of best practice standards) and the commercial lighting program (some lighting installation contractors would rather service more frequent burn-outs than sell longer measure life fixtures/lighting).
- For the residential market, new construction is an issue because of the added first costs of higher-efficiency measures.
- Building code changes were cited as potentially making a big difference in efficiency gains.

About Program Performance

Program performance targets were determined by starting with forecasts of what Newfoundland Power and Newfoundland and Labrador Hydro wanted to achieve. This was largely based on the potential study, housing stock analysis, and best case savings assumptions for participation. However, it was stressed by staff that these targets need to be updated in a systematic manner.

Within the context of goals and objectives, interviewees were asked, "How do the programs measure success?" According to program staff, the success of the programs is measured primarily by ongoing comparisons to expected program take-up (projected in the program design phase).

Specific metrics include:

- kWh savings
- numbers of rebates paid
- the scale of what individual participants do (e.g., size of insulation projects and lighting retrofits)

- brand awareness
- outreach targets (events conducted)
- what utility employees are doing about energy efficiency/conservation

Responses Specific to the Lighting Program

Interviews with retailers/contractors elicited an essentially uniform response that the goal of the programs is energy savings. One lighting retailer said the goal was "to get the energy hogs out, convert to T-8 or T-5s, and increase saturation/penetration of efficient lighting." A new home construction contractor expressed the opinion that the goals of the programs are not clearly defined for most contractors, citing that "contractors only understand taking a half hour to do the application, send in, and get a few hundred dollars – the goal of the program is lost!" However, this view was not reinforced in the other retailer/contractor interviews.

One lighting retailer noted that while the energy savings program goal was well defined for trade allies, the program goal was not always clear to the end-users, noting that, "Outreach is not always getting through on commercial lighting." Another lighting contractor stressed energy awareness, sustainability, and lower life cycle costs as appropriate CDM program goals.

With respect to target markets, lighting retailers tended to see the target market as any commercial, private building that has T-12s or F-32s. With respect to program barriers, one retailer commented that he "talks to end users about eight-month payback – but when they hear that it will require $20,000 up front the conversation stops." When asked if financing would make a difference he said, "Yes, probably would help." (Newfoundland Power does have financing options available to program participants, but that this financing offer needs to be better integrated with the takeCHARGE programs.)

One lighting retailer said he would like to make small commercial his key target. He also recommended the program target industrials and larger commercial, such as malls and warehouses. Another lighting retailer said there is considerable potential in the retail market for LED technologies, as well as CFLs.

Program Goals and Objectives: Potential Program Implications

About the Overall Response

At both utilities, staff members expressed concerns that the goals/objectives for the CDM programs were not sufficiently developed and that there is a need for a more comprehensive CDM planning framework. Such a framework would likely prescribe a process for developing: (1) a CDM annual business plan (i.e., operational plans, budgeting, staffing, etc. for individual programs within various market segments); and (2) an annual EM&V plan (summaries of each scheduled evaluation activity with goals, scope, level of effort, budgets, and general EM&V approaches). Ideally, each of these annual documents would flow from an overall CDM planning framework (and an accompanying EM&V framework). Some general considerations for overall CDM portfolio and evaluation planning are provided in Section 3 of this report.

About Target Markets

Related to planning goals was the expressed need to evaluate the target markets—"What we're getting, what we're not getting." Program planning staff reported that this is not currently being done in any rigorous (empirical) manner. Although some effort has been devoted to quantify total market opportunities (e.g., number of housing starts), these efforts have not yet established market penetration percentages. Future research focused on assessment of target markets is also discussed in Section 3 of this report.

About Market Barriers

With respect to participation barriers for Commercial Lighting, the programs will need to address certain specific program participation barriers that originate at the wholesale/ installer level. An example cited by a lighting retailer was the preference among installation contractors for servicing more frequent burn-outs rather than selling and installing fixtures/lighting with much longer measure life.

As for barriers related to awareness of lighting program benefits, while the approved lighting retailers expressed a clear understanding of the program goals for energy savings, there was concern that this goal is not well defined for many participating installation contractors and end-users. Lighting retailers were most concerned about effectively conveying this program message, and recommended more outreach efforts.

Program Implementation

About the Overall Response

Across interviews with both staff and retailers/contractors—and noted above as a strength of the programs—there was much agreement that the program designs align well with the intended customer bases. The residential programs' orientation to electric space heat was described as "the lowest hanging fruit." This view was also expressed by staff at Newfoundland Labrador Hydro. Staff at both utilities saw this as an appropriate strategic approach in the initial years of the five-year plan. It also conforms to the Potential Study's suggested best opportunities for savings.

About the Incentive Levels

Similarly, incentive levels were widely viewed as appropriate by staff, some of whom noted that changes to incentive levels will likely be needed going forward, based on review. One issue raised by Newfoundland Labrador Hydro staff is that while the programs are "very close to needing to re-assess rebate levels," there are not sufficient data for other than NE Avalon on which to base this re-assessment. There was also a suggestion to consider bundling of measures with graduated (increasing) incentives for installing more/different measures.

Residential program retailers and contractors concurred with the program staff regarding incentive levels, consistently reporting that the incentive levels were about right. Some retailers noted that they particularly liked the thermostat double rebates. One windows retailer said that the amount of incremental cost covered by the program incentive was the most important factor in increasing market demand.

About Product Offerings

Interview questions on program implementation also elicited opinions on the current product offerings. The current thinking on adding (or deleting) program offerings for years 3-5 of the current 5-year plan is focused on the 2011 program year. No new programs have been approved as yet (at the time of the staff interviews), but three programs are under consideration (and close to approval). The California screening tests are used for cost effectiveness analysis, with requirements of a positive TRC and a RIM test with a floor of 0.8.

The three program offerings being strongly considered for 2011 are: a mini-split heat pump *pilot* program; LED exit lights; and, high efficiency heat recovery ventilators (HRVs). Program staff reported that they have considered these three specific offerings from inception of the CDM programs. Program staff also reported that among the stakeholders and others from whom input is elicited regarding new offerings are: industry trade allies; their counterparts at Newfoundland Labrador Hydro; staff at Housing; and, contacts at other utilities.

About Implementation Efforts and Barriers

With respect to program implementation efforts to date, and as summarized above as a program challenge, interviews with lighting retailers/wholesalers tended to report that the commercial lighting program is a "tough sell" (three retailers contrasted this to the lighting programs offered in Nova Scotia and New Brunswick, which they regarded as doing very well). Why a tough sell for lighting? One retailer gave two primary reasons: (1) the program needs to be driven harder by utilities and the provincial government, and (2) some cynicism about electric rates. Another lighting retailer said, "The commercial side needs more attention." Another lighting retailer reported that to increase market demand (for efficient lighting) "more outreach and advertising is needed, aimed at the end-user."

As a program implementation barrier, it was also reported that lighting installation maintenance contractors do the maintenance at a high labor rate margin – and would rather put in standard ballasts every few months than install high efficiency fixtures and lamps that last many years. Lighting retailers also noted that their program efforts mainly consist of trying to educate and encourage contractors – often on the benefits of going from the F-32 lamp to the program-sponsored F-28 with electronic ballast. It was suggested by lighting retailers that more emphasis on conducting lighting audits is needed to capture more building owners/managers who will incur the first costs.

As reported by residential programs retailers, "cost" was the foremost barrier for the programs. Some other residential program retailers/contractors noted that the application paperwork was a deterrent, with two of these retailers suggesting that an "instant" rebate (at the cash register) might make a difference—and represented their main recommendation for achieving higher program participation levels. Another concern expressed was the percentage of program-subsidized thermostats that are actually installed, suggesting that reliance on do-it-yourself installations was a struggle for many customers.

Insulation retailers/contractors mentioned that resistance to insulating basements was a program barrier. A windows retailer also noted that homeowners intending to "flip" the house are much less likely to retrofit with higher efficiency.

Program Implementation: Potential Program Implications

As with all DSM/EE programs, incentive levels require ongoing review and modification.

- The success of the thermostat program likely suggests downward movement for incentives.
- The lower production costs for the program-qualifying windows also indicate the feasibility of lower incentives.
- The insulation program was regarded as the most difficult for which to gauge the correct incentive level (in part because of difficulties in gauging the market size).
- The commercial lighting program will almost certainly benefit from examining other similar programs (peer comparisons), where technology offerings, incentive levels, and payment options should all be reviewed.

A theme that emerged from interviews with lighting retailers is that while they are encouraged that takeCHARGE has a commercial lighting program, the program needs to be more aggressive in terms of promotion, more expansive in terms of lighting products included and lighting audits conducted, and more facilitative in terms of financing options for customers. It became clear that for some lighting retailers, the Nova Scotia Power Small Business Lighting Solutions is an example of what they would very much like to see offered by takeCHARGE.

Program Design and Participation

Staff Views of Program Design, Participation Rates, and Customer Satisfaction

Bases for the current program designs were typically described as a combination of borrowed (e.g., commercial lighting benchmarked from a New Brunswick program; the windows program similarly adapted from a BC Hydro program) or legacy (from previous Newfoundland Power DSM programs with review of other similar Canadian thermostat and insulation programs). The initial program design concepts were then combined with appropriate economic factors for Newfoundland to finalize the offerings.

With respect to participation levels being achieved, program progress is primarily tracked with the information from rebates application forms. Staff reported that although minimal customer surveying has been conducted, some surveys have contributed to program tracking. Program tracking results indicate that currently there are approximately 3,000 participants per year (1.5 percent of customer base).

Based on program staff interviews, program satisfaction among participating customers is thought to be very satisfactory, especially as compared to the government programs (which tend to be viewed as overly bureaucratic and less customer-friendly). However, there are currently no formal systems in place to gather customer feedback related to program products/services. Some very limited feedback is obtained from the QA/QC audits performed. As part of this evaluation, a customer survey has been developed. (See the discussion in Section 3 and a survey instrument in Appendix B.)

Retailer/Contractor Views of Program Design, Participation Rates, and Customer Satisfaction

The interviewed retailers and contractors offered a variety of views concerning program design and participation. One lighting contractor noted that many customers do not actually know they are participating in a program. He added that he makes sure that everyone he works with is not only aware of the program, but also knows how much money and/or energy they have saved (typically when they see the first post-install bill).

When asked about the very low levels of participation in their outlets elsewhere in Newfoundland, one participating lighting retailer noted that, "Managers are focused elsewhere than lighting retrofit jobs – they don't have the flexibility to seek the retrofit work because they are just behind the counter." He also stated that the other outlets were probably selling F-28s but not claiming program incentives because of the "paperwork hassle." Other lighting retailers echoed this reasoning, saying they had limited resources for marketing and that more outreach and training from the program was needed.

In general, lighting retailers tended to report that the takeCHARGE programs as designed are well-suited to residential customers—but not so much for the commercial (lighting) customers—stressing that there was "inadequate promotion of commercial lighting, compared to the residential programs."

Regarding adding measures to the commercial lighting program design, one retailer/wholesaler provided the following suggestion: "T-5 rebates would help (though T-5s are dying a slow death now); LED's will take over, but the quality is not there now— in a year or two, the quality will be better and they will take over; strip LEDs (replacing fluorescent tubes) will likely have different fixtures – but maybe not necessarily." Two other lighting retailers also recommended adding T-5s, and said the program was also "missing some opportunity on T-12 to standard T-8s," but acknowledged that standard T-8s will be phased out.

Among the measures that residential program retailers/contractors suggested could be added to the programs are: weather stripping; quick foam caulking; lighting products (e.g., CFLs, LEDs); and appliances and other consumer plug load products. There was also some enthusiastic response to the mini-split heat pump technology as a possible program measure.

Regarding retailer/contractor perceptions of participation, when asked for an estimate of the eligible market that has participated in the commercial lighting program one lighting retailer said "less than 5 percent, this year." He continued that, "I've done (through the program) 6,000 lamps and 1,200 ballasts…small, especially compared to jobs in Nova Scotia and New Brunswick" (done by his firm's outlets in those provinces). For additional context on his low level of program sales he noted that, "In total sales I've sold twice as many F-32s as F-28s, and 8,000 F-40s. I shouldn't be selling these, but it's what the customer wants." He concluded, "Newfoundland can be slower of the mark than other provinces…very cautious as a province, and always a few years behind."

One residential new construction contractor argued strongly that the programs were not meeting the needs of the building industry and that for new construction, the incentive levels are not having an impact. He recommended having more expert advice on energy efficiency (and comfort, durability issues) available to new home buyers and that this advice should ideally come from the utilities (e.g., heat-loss analyses). He recommended that "to raise the bar," you need a program

with the objective of providing expert consultation to new home buyers rather than simply providing some token incentive.

This builder elaborated that the programs are doing a good job on marketing and outreach, *as the programs currently exist.* He also cited social networking as a good move for marketing the programs. But as the programs *should be designed* he stressed that the programs need to provide more direct guidance and advising, thereby fulfilling a critically important education need. He suggested the utilities provide direct expert consultation, based on return-on-investment (ROI) for envelope, an appropriate heating system (room-to-room control, comfort, properly sized), and appropriate thermostat controls. He argued that this alternative programming approach would "go back to Newfoundland Power's roots of delivering technical guidance right from the plans stage."

Program Design and Participation: Potential Program Implications

Assuming that the Commercial Lighting program continues beyond 2011, program planners will need to continually expand the diversity of lighting fixtures and bulbs/lamps that qualify for rebates. Over time, this will facilitate the ability of the program to increase overall product offerings and thereby increase the range of efficient lighting choices that customers have experience with. The education of customers about choosing lighting products will become increasingly important as LED replacement lamps come to price point levels more amenable to program promotion (commercial and residential). Having some way to stimulate the number of lighting audits will also be important, as well as addressing fairly entrenched barriers to investment in efficient lighting.

The residential programs also need to pursue additional product offerings. All residential retailers/contractors interviewed had a ready list (albeit usually short) of products they would like to see added.

Marketing and Outreach

About the Overall Response

As noted above under program success, the level and quality of marketing and outreach efforts were widely regarded by staff as appropriate and effective. For the residential programs, retailers and contractors also reported satisfaction. As examples, the marketing material (POP displays, stickers, brochures) and the in-store exhibits and events were very favorably received. Retailers tended also to be very appreciative of the training provided to their sales staff, though also noting that with sales staff turnover "keeping staff educated is a challenge."

About Alternative Marketing Strategies

As to possible alternative marketing strategies—specifically for hard-to-reach geographic areas where there are contractor supply constraints—program staff are considering other ways to link customers to contractors to help move these more isolated markets. Some marketing techniques now being implemented include social media, and specifically use of Facebook, as a way to measure program success and to extend outreach (and encourage feedback to outreach messages). New TV commercials are also featuring customer testimonials.

Another lighting retailer said that despite good efforts by Newfoundland Power, "…Marketing and outreach is a weak point of the commercial lighting program." This retailer suggested that providing lighting audit guidelines on the program Website would be useful.

About Energy Education Efforts

In citing the very good marketing/outreach efforts in providing education on energy efficiency awareness and benefits, lighting retailers in particular expressed that, in the words of one retailer, "The Newfoundland Power team is always willing to educate—just not sure how much the education is used." Residential program retailers also stressed energy awareness as a key to broader participation, and the need for outreach to target contractors as effectively as it currently targets end-users. One home builder said that Newfoundland Power knows ***how*** to market, but that it needs to market the right services (i.e., expert consultation to new home buyers). This is the builder who strongly advocated that Newfoundland Power deliver technical guidance right from the plans stage.

Program Tracking

The fundamental sources of program tracking data are the rebate applications themselves. The information is entered using an internally developed application. There are plans for an on-line application completion capability.

From the tracking system data reports are routinely produced. A larger catalog of reports is anticipated, but one interviewee noted, "We're not there yet." Some staff indicated that the information in these reports does not give a comprehensive view of program status, in particular because of the lack of rigorous evidence of program progress against an estimated market size.

Quality Assurance and Control

Staff interviews confirmed that the primary QC controls are:

- audits performed for 10 percent of installed projects (being reduced to 5 percent in 2011);
- the requirement for submission of original receipts for program-rebated products/services.

Audits are conducted by program staff, so there was some staff sentiment to not reduce the sample from 10 percent to 5 percent.

One lighting retailer reported that program QA/QC inspections on ballasts are important because otherwise rebate claims can be "abused."

Quality Assurance and Control: Potential Program Implications

Assuming continued evolution and growth of the CDM programs, additional QA/QC controls will likely be desirable (beyond the current audits and original receipt requirement). QA/QC indicators are typically designed to help program managers ensure that they have accurate information about program performance. QA/QC indicators and inspections should be designed to reflect the relative risk associated with each of a program's outputs as well as the cost to inspect them. Thus, the importance of an inspection point is weighted against the burden imposed on program personnel to

capture the information. In addition, ongoing methods are needed for using QA/QC results to adjust program results (i.e., reported savings).

Trade Allies

Interviewed staff explained that trade allies are not formally registered for residential program involvement. Instead, ability to deliver the program-eligible products/services—and interest in participation—have determined involvement of retailers and contractors. However, there are agreements in place with the approved lighting retailers.

In terms of the approved retailers, one lighting retailer said that the program is targeting the right trade allies but that a more difficult challenge is getting other lighting contractors to promote the program measures. He said that he "talks with their contractors to try to bring them into the program."

Training is provided to participating trade allies primarily through "lunch and learn" events and more informal contacts with program staff. In general, staff commented that certain trade allies tend to see the marketing advantages and added service/value to customers, and they are the ones who have "taken hold of it."

Cross-Organization Coordination

Coordination between Newfoundland Power and Newfoundland Labrador Hydro was seen by staff as working well. One interviewee stressed, however, that agreeing on an overall energy management plan (framework and process) would improve coordination.

The federal and provincial governments also require some coordination with the CDM program staff (of Newfoundland Power and Newfoundland Labrador Hydro), but this need was characterized as minimal. The staffs of the two partnering utilities do meet often, frequently in the course of delivering outreach activities.

A lighting retailer indicated that although he was not involved with any CDM program-related coordination with other contractors or associations in Newfoundland, his company are involved in programs in Nova Scotia and New Brunswick and feel that he benefits from the Nova Scotia Power Small Business Solutions Program.

Program Staffing and Communications

Staff at Newfoundland Power generally found the program responsibilities to be optimally allocated. For Newfoundland Labrador Hydro, some concern was expressed about adequacy of staff, although those responsible for specific tasks were considered to be well qualified for their roles.

Communications within program staff were consistently characterized as good, although the need for more focus on planning was cited as an area that will require even better communications. Also, it was noted that the transition to CDM programming responsibilities can be challenging for staff coming from different groups within the utility. As highlighted at the start of this report section as a program success, staff at Newfoundland Labrador Hydro stressed the strong, positive

relationships with staff at Newfoundland Power and indicated that this will provide an important basis for the balance of the five-year CDM Plan.

Interviewees described management support for program staff described as either good or very good. One interviewee noted that executive-level support for CDM was evident, but that at the management level, support was sometimes lacking. (This was attributed to a "utility engineering orientation.") A barrier to internal communications at Newfoundland Power is that the Communications group and the Custom Relations group are currently in different locations.

Program Staffing and Communications: Potential Program Implications

The somewhat different utility agendas will present ongoing challenges for collaboration on the five-year CDM Plan, but the strong interpersonal relationships between the respective staffs— and the initial program successes at this early stage of the plan—should provide a workable basis for the two-utility joint planning. Further, as new responsibilities focused on planning are defined, it is possible that additional capabilities will be needed that could require changes in responsibilities and assignments. As previously suggested, an increased emphasis on planning activities will likely also have the effect of reinforcing the current good communications between the two partnering utilities.

Be advised, however, that the somewhat different agendas of the two utilities might drive some divergence on takeCHARGE programming. This could take the form of a core, joint portfolio with differences in additional utility-specific offerings. For example, Newfoundland & Labrador Hydro currently offers some additional small initiatives covering different technologies, and Newfoundland Power also has other initiatives (such as its financing offering).

The different utility agendas tended to be broadly characterized in interviews as "private vs. government," but they were also expressed in terms of differences in emphasis on acceptable TRC/RIM results and the importance of free-ridership (Newfoundland & Hydro staff placing somewhat less emphasis on each of these planning-related factors). Differences were also noted on the number of technologies currently sponsored by the programs, where Newfoundland & Labrador Hydro staff tended to favor sponsoring many more technologies.

Assessment of Program Planning and Development

The original CDM program planning and development relied significantly on research conducted on the potential for energy efficiency and conservation opportunities in Newfoundland. As part of our evaluation, Cadmus reviewed findings from the set of potential studies conducted by Marbek Resource Consultants Ltd. in 2006 for Newfoundland Power and Newfoundland & Labrador Hydro.[2]

We wanted to determine whether the findings of these reports needed revision in light of both recent program activity and a 2010 end-use survey of residential customers. That survey provides

[2] Marbek Resource Consultants Ltd. 2008. "Conservation and Demand Management (CDM) Potential Newfoundland and Labrador: Residential Sector." Marbek Resource Consultants Ltd. 2008. "Conservation and Demand Management (CDM) Potential Newfoundland and Labrador: Commercial Sector."

more detailed information about the penetration of energy-efficient equipment than was available to the authors of the potential study.

We note that our evaluation focuses on energy consumption rather than demand. We have no reason to think the observations on energy do not equally apply to projections of demand savings.

Review of the Potential Study and Customer End-Use Survey Reports

For the "island and isolated" service regions, which include the Newfoundland Power territory, the Marbek studies estimated an achievable potential energy savings of between 5.9 and 11.1 percent for residential customers by 2026. The different levels of savings reflect different assumptions about program support, incentive levels, and participation.

For commercial customers, the studies estimated an achievable potential energy savings of between 11.7 and 17.3 percent by the same date. The base year for both estimates is 2006.

Savings percentages are relative to a base that changes over time as a result of growth and uninfluenced or natural changes in technology. Table 2 shows the progression of achievable savings potential estimated in five-year increments, with the 10-year savings potential highlighted in light blue because these are referenced below.

Table 2: Energy Savings Achievable Potential by Sector, 2011 to 2026

	Residential		Commercial	
Year	Low	High	Low	High
2011	0.4%	1.7%	4.1%	5.6%
2016	1.9%	4.2%	7.8%	10.7%
2021	4.2%	7.5%	9.7%	13.9%
2026	5.9%	11.1%	11.7%	17.3%

Source: Marbek Resource Consultants Ltd. 2008.

The estimates of the Marbek studies appear conservative compared to other potential studies of which we are aware.

- A Vermont study from 2007 estimated 10-year energy savings of 22.1 percent each for residential and commercial sectors.[3]
- A 2005 study of Ontario potential savings arrived at a total 10-year potential of between 3.7 and 20.6 percent, depending on the level of incentive provided by programs.[4] With incentives set at 50 percent of incremental costs, the estimated 10-year energy savings was 13.1 percent. By sector, the Ontario study projected 10.1 percent ten-year electric energy savings for residential customers and 12.9 percent savings for commercial customers.

[3] GDS Associates. 2007. "Vermont Electric Energy Efficiency Potential Study." Prepared for the Vermont Public Service Commission.

[4] ICF Consulting. 2006. "Assessment of Energy Efficiency Potential: 2006-2025." Prepared for the Ontario Power Authority.

- Finally, a meta-analysis of a set of 15 potential studies conducted in the Northwestern United States projected an average of 19.1 percent electric energy savings after ten years.[5]

These values contrast sharply with the Marbek median 10-year energy savings potential of 3.1 percent for residential customers and 9.3 percent for commercial customers.

Comparing findings from different potential studies is instructive but must be done with caution. For instance, differing energy costs result in a different mix of economically viable measures. Climate differences affect the saving opportunities from space cooling and heating. Moreover, different assumptions about barriers to adoption can result in significantly different conclusions about the rate of measure uptake. Market differences and even regional cultural differences can confound comparisons.

Nevertheless, our review of other studies leads us to conclude that the Marbek studies estimate electric energy savings that are comparatively low as a percentage of baseline consumption. We cannot, however, on the basis of our review offer an alternative value. And, indeed, when we look more closely at the details of the studies, we see some areas where potential may be understated and other areas where it may be overstated.

While the comparison of savings potential from different studies provides a useful perspective on the overall aggressiveness of assumptions in the Marbek studies, it does not account for the targeted efforts of Newfoundland Power: residential space heating and commercial lighting. The Marbek studies found that:

- Residential space heating constituted 41 percent of residential consumption.[6]
- Lighting was estimated to constitute 25 percent of commercial consumption.

Table 3 shows the projected energy savings potential for these two end-use categories as a percentage of their estimated share of energy consumption. For instance, the low estimate of potential savings for commercial general lighting in 2011 is 6.5 percent of the 25 percent lighting share, or about 1.6 percent of total commercial energy consumption.

Table 3: Energy Savings Achievable Potential for Program-Targeted End-Uses by Sector, 2011 to 2026

	Residential Space Heating		Commercial General Lighting	
Year	Low	High	Low	High
2011	0.1%	0.2%	6.5%	8.8%
2016	0.3%	1.2%	12.1%	15.6%
2021	0.8%	3.4%	14.8%	18.4%
2026	2.2%	8.1%	17.3%	20.1%

Source: Marbek Resource Consultants Ltd. 2008.

[5] Massachusetts Energy Efficiency Advisory Council. 2009. "Massachusetts Energy Efficiency and Combined Heat and Power Potential Assessment Regional Findings."

[6] This and the next reference reflect estimates for the island and isolated region.

In the following sections we consider each of the end-uses that are a primary focus of Newfoundland Power's current programs.

Commercial Lighting

The savings potential for commercial lighting in the Marbek commercial study reflects a mix of T12 and conventional T8 fluorescent upgrades, incandescent replacements, LED exit signs, and HID lighting upgrades. Since the current Newfoundland Power program focuses on T12 and T8 upgrades, we center our analysis on projections for these technologies.

In the Marbek study, the projection of savings potential for lighting derives, most prominently, from assumptions about the number and size of buildings, classified by the primary activities conducted in them. From there, it is determined by assumptions about the current mix of technologies, the hours of operation, and the rate of growth over time. Each of ten building types has a profile developed that represents the average opportunities for energy savings. Key values in the profiles are:

- Square footage
- Average illumination (foot candles)
- Hours of operation
- Percentage of lights illuminated during hours of operation
- Percentage of lights illuminated during off hours
- Percentage of lighting by technology type (T12, T8, etc.)

A rate of participation in programs is applied that peaks at an estimated maximum percentage of total customers in the final analysis year of 2026. For instance, replacement of T12 lamps with advanced T8 lamps is assumed to progress in a linear growth pattern over twenty years, achieving 74 percent penetration of the new technology by 2026.

Each of the elements in the potential estimate is subject to refinement on the basis of more detailed empirical data about the specific circumstances of Newfoundland Power's commercial customer base. Unlike the residential programs, we do not have access to recent commercial saturation research that might provide a basis for evaluating the commercial potential study. We can draw a few conclusions, however, from the study itself and recent program performance.

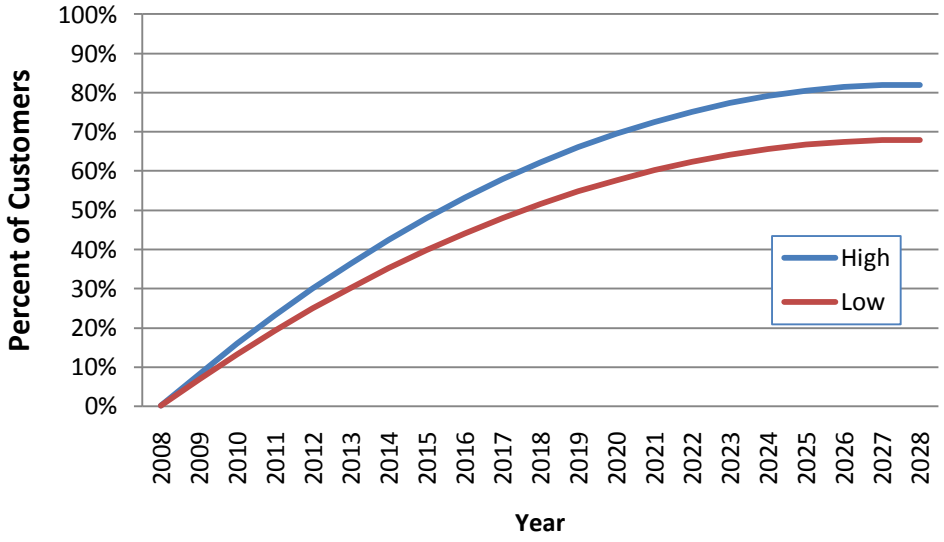
It appears the Marbek study assumed faster program uptake than is currently being achieved in the commercial lighting program. This is not surprising because the Marbek study does not allow for an initial slow-growth start-up period. To achieve its projected savings rates, the potential study estimated a 2026 participation rate (i.e., upgraded fixtures) of between 64 and 74 percent for T12 upgrades and between 73 and 90 percent for T8 upgrades. In each case, the two values reflect low and high scenarios for program participation, incentive levels, and other factors.

Although the study does not provide detailed participation rates for the intervening periods, it does indicate linear growth for conversion of T-12 lamps to high-efficiency T8s. For conversion of standard T-8s to high-efficiency T-8s, the potential study projects a more rapid initial adoption that

decreases as saturation approaches 100 percent. The study does not describe the rate of adoption in sufficient detail to derive an estimate of participation in intervening program years, however.

Using the rate of projected energy savings growth as a proxy for participation rate, we can derive a Marbek study projection of 13 to 16 percent of lighting upgrade opportunities (businesses or, more accurately, fixtures) participating in the commercial lighting program by the second program year. Figure 5 shows the rate of participation, by year, derived from projected energy savings.[7] Actual Year 2 program-to-date participation is roughly 300 commercial customers (or 14,700 fixtures).[8] This is fewer than the projected customers and, based on the Marbek figures for square footage, fewer than the projected fixtures.

Figure 5: Savings-Derived Adoption Rate of Commercial Lighting Measures, 2008 to 2026



The slower-than-projected uptake of the commercial lighting program does not indicate that its eventual performance will be less than the 70 to 80 percent participation projected by Marbek. If the program can turn the start-up corner soon, it could catch up. Indeed, the trajectory of savings over time, the pathway from zero to maximum program participation, which is based on findings of a workshop conducted among core members of the consultant team, program personnel from the utilities, and local trade allies, probably has the weakest empirical basis and introduces the most uncertainty into the model. Relatively small differences in the maximum participation rate or rate of change over time can have a large affect on participation at intermediate points on the trajectory.

We note another anomaly relative to that study that tends to offset differences just noted in the rate of participation. The Marbek study projects higher participation for the upgrade of T8 fixtures than for T12 fixtures: linear growth to a low peak for T12s; rapid initial growth to a higher peak for

[7] The Marbek study used 2006 as its base year. Since programs did not begin until 2009, we set "year zero" at 2008. We plotted the five-year savings values and fitted a polynomial function through them. The fit was better than R^2 = 0.99. We then solved for intervening years.

[8] Cadmus had access to program counts of participants and measures for 2010 but estimated counts for 2009 based on energy savings.

T8s. The T8 upgrades have lower unit savings than the T12 upgrades, so this participation pattern would suppress program savings. Program data from 2010, however, suggest the opposite is true.

Based on the ratio of claimed energy savings to upgraded fixtures (which is 77.7 kWh per fixture), we estimate that roughly 80 percent of upgrades have been for T12 fixtures. While this estimate is based on a number of assumptions about the installed measures, the evidence shows that more T12 than T8 fixtures are being upgraded.[9] Clearly, T12 upgrades occur from a larger base than T8 upgrades; but this does not account for a four-fold difference in participation, according to Marbek estimates of technology saturation.[10] The difference may reflect a misallocation of lighting across the two technologies in the study or it could reflect the greater performance improvement associated with T12 upgrades.

Finally, we observe that the Marbek commercial study, quite naturally, does not explicitly model the effect of targeted marketing on participation over time. It does not, in other words, consider program efforts to initially gather "low-hanging fruit." Savings potential is projected into the future on the basis of the floor space of establishments and assumptions about growth over time. Other than estimating the mix of technologies by building activities, it does not account for market factors that might induce some categories of establishment to be disposed to participate earlier than others. In principal, this limitation does not affect the ultimate participation rate but only the timing of achieved savings. In fact, however, the twenty year horizon of the potential study may be excessive in light of the many unknown factors that increasingly will make the study findings obsolete—new technologies being only the most obvious of these. Early savings should be given a significant premium over savings that are ten or more years from being realized. Strategic information that can speed up the adoption process within the next five years—information about markets and likely early adopters—is critical to the overall success of the commercial program.

Residential Space Heating

Our ability to comment on the Marbek residential potential study is enhanced by a recent survey of customers who investigated electricity use and related topics.[11] The survey was conducted by phone with 1,201 residential customers of Newfoundland Power. With respect to Newfoundland Power's current suite of residential programs, the survey included relevant questions about the following:

- Space heating fuel, primary and secondary
- Space heating equipment: type, age, etc.
- Thermostat type
- Thermostat setting
- Energy saving measures taken at the home, including insulation, weather sealing, etc.
- A rating of the home's energy efficiency

[9] Most basically, that T12 upgrades save approximately 87 kWh annually per fixture; T8 upgrades save approximately 30 kWh annually per fixture.

[10] Across all building activities, based on the profiles developed by Marbek, T12s represent about 62 percent of fluorescent fixtures that have not already been upgraded.

[11] Newfoundland Power, Inc. 2010. "Energy Conservation Study."

This information has direct bearing on the assumptions introduced into the Marbek residential potential study. For that study, energy savings potential was based on a set of thermal archetypes: one for detached homes and one for attached homes. Savings were projected into the future through the conversion of archetypical homes to higher-efficiency measures, as well as the introduction of high-efficiency measures into new homes.

Features of the single detached archetype include:

- Single story
- Heated space of 1,000 sq. ft.
- Finished basement
- 83 sq. ft double glazed windows with wood or vinyl frames
- Wall insulation R-13.5
- Ceiling insulation R-25.5
- Basement insulation R-3.5

Features of the attached archetype include:

- Two stories
- Heated space of 1,120 sq. ft.
- Finished basement
- 77 sq. ft double glazed windows with wood or vinyl frames
- Wall insulation R-13.5
- Ceiling insulation R-25.5
- Basement insulation R-3.5

Similar thermal archetypes were developed for new homes, except the floor space was larger (1,184 sq ft. detached / 1,400 sq. ft attached); basements were uninsulated; and insulation R-values in walls and ceilings are 20 to 25 percent higher.

Home Size

The survey results suggest the archetypes for home size are too small. A question asked customers to classify the size of their homes into one of seven square-footage categories. To derive an average, we assigned the median value of each category. For the top and bottom categories, which are open-ended, we assigned a value 20-percent lower or 20-percent higher than the stated value.

This approach introduces some error into the estimates, but it provides an approximate value. The result is that detached homes with electric heat have an average size of 1,594 square feet (i.e., 59 percent larger than the potential study archetype). Attached homes with electric heat have an average size of 1,392 square feet (i.e., 24 percent larger than the potential study archetype). We note that there were only 22 survey responses from customers living in attached dwellings.

Because potential estimates were produced with both a top-down perspective (based on estimated energy shares by end-use) and a bottom-up perspective (based on home modeling), we cannot be sure of the size of the effect of underestimating home size. The direction of the effect, however, is clear: a potential for energy savings from space heating that is too low. If underestimating the size of homes results in too small a share of total consumption allocated to heating, all heating measures will be assigned a potential that is too low, because each upgraded measure is assigned a percent reduction in the share of energy assigned to heating.[12]

Insulation

Survey results do not have sufficient precision to provide a counterpoint to assumptions in the Marbek study about insulation R-values. Still, from the survey we can estimate that 89 percent of electrically heated homes (91 percent of detached homes) have insulated attics, although we cannot discern the type or thickness of the insulation.

It is problematic to ask detailed questions about insulation because many respondents do not possess that information, although we know of survey instruments developed for residential customers that have probed more deeply into the matter than was done for Newfoundland Power. Nevertheless, it appears that the opportunities for energy savings are slightly higher than estimated by the potential study, since roughly 10 percent of homes are reported as not insulated at all. This is a survey finding that bears verification and, if true, points to a special opportunity to identify these homes and promote the insulation program.

Likewise, the survey indicates that only 75 percent of electrically heated homes have an insulated basement. The potential study archetype assumes that all basements are insulated; however, an opportunity profile that was developed from a workshop conducted for the study states that many houses have little or no basement insulation. We cannot be sure how these apparently conflicting pieces of information entered into the estimate of energy savings potential. The fact that 25 percent of homes have no basement insulation whatsoever suggests an increased opportunity for savings at least relative to the thermal archetype for detached homes.

Windows

The residential customer survey indicates that about 55 percent of electrically heated homes have installed ENERGY STAR windows. We cannot determine from the potential study the assumed baseline penetration of ENRGY STAR windows. This is a critical value in estimating remaining savings potential because existing homes will continue to make up the majority of the opportunities during the study period. In describing the development of opportunity profiles, no mention is made of the current penetration of efficient technology. If the assumption was that all windows could be upgraded, the savings potential has been overstated. Since we cannot be sure, we simply sound a note of caution about interpreting the savings projections of the Marbek study.

[12] To account for interactions, the model applies the savings for separate heating measure sequentially, with the savings potential applied to the share net of previously applied savings. This may not adequately account for synergies or inefficiencies but it is a reasonable approach to approximating interactions in lieu of full modeling of effects.

Thermostats

The residential customer survey indicates that about 16 percent of electrically heated homes have installed programmable thermostats. An additional seven percent have installed high-performance thermostats. As with ENERGY STAR windows, we cannot determine from the potential study the assumed baseline penetration of programmable thermostats. Again, if the assumption was that all thermostats could be upgraded, the savings potential has been overstated.

Conclusions

From an overall perspective, based on a comparison with other studies, we find the Marbek potential studies to have been conservative in estimating the potential for energy savings. In looking at particular measures, however, the case is mixed.

- For commercial lighting, the rate of uptake in the Marbek studies may be exaggerated.
- For residential shell measure upgrades, we could not be sure that the potential estimates were based on a realistic estimate of current penetration of efficient measures.

This would also overstate the opportunities. Conversely, we think it likely the Marbek residential study underestimated the share of energy for space heating because it underestimated the size of dwellings. In that case, the potential for savings in this end use are also underestimated.

To project savings into the future, potential studies must make numerous simplifying assumptions. We have probed the assumptions where we could and found a few cautions; however, we do not conclude there were any fundamental flaws in the study.

From the standpoint of program planning, we do think the 20-year horizon of the study should not be a distraction from the near-term trends. Whatever error there is around the maximum values in 2026, we believe the approach taken guarantees there will be even more error—certainly a more important *kind* of error in terms of its impact—around the intermediate points on the pathway to that maximum. This important piece of information has the least adequate basis in empirical fact.

Recommendations

Although our recommendations derive from these various sources, for continuity in report structure, they commence with recommendations from our review of the potential study. The remainder of our recommendations is then organized by the program topic areas covered in the interviews.

Design and implementation of the takeCHARGE programs represent significant accomplishments that deserve to be recognized as such. Many of the obstacles that face the start-up of similar programs have been successfully met.

However, it is not possible to address all issues in the first two years of these offerings. The recommendations that follow should be viewed as recommendations that pertain to the programs going forward now that start-up has been completed. Thus, these recommendations represent suggestions regarding what should or could be addressed in the remaining years of the five-year CDM plan. They are not meant as criticism of what has transpired. In that sense they are intended

to consolidate the initial efforts of the first two years and help establish the longer term future of the CDM programs.

Review of the Potential Study: Recommendations

Based on our review of the Marbek Potential Study, we offer these recommendations:

- As a global statement, additional information is desired. In particular, a commercial saturation survey would help evaluate the Marbek commercial sector findings. In light of our recommendation to take a shorter view of savings potential, the saturation survey could be designed to include an attempt at measuring perceptions of needs related to energy upgrades, near-term plans to make upgrades, as well as attitudes toward energy efficiency, cost sensitivity, etc. These could become part of the targeted marketing effort.
- For the residential sector, we do not think the evaluation of the Marbek study leads to any strong recommendation for additional actions. There may have been a missed opportunity to obtain more detailed information about housing characteristics – in particular related to shell measures – in the recently completed study; but nothing in either the Marbek study or the survey contradicts the approach taken by Newfoundland Power to address electric space heating as the top priority for energy efficiency.

Program Goals and Objectives: Recommendations

- There is a need for a more comprehensive CDM planning framework. Such a framework would likely prescribe a process for developing a CDM annual business plan, and an annual EM&V plan. Ideally, each of these annual documents would then flow from an overall CDM planning framework. (Section 3 of this report contains suggestions for both overall CDM planning and future evaluation research.)
- More rigorous evaluation of the target markets is needed – "what we're getting, what we're not getting" in terms of program penetrations. This is not currently being done in any rigorous (empirical) manner. (This need is addressed to some extent in the Section 3 proposed evaluation projects for the remaining three years of the current CDM plan.)
- Primary data collection efforts are likely needed to empirically identify program-specific market barriers. There is a lack of baseline data on existing markets.
- Program performance targets need to be updated in a rigorous manner. The original Potential Study was constrained by very limited primary data collection. (See Potential Study review above in this Section.)

Program Implementation: Recommendations

- As with all DSM/EE programs, incentive levels require ongoing review and modification. The following are program-specific suggestions:
  - The success of the Thermostat Program likely suggests downward movement for incentives.
  - The lower production costs for the program-qualifying windows also indicate the feasibility of lower incentives.

  - The Insulation Program is likely the most difficult program for which to gauge the correct incentive level (in part because of difficulties in gauging the market size). Survey data collection with participants would provide some needed feedback.
  - The Commercial Lighting program will almost certainly benefit from examining other similar programs, where technology offerings, incentive levels, and payment options should all be reviewed.
- We recommend expansion of retailer and contractor training, which is critical to exerting the control the programs need over the performance of market allies delivering the program-sponsored products and services.
- The extent of do-it-yourself installation of residential measures is unknown for the CDM residential programs, but best practices in other similar programs seek to assert some quality control over non-professional installation (and sometimes over professional installation of insulation and windows). This is a future evaluation issue addressed in Section 3 of this report.

Program Design and Participation: Recommendations

- Assuming the takeCHARGE commercial offerings continue to include commercial lighting, there is a need to continually expand the diversity of lighting fixtures and bulbs/lamps that qualify for rebates. This will facilitate the ability of the program, over time, to increase overall product offerings and thereby increase the range of efficient lighting choices with which customers have experience.
  - The education of customers about choosing lighting products will become increasingly important as LED replacement lamps come to price point levels more amenable to program promotion (commercial and residential).
  - Some way to stimulate the number of lighting audits will also be important, as well as addressing fairly entrenched barriers to investment in efficient lighting.
- LED streetlights (manufactured in Halifax) have recently dropped significantly in price, and are now likely to pass the TRC test for takeCHARGE programs (they now pass the TRC test in Nova Scotia). We recommend considering adding this as a CDM program.
- Based on our best practices review of program offerings in other provinces we recommend expansion of the takeCHARGE program measures for both residential and commercial sectors. For residential we suggest adding water heating and appliance offers. For the commercial sector, the Potential Study indicates that space heating and ventilation measures could likely capture cost-effective electricity savings.

Marketing and Outreach: Recommendations

- The programs will need to test other marketing strategies that facilitate linking customers to contractors to help move the more geographically isolated Newfoundland markets.
- The Cadmus Group's evaluation of the takeCHARGE programs includes a review of online exposure (http://www.takechargenl.ca/) relative to accepted best practices listed in Appendix A. Recommendation bullets included in this separate appendix devoted to these

marketing/outreach approaches offer suggestions to maximize the effectiveness of the already well-executed interactive exposure.

In general, the interactive platform, accessibility, and consistency earn high review marks. The clean design of the homepage offers a clear path of action and multiple access points for program details. The takeCHARGE collateral also provides this consistent and recognizable formatting. In addition, plain language in both online and print brochures clearly defines program benefits.

The takeCHARGE interactive elements also take advantage of multi-media and social media opportunities. The videos, including TV commercials, use real people in authentic situations which translate well to potential participants. Further detail regarding online and social networking possibilities can be found in Appendix A.

Program Tracking: Recommendation

The current program tracking databases will need to be augmented to support future impact evaluation projects. This will include the need to capture and store data on pre-retrofit lighting equipment for commercial sector programs, and linking to the billing data systems to support impact evaluation of the Insulation Program.

Quality Assurance and Control: Recommendation

The current audits being conducted on a percentage basis should be entered into a formal, reportable tracking system (they are handwritten and currently not entered).

Cross-Organization Coordination: Recommendation

Joint adoption of an overall CDM planning framework (process for program planning and EM&V) would improve coordination between Newfoundland Power and Newfoundland Labrador Hydro.

3. Future Evaluation Research

In this section, the Cadmus team provides an overview of a proposed evaluation approach within the residential and commercial sectors for the current CDM programs and through the remaining three years of the CDM plan (*Five-Year Energy Conservation Plan: 2008-2013)*. This includes some broad strategies for each sector, with a primary emphasis on residential initiatives involving dwelling envelopes and products related to electric space heating and ventilation. The section then addresses program-specific evaluation project recommendations. We also offer some planning considerations for an overall process for evaluation, an example conceptual framework for overall CDM planning, and a summary of recent Cadmus research on cost-effectiveness screening.

Strategic Evaluation Planning Considerations for the Current CDM Programs

Residential Sector

Strategic planning for the residential sector evaluation activities benefits from recognition of the synergies between the current programs. Specifically, programs for the residential sector are aimed at space heating, reflecting the energy conservation potential identified in the potential study.

At the residential sector level we differentiate between evaluation *functions* and evaluation *activities*. The evaluation functions are fully sector-level in nature; the evaluation activities within each sector are partially program-specific and partially sector-specific.

For the residential sector we recommend two evaluation functions in Newfoundland Power's strategy for evaluation planning: (1) new programs; and (2) residential sector policy analysis. The new programs' evaluation function explicitly recognizes that over the balance of the current five year plan additional program initiatives will be designed and implemented. The actual number and breadth of programs that will be offered is mostly unknown at this time. We do understand that two new residential efforts will be offered in 2011 – a mini-split heat pump *pilot* program and a high efficiency heat recovery ventilators (HRVs) offering. The extent of evaluation research needed for these new programs, while not detailed at this time, suggests the need for contingency evaluation funds.[13]

The second evaluation function recommended for the residential sector is policy analysis. We see this function as likely being divided into three parts: policy analysis focused on synthesizing the results for different residential sector programs; policy analysis focused on synthesizing the results for different programs across the residential and non-residential sectors; and targeted analysis of specific policy issues likely to affect the CDM programs (e.g., initiatives of the Office of Climate

[13] Related to development of new residential programs over time, we recommend for future potential linking of program measures to *Energy Star* the following consideration. An increasing number of *Energy Star* products cannot pass a TRC test, in part because the program has been successful in raising baselines. For example, in some areas it is hard not to find an *Energy Star* refrigerator and, if you can, the performance delta between non-*Energy Star* and *Energy Star* is often small. Thus, we recommend monitoring consumer product listings from the organization TopTen USA (www.toptenusa.org). They claim large savings variations within *Energy Star,* and at a minimum should be consulted as their product recommendations may well be more useful than *Energy Star*.

Change, Energy Efficiency and Emissions Trading, and possible other provincial or federal government initiatives regarding codes and standards).

The high-level evaluation activity categories that we consider are these:

- tracking and database management;
- measurement/verification and energy/demand savings from specific programs;
- evaluation of market effects; and
- process evaluation.

Table 4 provides a suggested level of effort to be allocated to specific residential programs for future evaluation. Primary factors in proposing the relative level of effort for each activity are the estimated costs and energy savings for each program (as included in Schedule A of the *Five-Year Energy Conservation Plan: 2008-201*) and the methods discussed for evaluation in the program-specific evaluation project recommendations (in the subsection following).

Table 4. Proposed Prioritization of Residential Program-Specific Evaluation Activities

	Residential Windows	Residential Thermostats	Residential Insulation
Tracking and Database Management	Low	Low	Medium
Measurement/Verification and Energy/Demand Savings	Low	Low	High
Evaluation of Market Effects	Medium	Medium	Medium
Process Evaluation	Low	Low	Medium

Commercial Sector

The program emphasis in the commercial sector is Commercial Lighting, which the Potential Study identified as the largest single source of opportunity in the sector. The initial lighting offering is considered a "point of entry" for the commercial sector, in part recognizing the challenges of disaggregated market data upon which to design additional programs (though an LED exit light program is slated for 2011).

For the commercial sector we recommend one central evaluation function in Newfoundland Power's strategy for evaluation planning: collection of baseline data characterizing end users' current decision making structures and energy efficiency practices in some detail. This effort could consist of two kinds of alternative approaches applied to the commercial population. One would be to obtain market shares data for targeted technologies (e.g., lighting, and then perhaps space heating and pumps/fans). Another would be to collect data more broadly characterizing the physical structures and equipment in place across more end uses, preferably at periodic intervals. Both of these approaches are expensive to implement across a comprehensive list of end uses and equipment. Likely more feasible is collection of the narrower market shares data for targeted technologies.

For near-term strategic evaluation planning, we recommend "medium" effort emphasis on the tracking and database (and "low" effort on the evaluation of market effects attributable to the

program, measurement/verification of energy savings and process evaluation). These prioritizations follow from the fact that evaluation utilization of the program tracking information will need to be more involved to support the impact (energy savings) evaluations for future commercial sector offerings (e.g., the need for pre-retrofit lighting equipment specifications).

Program-Specific Evaluation Project Recommendations

Residential Sector

Insulation Program

The main savings opportunities for this program are due to discretionary actions taken by customers to solve a perceived problem or need that tends to be importantly influenced by installation contractors. It is probably reasonable to assume that consumer decision-making in this market tends to be risk averse, favoring the maintenance of the status quo rather than the expenditure of out-of-pocket funds for what they may perceive as limited value savings or improvements.

Fundamental to the continued expansion and success of the program is convincing contractors and retailers that selling enhanced efficiency building envelope services is in their best financial interest. Thus, removing the market barriers to market actors providing insulation and installation services can be seen as the most important avenue to increased levels of program participation. As a result, the recommended evaluation projects focus on development of the service delivery infrastructure.

Evaluation Approach – 2011. The evaluation should focus on the first "links" in the hypothesized chain of events leading to widespread changes in insulation retailer and contractor awareness, knowledge, capabilities, and business strategies.

- **Conduct a comprehensive set of interviews with installation contractors and insulation retailers.** The in-depth interviews will help determine whether relevant market indicators (such as retailer and contractor awareness, interest, practices, and business strategies) are changing in response to the program. In addition, this evaluation project should qualitatively verify significant energy savings by completing "case studies" with participating trade allies *and* customers. These case studies will help to understand the ways in which customers access the program (e.g., via contractors or by way of retailers and do-it-yourself installation), and the associated program outcomes.

Evaluation Approach – 2012. At this stage of the program, a systematic approach to evaluating the energy savings impact (on a per home basis) should be designed and implemented.

- **Measurement and verification of performance for each participating home.** As the program progresses, and the number of installations increases, a higher level of evaluation funding should be allocated to understanding per home energy savings. This will likely entail the design and implementation of a fairly rigorous impact analysis using billing data. Conducting this study in 2012 should also facilitate the collection of

a full 13 months of pre- and post-retrofit billing data for a sufficient number of participating homes.

Our understanding is that this impact analysis can be informed by earlier research conducted in Canada on dwelling envelope retrofits.[14] Under a previous Natural Resources Canada program, for retrofit of existing homes, there was a "test-in" and "test-out" system (including blower-door tests) that resulted in an improvement score. However, the federal system and its financial support are now discontinued by the current government, leaving the provinces and individual utilities to continue on their own financing and program designs. A weakness in this previous system was that it relied primarily on simulation modeling for all residential whole house work (very similar to the modeling used for USDOE low-income WAP programs in the U.S.). However, various true-up studies of the NRC model showed that it could be very far off from impact measurement using utility billing data (with PRISM, or PRISM-like, weather normalization techniques).

These true-up studies could be very useful to a billing data analysis for the takeCHARGE Insulation Program in understanding, for example, the additional explanatory variables that should be included in the billing analysis. Thus, as part of this evaluation project, we recommend contacting the unit at Natural Resources Canada that ran this program and secure either the studies they did on "true-up" or conclusions from them about the variability between their model and billing data analyses.

Evaluation Approach – 2013. In the final year of the current five-year CDM plan, and to inform planning for the next plan, more comprehensive market assessment information should be sought.

- **Province-wide effort to assess consumer awareness, to include systematic sampling of trade allies.** Use telephone survey of both participating customers and trade allies (both participating and nonparticipating) to understand the extent to which the values/benefits of increased insulation levels and practices are migrating into wider customer awareness and knowledge—and into various segments of the trade ally community. This assessment will provide valuable information to the takeCHARGE programs in determining the extent to which the program concept has caused decreases in market barriers.

Windows and Thermostats Program

Energy Star-qualified windows and programmable (and high-performance) thermostats are consolidated here in evaluation planning because of their similar program delivery strategies, costs, and estimated energy savings. They each involve partnering with relevant trade allies (home builders, retailers, and renovation industry contractors). Though saturations of both products are thought to be relatively low in Newfoundland (approximately 10 percent of sales), it is anticipated that over time, as market share increases, incentives will decrease or be eliminated altogether. The theory is that efforts to work with various members of the program infrastructures – combined with

[14] Personal communication from Gil Peach (H Gil Peach & Associates), who is currently Savings Verification Consultant for the Nova Scotia Utility and Review Board.

consumer education and marketing—will, through time, increase customers' demand for these products by establishing their value and benefits.

We do not recommend that energy (and demand) savings be directly assessed in evaluations for these programs. What is being promoted is the purchase and use of two products that are more efficient than standard products but not new or experimental. Thus, savings estimates can be developed through an engineering review of the average savings attributable to the substitution of the more efficient products for the standard efficiency product, multiplied by the incremental sales of the more efficient products attributable to the programs.

The highest priority for evaluation of these programs is collection of sales and/or market share data on a regular and reliable basis (or *indicators* of market progress, such as labeling and stocking practices). Another priority is to monitor customer changes in awareness and understanding of the products' benefits (and for the windows, the awareness and understanding of the Energy Star label).

Evaluation Approach – 2011 and 2013. We recommend three evaluation projects to be conducted in 2011, and then follow-up studies in 2013. For each evaluation project the 2011 efforts will yield baselines that are then compared to the 2013 results.

- **Develop and implement method(s) for tracking sales/market shares of each product.** The programs are designed to stimulate increases in the sales and market share of the products. The initial evaluation step is to identify indicators of market progress that can be tracked in a reliable, cost-effective, and (ideally) general manner, and then to develop and implement the methods for doing so. There are various approaches to accomplishing this tracking: introduce a new data collection effort at the retailer level; obtaining shipment data from cooperating manufacturers and retailers; or purchase of sales data from a commercial organization or an industry association. Each has drawbacks—and each can be expensive. It may be most likely that proximate indicators of market progress (focusing on the program's primary local retailers/distributors) will be feasible. For example, surveys of stocking practices may be the most prudent use of available evaluation resources that will still provide useful, actionable research reports.
- **Surveys of customers, supplemented by in-depth interviews with market actors in the windows market.** The customer survey research would be the preferred method for monitoring changes in awareness and understanding of the value and benefits of each product. This will support testing of the basic program design theory: labeling and the promotion of the products will increase customer recognition and understanding of the products' features and benefits. In addressing the windows market specifically, where establishing and publicizing standards are at issue and contractors control a portion of the market, in-depth interviews are desirable.
- **Customer follow-up research to verify installation.** There are alternatives for the participant in accomplishing installation of these products: do-it-yourself; independent contractor; or, installation services available from the retailer. As part of the customer survey study – which needs to probe regarding installation status of the measures—on-site audits should be conducted for a subset of participants who are surveyed (and the results of the on-site can then be extrapolated to the survey sample, and then to the participant population).

Commercial Sector

Commercial Lighting Program

According to the five-year CDM plan this program is expected to be delivered for three years, at which time delivery will be integrated with future commercial sector offerings. Given this plan, and the modest energy savings level for the current program, we think the most prudent use of resources involves two types of evaluation projects:

- **Development of tracking methods to capture key details about the pre-retrofit equipment.** For near-term evaluation planning, we recommend efforts on the tracking and database management (and "low" effort on the evaluation of market effects attributable to the program, measurement/verification of energy savings, and process evaluation). These prioritizations follow from the fact that evaluation utilization of the program tracking information will need to be more involved to support the impact (energy savings) evaluations likely to be needed for future sector offerings (e.g., the need for pre-retrofit lighting equipment specifications).
- **Baseline research on equipment saturations and commercial/industrial decision-making regarding energy-using equipment purchases.** As described above in this section, for future evaluation (and program) planning we recommend one central evaluation function: collection of baseline data characterizing end users' current decision making structures and energy efficiency practices in some detail.

  Related to understanding lighting equipment purchase behaviors, we note that the observed contrasts between Nova Scotia and New Brunswick in purchasing behavior and stocking practices for energy efficient commercial lighting are remarkable.[15] New Brunswick recently discontinued its upstream lighting distributor program and almost overnight lighting equipment purchases reverted to pre-program behavior, demonstrating that in the commercial sector nearly all end-use players are price driven and ***not*** green driven (with a few exceptions). This contrast could be investigated by discussion with one or two lighting distributors that serve in all three provinces of Newfoundland, Nova Scotia, and New Brunswick. It is an example of an unplanned experiment that documents why lighting programs can be essential to changing market actor behaviors.

Cross-Sector Evaluation Projects

For both sectors, we recommend periodic participant and nonparticipant customer surveys.

- **Customer surveys.** Surveys with program participants will provide greater understand of satisfaction with program processes (e.g., application process), use of equipment/products, preferences for learning about other takeCHARGE programs, and free-ridership and spillover. (See subsection immediately below for summary of a customer survey designed for the programs as part of this process evaluation.)

[15] Personal communication from Gil Peach (H Gil Peach & Associates).

A Suggested Residential Participant Survey Instrument

As part of this process evaluation Cadmus has developed a customer survey suitable for understanding customer perceptions of the programs (provided in Appendix C). For participating customers the survey has questions for these topics:

- Primary sources of program awareness (and assessments of outreach/marketing methods and content)
- Satisfaction with program elements (e.g., measures received, interactions with trade allies, eligibility requirements, incentive amounts, application processing, payment timeliness)
- Reasons for satisfaction, or dissatisfaction
- Awareness of efficiency and conservation "brands" (e.g., Natural Resources Canada ecoENERGY, EnerGuide, Energy Star)
- Barriers to program participation (pre-participation and post-participation)
- Demographics and other customer characteristics
- Willingness to participate in current and potentially new offerings
- Impact evaluation questions for measuring free-ridership and spillover (energy-efficiency or conservation behaviors outside of the program but as a result of participation)

An Example Template for Detailed Evaluation Plans

Cadmus recommends the following detailed evaluation plan outline, where very brief annotations describe the content of each plan element. This plan template is suitable for both residential and nonresidential program evaluations.

- **Program description.** A description should be provided in enough detail that readers can understand the program and its components that are delivering anticipated effects.
- **Program logic.** A program logic model provides a concise schematic of the resources, activities, short-term outputs, longer-term outcomes, and key performance measures for a program.
- **Researchable issues and prioritization.** Depending upon the purpose of the evaluation research, the objectives of the evaluation are to address the primary researchable issues, prioritized usually along process-related issues and/or an examination of the energy usage impacts attributable to the program.
- **Tracking database analysis.** The creation and maintenance of data tracking systems, and the dissemination of information from those systems, is one of the major DSM program evaluation functions. Assessment of these systems is central to the "evaluability" of a program.
- **Summary of data collection activities.** The evaluation data collection activities, whether primary or secondary, are summarized along with their purposes and data sources.
- **Staff interviews.** The objectives of these interviews are to gain information about program operations, emphasizing the strengths and weaknesses of the current implementation procedures.

- **Stakeholder interviews.** (If applicable) For some evaluations interviews are conducted with samples of trade ally partners and other interested parties. These interviews usually elicit opinions about which parts of the program work best and least well, and what kind of change recommendations are suggested.
- **Participant telephone survey.** (If applicable) Surveys with participants can focus on a wide range of issues, depending upon the evaluation objectives. A detailed plan should describe how surveys will be coordinated between impact and process evaluation objectives, as applicable.
- **Nonparticipant telephone survey.** (If applicable) Surveys with nonparticipants typically focus on program awareness and reasons for non-participation, and perceptions of the needs for the program services.
- **Impact evaluation approach.** For detailed planning for impact evaluations, the approach for calculating gross energy and demand savings must be specified. This could be one, or a combination, of: M&V; deemed savings and engineering review; and statistical billing data analysis.
- **Site visits.** (If applicable) Engineering calculations, observation site visits, and metering are techniques that fit together and are used to varying degrees in impact evaluations.
- **End use metering.** (If applicable) Metering is a data collection method to collect physical data to analyze savings as a result of installed energy-efficient improvements.
- **Engineering review of ex ante savings estimates.** (If applicable) This engineering review typically focuses on energy savings goals recorded at the beginning of the program funding cycle.
- **Attribution activities.** (If applicable) These analyses focus on isolating the savings that are caused by a program's efforts from the savings that are caused by other market forces.

In addition to these elements of a detailed evaluation plan, evaluation timeline and budget are also typically included. Any cost-effectiveness activities, non-energy benefits estimation/quantification, and a quality assurance/control plan may also be detailed. Finally, evaluation data requests should be specified. These data may come from the utility, third party implementers, or other sources.

Some Considerations for an Overall Evaluation Process

The takeCHARGE Energy Saver Power Smart programs are designed to "support a long term goal of development of a conservation culture and sustainable reduction in electricity consumption." (*Five Year Energy Conservation Plan: 2008-2013*, page 1). As with any DSM program sponsor, a risk management strategy for Newfoundland Power and Newfoundland and Labrador Hydro relies importantly on evaluation—from program development through post-program documenting of energy savings and cost effectiveness. These partnering utility sponsors are embarking on how to apply evaluation processes to reduce uncertainty in CDM program-attributable energy impacts

while at the same time providing internal and external accountability. It is this overall evaluation process for the takeCHARGE programs that is the focus of the following considerations.[16]

As Newfoundland Power and Newfoundland and Labrador Hydro move ahead with both the takeCHARGE programs and associated evaluation research, it will be important to address over time a number of institutional, accountability, and process-oriented issues. This will involve the programs and the staff of both utilities who are involved in planning, designing, developing, implementing, marketing, evaluating, and overseeing the evaluation reporting for the takeCHARGE programs. These issues are summarized in the following six topics, each characterized by a key researchable question concerning the overall process for evaluation.

- ***Management direction.*** "Is there clear accountability for the evaluation function and process?"
  - Effectiveness of evaluation oversight
  - Institutional organization of evaluation activities
  - Evaluation planning process
- ***Asset protection.*** "To what extent are key evaluation assets being protected?"
  - Staff morale and turnover
  - Approach to the use of consultants
- ***Relevance.*** "Is evaluation performing the right evaluation activities?"
  - Appropriateness of evaluations to the program being evaluated and stated evaluation objectives
  - Perceptions of interviewees regarding evaluation work products
- ***Appropriateness.*** "Is evaluation performing its activities in the best way available?"
  - Research methods used in evaluation and related studies
- ***Costs and productivity.*** "Is evaluation performing its activities at a reasonable cost?"
  - Costs of studies (current and planned), and other evaluation spending information, compared to program administrators in other regions
- ***Acceptance.*** "What effect are evaluation efforts having?"
  - Stakeholder acceptance and assessments of evaluation results.

While these are potentially fairly broad topics and objectives, over time the benefits of addressing them we believe will result in continuous improvement to CDM programs.

[16] These overall evaluation process considerations are adapted from work completed by Cadmus' lead report author for BC Hydro Power Smart.

Some Considerations on Overall CDM Planning

The design and management of a CDM portfolio must address portfolio risk: the likelihood that the portfolio will fail to deliver on its objectives. Based on the *Five-Year Energy Conservation Plan: 2008-2013*, this risk can be seen as reflected in the objective of 79 GWh per year of energy savings. An established framework for managing risk for DSM programs is to consider three factors:

- the program sponsor's risk tolerance—in this case, the tolerance for Newfoundland Power and Newfoundland and Labrador Hydro of falling short of the 79 GWh
- the relative riskiness of the programs included in the portfolio
- the portfolio design elements used to mitigate and balance individual program risk

If the *risk tolerance* factor is low, core programs with fairly standard and straightforward program designs are preferred. These programs will likely have anticipated high net-to-gross ratios and a track record of successful implementation in either Newfoundland or other Canadian provinces.

Given the past experience of Newfoundland Power, and Newfoundland and Labrador Hydro, with legacy energy conservation program design and implementation, valuable information about the relative success of different types of programs exists. Thus, *program risks* have been reduced by inclusion of two programs in the five-year plan that are continuations of previous programs (the Thermostat and Insulation programs).

The previous experiences of Newfoundland Power and Newfoundland and Labrador Hydro that provide knowledge of the relative riskiness of program types also suggests methods for *risk mitigation.* With programs that depend on being able to influence a mass market, risk can be mitigated to some extent by moving the program focus upstream to retailers and contractors. However, the effectiveness of this risk mitigation approach can depend on how much control the program sponsor can exert on the performance of upstream program allies. This currently is an evaluation question for the residential CDM programs.

Another consideration for the takeCHARGE program portfolio is managing risk over time. Generally, the longer the implementation plan cycle the more the economy and markets can change from initial assumptions. Technology risks (the risk that program technologies will not deliver the planned savings) are more likely to decline over time as performance characteristics are more thoroughly understood. However, this can be countered by program reliance on emerging technologies, where risks are not as well understood. Also, some programs require more time to gain traction in markets—such as the Commercial Lighting program—while others can achieve savings fairly quickly (e.g., Insulation program). Balancing the portfolio to account for both quick starting programs and late-developing programs is therefore a risk mitigation strategy.

We recommend that future CDM portfolio planning considers this risk framework. One way to apply the framework is to explicitly align portfolio objectives with specific program design parameters and program elements. Specification of program design parameters describes how the portfolio objectives influence the programmatic composition of the portfolio. Then program design parameters can be linked to specific program elements.

In a sense, this is an example of a *portfolio* logic model that clarifies the relationship between individual programs and the portfolio level objectives. Effective CDM portfolio planning will benefit from developing a detailed and articulated explanation of what programs are intended to achieve.

Recent Cadmus Research on Cost-Effectiveness Screening

Recent research by Cadmus has demonstrated how the selection of a discount rate and the inclusion of non-energy benefits can each have a substantial impact on cost-effectiveness results.[17] Additionally, the level at which a cost-effectiveness screen is applied can impact program offerings. While some jurisdictions require that the overall plan pass a screen, some jurisdictions require that each measure and/or each program pass a screen. A recent review of Total Resource Cost (TRC) and Societal Cost (SCT) test requirements by Cadmus revealed the selection of these requirements impacts the depth of savings a utility can achieve if measures that do not pass a screen are precluded from a portfolio. Additionally, varying requirements can create situations where plans might not adequately serve certain ratepayers.

In the single-family market, the exclusion of non-energy benefits, use of a weighted-average-cost-of-capital (WACC) discount rate, and a measure-level TRC/SCT screen was found to cause utilities to exclude measures that are popular with customers, measures that are prevalent in single-family homes, and emerging technologies that have the potential for significant savings, impacting the depth of the portfolio's savings.

It was also found that a measure-level TRC/SCT requirement can create ambiguity about which measures can be offered on a prescriptive basis in the small commercial market. The differences between buildings can create a situation in which a prescriptive measure is cost-effective for one building type but not another. Additionally, program-level TRC/SCT screens limit the ability to reach small commercial customers, particularly when a WACC discount rate is used and non-energy benefits are excluded. These rules can create a barrier to (1) offering innovative funding options, (2) direct install programs, or (3) programs that specifically target this unique market.

The study also revealed that most jurisdictions employ some type of cost-effectiveness exemption for low-income and education programs, acknowledging the societal goals of these programs. The study recommended that if the TRC/SCT test is employed to determine program cost effectiveness, the use of a societal discount rate and a 10-percent benefits adder for non-energy benefits and the application of the test at the total portfolio level promote an environment for increased savings and breadth of offerings. The study also recommends exempting low-income, education, public purpose, research and development, codes and standards, and pilot programs from cost-effectiveness requirements.

[17] This summary is based on the paper "Picking a Standard: Implications of Differing TRC Requirements," by Elizabeth Daykin with Jessica Aiona and Brian Hedman of The Cadmus Group (presented at the AESP National Conference and Expo, January 2011).

Appendix A. Best-Practices Review

The Cadmus Group's evaluation of takeCHARGE is presented in this assessment of online exposure relative to accepted best practices, which are listed below. We also provide recommendations for social media monitoring and outreach potential.

1. Goal and Methodology

The Cadmus team's goal for this analysis was to provide a comprehensive assessment of online properties, using interactive best practices as our guide. Following the Page Reviews section is the Best Practices section, which contains a high-level summary of the best practices used in this review.

Aggregate findings allowed us to identify both bright spots—elements that were done well— for replication throughout the site and opportunities for improvement. In conjunction with best-practice items listed, our Website review also contains specific comments regarding the following (as applicable):

- General look and feel
- Brand and message consistency
- Program accessibility
- Stakeholder criteria, including:
  - Rebate forms
  - Web-based marketing and educational collateral
  - Searchable retailer listings
  - Online processes availability

2. Page Reviews

takeCHARGEHome Page Review Comments

http://www.takechargenl.ca/

On this interactive platform, accessibility and consistency earn high marks. The clean design of the home page offers a clear path of action and multiple access points for program details.

Program color and font choices reflect a level of care rarely found on utility-built Websites. This attention to detail, while unobtrusive, provides customers and potential participants with a feeling of safety and calm as they navigate the site. The program colors also allow extension into other interactive and print elements, as appropriate, which increase recognition levels.

The takeCHARGE collateral also provides this consistent and recognizable formatting. In both online and in print brochures, takeCHARGE programs are clearly defined and presented in plain language. This is important because studies have shown that participation targets tend to be easily

overwhelmed by similar-seeming programs without clear demarcation or instruction. Consequently, in the presence of too much choice, participant targets often choose "no action."

The takeCHARGE interactive elements also take advantage of multi-media and social media opportunities. The videos, including TV commercials, feature real people in authentic situations, which translate well to potential participants. The tone and scripting of video messages also fit well with the brand itself: "You have the power to take control of your own energy use."

The takeCHARGE messaging does a good job of maintaining this simple, direct message. Marketing communication that maintains consistency in branding, messaging, and calls-to-action increases the opportunity for multiple impressions to act cumulatively on participant target behavior.

These bulleted suggestions identify opportunities to maximize the effectiveness of the already well-executed interactive exposure.

- **Capture visitor information on the home page** or by program for cross-marketing and additional promotional opportunities. When possible, gather demographic/ psychographic categories. Offer some value in exchange for data, such as additional rebates or sponsored prizes.
    - Encourage visitors to provide their name and email information to generate an automated email response with attachments of the appropriate forms and lists. These visitors become "warm" leads, or prospects that have self-selected in some way and are more likely to act This kind of automation is both customer-centered and allows for data capture for further marketing opportunities. It can also significantly reduce utility expenditures on call centers.

- **Lead with FREE.** NPI and LP have created great value in the form of informational and entertaining videos. This educational material provides free energy-efficiency guidance, so it is something visitors can share with family and friends.
- **Include more case studies and testimonials from real customers.** This is an additional opportunity to engage participants to share success in user-generated content and/or contests. These Facebook page stories are good opportunities for highlighting the takeCHARGE message within the Website and/or other promotional material.
- **Identify a single point of contact**. Participation targets are easily overwhelmed by similar-seeming programs. As previously noted, in the presence of too much choice, the chosen option is often "no action." One single point of contact and one call to action are easier to remember, and this approach increases participation by all stakeholders. Currently, the site includes an email address for questions about the Website, so having a similar "go-to" email address for all program questions would benefit potential participants.
- **Market through the supply chain**. Our research (via surveys and interviews) on similar programs in other areas revealed that contractors and other trade allies were key links to efficiency decision makers. By providing online options, NPI offers the opportunity to connect trade allies with participants.

  Additionally, having region-specific strategic plans that reach contractors benefits both

residential and commercial programs and drives participation at the point of choice/purchase. Having online collateral for contractors for residential "leave behind" education provides co-marketing benefits with low distribution costs. These can also provide co-branding elements, a benefit to the trade allies.

- **Leverage social networks and influence social norms**. By providing messaging and widgets appropriate for social network distribution both online and in-person, takeCHARGE can build on current social media success. Groups such as stakeholder trade associations, community networks, Chambers of Commerce, LinkedIn groups, and multifamily email networks provide low-cost and high-volume information distribution vehicles.
- **Allay concerns and address barriers to participation**. All messaging efforts should lead with key messages that speak to barriers to participation and address concerns. In our findings with other programs, these concerns are consistently identified as lack of time, lack of money, and potential difficulties regarding participation. Web access and information can address these concerns and encourage the first step toward action.
- **Online applications for all rebates and programs will drive participation for some populations.** This kind of automated service can be very attractive to those residents and businesses that like to respond online. Automation also speeds the process and reduces paper use.
- **Capitalize on Social Media outreach**. Currently, takeCHARGE leverages Facebook and YouTube. Facebook advertising and specific Twitter handle outreach will maximize exposure. Also, many program targets are Linked In and participate in online groups where information can be distributed. Further, key online influencers can share program benefits in a structured, meaningful way. A sample social media road map is included in Section 4, and Cadmus will provide more detail and consultation, upon request.

3. Best Practices

Website/Online Best Practices

Landing page optimization:

- Leverage first impressions
  - Include a simple, attention-grabbing, and relevant offer
  - Keep offer highlights above the fold
  - Offer clear calls to actions
- Communicate value
  - Always ask "what's in it for my reader?"
  - Make offer attractive and easy to access
  - Target to site visitor as much as possible
- Keep it simple

  - Design clear and intuitive navigation
  - Don't make your visitor hunt for the program/offer
  - Offer simple forms
  - Request the minimum contact information for lead capture
- Maximize results by focusing on "conversion" (that is, on converting visitors to people who take an action)
  - Make the submit button or other acceptance-related button prominent
  - Offer more information and assistance in exchange for some attractive benefit
  - Become customer-centric; offer information ***and*** support
- Build trust
  - Communicate your privacy policy
  - Make sure visitors know where their information is going and how it will (or won't) be used
  - Offer value: many residents and businesses will be grateful for help understanding multiple energy-efficiency programs
- Test, measure, fine tune, repeat*

*Website designers serious about leveraging their online presence constantly test multiple landing page variables in image, copy, look and feel, offer, and lead marketing. While this may be outside the scope of NPI's current program planning, it is worthwhile to consider how this effort might serve participation results.

4. Social Media Best Practices and Road Map

Objective

Leverage traditional and cost-effective Web 2.0 marketing methods for takeCHARGE program branding, exposure, and participation.

Goals

- Support interest and participation in takeCHARGE programs
- Deliver warm leads and build prospect lists
- Communicate the takeCHARGE program vision and mission effectively and consistently
- Market, promote, and differentiate takeCHARGE's "online hub" for best-in-class program information, a like-minded community gathering place, and engaging user-generatedcontent
- Increase takeCHARGE brand social network connections
- Identify and act on opportunities as they become apparent

Social Media Success Framework: Ongoing and Concurrent

A. ***Listen:*** Track and assess current online conversation.

B. ***Learn/Use:*** Identify influencers and conversational themes.

C. ***Engage/Moderate:*** Get connected and join the conversations!

D. ***Audit:*** Evaluate and build assets as needed.

A. Listen

Use social media analytic vendors to track key words and conversations. Key citizen insight and penetration data are accessible via "Listening" to social media online conversation

B. Learn/Use

- Aggregate trend data from "Listen."
- Identify key blog and twitter influencers with large followings.
- Collect lists for promotion and marketing.
- Comment on posts/Answer questions.
- Monitor competitive programs for intelligence and marketing ideas.

C. Engage: Create takeCharge Program Brand Social Network Presence

Key concepts: Educate, engage, and share

Success methods*:* Maintain a presence, join conversations, answer questions, make comments, and promote others' content

Action Items

1. Create takeCharge social media accounts, each of which will link to the appropriate takeCharge site and each other
   - Micro blogging= Twitter
   - Business Profile=Linked In
   - Personal Social/Business Group Profile=Facebook
2. Connect Accounts: Ping.fm and through the sites themselves
3. Set up timesaving Twitter tools
4. **Be Social!**
   - Set a schedule to check accounts
   - Read, comment, and post on related blogs
   - Tweet about articles of interest and about takeCHARGE announcements/partners

- Re-tweet to gain positive regard and build relationships
- Always drive visitors to or highlight takeCHARGE program benefits

Network-Specific Best-Practices Tactics

Linked In

Create accounts for each program stakeholder and key team members.

Attractive Link Targets:

- Regional influencers
- Related groups
- Business leaders
- Municipal leaders
- Energy-related thought-leaders

Twitter

Twitter works for exposure, relationship building, and short links to takeCHARGE program brand and partner sites. Staff members using a twitter account can be a critical avenue for flash announcements and, special offers. This is also a way to create exponential outreach with minimal staff time input.

Appendix B. Proposed Customer Survey

takeCHARGE Energy Saver Rebate programs
Participant Survey Instrument

Introduction

Intro. Hello, my name is [interviewer name], and I'm calling on behalf of Newfoundland Power and Newfoundland & Labrador Hydro takeCHARGE Energy Saver Rebate programs. May I speak with [sample name]?

1 Yes [GO TO INTRO2]
2 No [CONTINUE]

Intro1. Is there another adult in the household that is knowledgeable about your household's experience with the takeCHARGE Energy Saver Rebate programs that I could speak with?

1 Yes [CONTINUE]
2 No [ATTEMPT TO CONVERT]

Intro2. I'm with _____, an independent research firm. We have been hired to assist Newfoundland Power in evaluating some of the services they are offering to households as part of the takeCHARGE Energy Savers Rebate programs. I'm not selling anything; we would like you to help us complete important research about your experience with the programs. I'd like to assure you that your responses will be kept confidential and your name will not be revealed to anyone.

For quality and training purposes, this call will be recorded.

INTRO3 *(Why are you conducting this study: Studies like this help the utility better understand household's awareness of, satisfaction with and* need for energy programs like this.)

(Timing: This survey should take approximately 15 minutes of your time. Is this a good time for us to speak with you? IF NOT, SET UP CALL BACK APPOINTMENT OR OFFER TO LET THEM CALL BACK AT: _____.)

(Sales concern: I am not selling anything; we would simply like to learn about your home's comfort, safety, and energy efficiency. This information will help Newfoundland Power best design and deliver energy programs to assist residential customers. Your responses will be kept confidential by our firm. If you would like to talk with someone about this study, feel free to call Sherina Wall at _____.

Screener 1 – takeCHARGE program rebate application processed/paid ('Participant')

S1 Our records indicate that you applied for and received a program rebate through [INSULTATION REBATE PROGRAM or THERMOSTAT REBATE PROGRAM or ENERGY STAR WINDOW REBATE PROGRAM] around [FinalStatusDate]. Is this correct?

1 Yes (skip to T1)
2 No

S2 As part of your participation you would have purchased [INSULATION or THERMOSTAT or WINDOWS]. Could you confirm that you remember purchasing this product?

1 Recalls purchasing product/services
2 Does not recall purchasing product/services – [PROBE TO ENSURE SPEAKING WITH CORRECT PERSON, IF NO ONE IS KNOWLEDGEABLE TERMINATE]

Program Information

T1 How did you first hear about the takeCHARGE program? [ALLOW MULTIPLE RESPONSES]

1 Utility company representative
2 Utility bill insert
3 Direct mailing/letter/brochure from utility
4 Direct mailing/letter from the Program
5 Phone contact with the Program
6 Referral from another agency [SPECIFY]
7 Referral from a retailer or contractor
8 Friend, neighbor or relative
9 Landlord
10 Newspaper/radio media
11 Press releases
12 Program Posters
13 takeCHARGE Program website
14 Other [SPECIFY]
D (Don't know)
R (Refused)

T2 What was the main reason why you participated in the Program? *(DO NOT READ. ALLOW MULTIPLE RESPONSES)*

1 Wanted to reduce energy bill
2 Wanted to learn how to save energy
3 Wanted to pay off utility debt
4 House was uncomfortable
5 Didn't want to get disconnected
7 House needed improvements (insulation, windows, thermostat controls, etc.) [DESCRIBE]
8 Improve the health and safety of my home
9 Other [SPECIFY]
D (Don't know)
R (Refused)

T3 In purchasing the program-sponsored product the rebate covered some of the total cost, but you needed to pay the balance. Would purchasing the product have been easier if the program would have been able to:

1 Set up a payment plan
2 Set up a low-interest, short-term loan to pay costs off
3 Do anything else to defray the cost?
D (Don't know)

T4 Did you have any issues that may have delayed your participation in the program?

1 Yes
2 No
D (Don't know)

T5 (if T4=1) What did you experience that might have delayed your participation in the program?

1 Did not think my home needed the product/services obtained through the program/home already energy efficient
2 Other programs out there, federal or provincial, that considered participating in instead/confusion among the various programs (Specify other programs)
3 Did not have time/hassle of participating
4 Did not know how to participate/complete application
5 Didn't want someone in my house
6 My home was previously weatherized
7 The program and rebate sounded too good to be true
8 I didn't know what amount I would need to pay
9 I rent my home

10 House was for sale or sold
11 Other (SPECIFY)
D (Don’ t know)
R (Refused)

T6 (if T4=1) What helped you to overcome any reason(s) for delaying participation?

1 Program information
2 Helpful retailer or contractor staff
3 Rebate application process easier than expected
4 Help in completing the rebate application process
5 The amount of the rebate
6 Measures/improvements/services available through the program
7 Other (SPECIFY)
D (Don’t know)

T7 Were you planning to install the [INSULATION or THERMOSTAT or WINDOWS] improvements before learning about the program rebate?

1 Yes
2 No (SKIP TO T11)
D (Don’ t know)
R (Refused)

T8 Had you already purchased or installed the [INSULATION or THERMOSTAT or WINDOWS] before learning about the program rebate?

1 Yes
2 No
D (Don’ t know)
R (Refused)

T9 If you had not received a rebate from the takeCHARGE program would you have installed:

1 A product that was LESS energy efficient than the one you installed?
2 A product of the SAME energy efficiency?
3 A MORE energy efficient product?
4 NO new product [INSULATION or THERMOSTAT or WINDOWS]

D (Don’ t know)
R (Refused)

T10 Without the takeCHARGE program rebate, would you have purchased and installed:

1 The SAME quantity of [INSULATION or THERMOSTATS or WINDOWS] that you purchased through the program?
2 FEWER quantity of [INSULATION or THERMOSTATS or WINDOWS]?
3 NONE of the [INSULATION or THERMOSTATS or WINDOWS]?
D (Don’t know)
R (Refused)

T11 Without the takeCHARGE program rebate, would you have purchased and installed the [INSULATION or THERMOSTAT or WINDOWS]…

1 Within the same year
2 In one to two years
3 In three to five years
4 More than five years out
5 Never
D (Don’t know)
R (Refused)

T12 On a scale of 1 to 5, where 1 is “not at all satisfied” and 5 is “very satisfied”, how satisfied are you with your experiences in the following areas with participating in the takeCHARGE Energy Saver Rebate program?

D DON’T KNOW
NA NOT APPLICABLE

___ The initial information you received about the program
___ Your dealings with the retailer or contractor from whom you purchased the product
___ Any energy assessment/audit conducted of your home prior to the installation of any products purchased through the program
___ Information provided to you through the program about how to install and/or use the product
___ Information provided to you through the program about how to maintain the installed product
___ The amount of time it took to receive the program rebate
___ [IF INSTALLED BY HOMEOWNER] The amount of time it took to complete the installation after you purchased the product through the program

___ [IF INSTALLED BY CONTRACTOR/INSTALLER] The amount of time it took to complete the installation after you purchased the product through the program
___ [IF INSTALLED BY CONTRACTOR/INSTALLER] The install crew and/or contractor that did the work on your home
___ [IF INSTALLED BY CONTRACTOR/INSTALLER] The install crew and/or contractor's explanation of how to maintain the product installed
___ [IF INSTALLED BY CONTRACTOR/INSTALLER] The quality of work done
___ The comfort level of your home since the installation of the program product
___ The change if any in your energy bill since the completion of the work done
___ The program eligibility requirements
___ The application process
___ The amount of the rebate
___ Information provided by the takeCHARGE programs, or website, to help you identify things you can do to save energy
___ The overall program

T13 (IF T12<4) What could have made you more satisfied with the program product and services you received? [DO NOT READ. ALLOW MULTIPLE RESPONSES]

1 More helpful retailer or contractor staff
2 Shorter waiting period for getting rebate
3 Shorter waiting period for getting product installed
4 Changes in the eligibility requirements (PROBE FOR WHAT COULD BE CHANGED)
5 Less difficult application process
6 More or easier access to takeCHARGE program staff
7 More help or information on how to maintain the installed product
8 More energy-saving products available through the takeCHARGE programs (SPECIFY EXACT MEASURES)
9 More information about ways to control energy use
10 More assistance in the application process
11 Did not save the energy I was expecting
12 Other (SPECIFY)
D (Don't know)

T14 What do you think are the most important benefits of the takeCHARGE Energy Saver Rebate Programs? (INDICATE ALL THAT APPLY; PROBE: Anything else?)

1 Easier to pay utility bill
2 Home is more comfortable/less drafty
3 Save money/makes it easier to pay other expenses
4 Education I received about energy efficiency
5 Avoid getting disconnected

6 [ASK FOR WINDOWS PARTICIPANT ONLY] Improved the appearance of home
7 Increased value of home
8 [ASK FOR WINDOWS AND INSULATION PARTICIPANTs ONLY] Reduced noise level of home
9 Avoided having to move
10 Other (SPECIFY)
D (Don't know)

T15 How do you feel the program could be improved to make it more beneficial to households like yours? (RECORD VERBATIM)

Other Program-related Actions (Spillover)

O1 Since participating in the program, have you installed any other energy efficiency equipment rebated through a takeCHARGE program – but where you did not apply for a program rebate?

1 No [SKIP TO NEXT SECTION]
2 Yes
D (Don't know)

What products were they?

Type 1: _____ Quantity 1: _____

Type 2: _____ Quantity 2: _____

Type 3: _____ Quantity 3: _____

O2 (ASK FOR EACH PRODUCT TYPE) Was this product more efficient than you would have installed before participating in the takeCHARGE program, or about the same lvel of efficiency?

Type 1:	More efficient	About the same	Don't know
Type 2:	More efficient	About the same	Don't know
Type 3:	More efficient	About the same	Don't know

O3 With respect to the product(s) we've been discussing, on a scale from 0-10, with 0 indicating you **strongly disagree** and 10 indicating you **strongly agree**, please rate this statement:

My experience with the **[specific takeCHARGE program]** influenced me to install additional high efficiency equipment on my own.

(RECORD RESPONSE 0-10) _____

D (Don't know)

R (Refused)

Energy Use Information

Now, I would like to ask you questions about energy use in your home.

E1 As part of purchasing a product(s) rebated by the takeCHARGE program, did someone speak with you about ways to manage energy use in your home?

1 Yes
2 No
D (Don't know)

E2 On a scale of 1 to 5, with 1 meaning "no control" and 5 meaning "a great deal of control", how much control do you feel you have over how your household uses energy? _____ [RECORD D FOR DON'T KNOW]

E3 As a result of your participation in the takeCHARGE program, do you feel you have less control, more control, or the same amount of control over your household's energy use?

1 Less
2 The same
3 More
D Don't know

E4 Prior to participating in the program, would you say that your home was very energy efficient, somewhat energy efficient or not very energy efficient?

1 Very energy efficient
2 Somewhat energy efficient

3 Not very energy efficient
D Don't know
R Refused

E5 Since participating in the program, would you say that your home is very energy efficient, somewhat energy efficient or not very energy efficient?

1 Very energy efficient
2 Somewhat energy efficient
3 Not very energy efficient
D Don't know
R Refused

E6 Prior to participating in the program, would you say that your home was very comfortable, somewhat comfortable or not very comfortable?

1 Very comfortable
2 Somewhat comfortable
3 Not very comfortable
D Don't know
R Refused

E7 Since participating in the program, would you say that your home was very comfortable, somewhat comfortable or not very comfortable?

1 Very comfortable
2 Somewhat comfortable
3 Not very comfortable
D Don't know
R Refused

E8 On a scale of 1 to 5, with 1 being not at all important and 5 being very important, how important is lowering the cost of your energy bills to you?

1 Not at all important
2
3
4
5 Very important
D Don't know
R Refused

E9 In addition to the takeCHARGE Energy Saver Rebate Programs, which of the following energy efficiency initiatives are you familiar with? *(DO NOT READ. ALLOW MULTIPLE RESPONSES)*

1 Newfoundland and Labrador EnerGuide for Houses Program
2 ecoENERGY Retrofit
3 ENERGY STAR
4 Residential Energy Efficiency Program (REEP)
5 takeCHARGE of Your Town Challenge
7 How-to Videos available on the takeCHARGE website (www.takechargenl.ca)
8 Savings Tips or How's Your House? on the takeCHARGE website
9 Other [SPECIFY]
D (Don't know)
R (Refused)

E10 On a scale of 1 to 5, with 1 meaning "no interest" and 5 meaning "a great deal of interest," how interested are you in participating in a takeCHARGE program in the future? _____ [RECORD D FOR DON'T KNOW]

E11 What would be your main reason for participating in a future program? *(DO NOT READ. ALLOW MULTIPLE RESPONSES)*

1 Want to reduce energy bill
2 Want to learn how to save energy
3 Want to pay off utility debt
4 House is uncomfortable
5 Wouldn't want to get disconnected
7 House needs improvements (insulation, windows, thermostat controls, etc.) [DESCRIBE]
8 Improve the health and safety of my home
9 Moving to another house that needs improvements
10 Other [SPECIFY]
D (Don't know)
R (Refused)

House Characteristics

Next, I would like to ask you some questions about your household.

H1 Which of the following best describes your home? [READ LIST, ACCEPT ONLY ONE RESPONSE]

1 Detached House, no basement apartment (house separated on all sides from any other dwelling)
2 Semi-Detached House, Townhouse, or Row House, no basement apartment
3 Two Apartment Home (Detached/Semi-detached) House with basement apartment: Upstairs residence
4 Downstairs/Basement apartment (in two Apartment Home)
5 Mobile Home
6 Apartment in apsartment building (includes bachelor apartments – does not include basement apartment)
7 Other (SPECIFY)

H2 Including yourself, how many people live in your household?
_____People

H3 (IF H2>1) Including yourself, how many people currently living in your home year-round are in the following age groups? (TOTAL SHOULD EQUAL H2)

____ Less than 18 years old
____ 18-24 years old
____ 25-34 years old
____ 35-44 years old
____ 45-54 years old
____ 55-64 years old
____ 65 or older
R (Refused)

Comments Those are all the questions I have for you. Thank you very much for your interest in the takeCHARGE programs and this survey. Do you have any additional comments you would like me to note? *(IF YES, RECORD COMMENTS)*

1 Yes
2 No

Appendix C. Staff Interview Guide

THE CADMUS GROUP, INC.

Process Evaluation: Newfoundland Power takeCHARGE Energy Saver Rebate Programs

Program Staff Interview Guide

December 13, 2010

Name of Interviewee: _____ Date: _____

Title: _____

The following questions are designed to learn more about the programs, including program design, implementation and evaluation priorities. This interview will provide key inputs that the evaluation team can review to provide actionable recommendations for program design and implementation efforts.

Program Involvement & Roles

1. Could you please briefly summarize your role in administering the program(s)? What are your main responsibilities? [DETERMINE IF INVOLVED WITH ONE OR MORE OF THE PROGRAMS, AND HOW TO DISTINGUISH IN THE INTERVIEW]

2. Who are the key people involved in each of the program's implementation, what are their roles and how do they interact? [Probe for responsibilities of retailers and contractors, utility staff]. What are the formal and informal communication channels between these groups?

3. What program related activities are performed by the utilities? What program related activities are performed by the retailers and contractors?

4. Can you briefly describe the program? How is the program administered? [Are there program implementation manuals?]

Program Goals and Objectives

5. What are the goals of the programs (e.g. anticipated outputs/outcomes)? [PROBE TO IDENTIFY ADDITIONAL GOALS, PRIORITIES OF THOSE GOALS, IDENTIFY SHORT-TERM LONG-TERM OBJECTIVES] What are your program objectives?

6. Do you think the goals and objectives of the program(s) are clearly defined? Achievable? Are you aware of any conflicts between the program goals and day-to-day operations?

7. What is the basis for the design of the programs? (e.g., program theory process, regulatory directive, adapted from another utility)

8. [ASK IF PROGRAM THEORY WAS DEVELOPED] Does the program theory provide an estimate of how long it would take to achieve significant or sufficient participation from vendors to help design and launch the program?

9. What is your target market for the residential programs? For the commercial lighting program? Please describe the [market segments/customers] that are targeted by the program and why?

10. Have the [market segments/target customers] changed since program inception? What other segments would you like the program to market to? Does the program target particular trade allies? If yes, what types?

11. What is the size of the target market? What factors do you think would increase market demand? [E.G. MEASURES OFFERED, MARKETING AND OUTREACH, ETC]

12. Have the programs identified market barriers? If so, what are they? How do the programs seek to overcome potential market barriers?

13. How do the programs measure success? What performance metrics (e.g. measures of success) are you currently using to measure program performance?

14. How were the performance targets determined? [PROBE FOR DETAILS OF HOW THEY SET TARGETS FOR PARTICIPANTS, PER UNIT SAVINGS, AND EXPENSES]. What assumptions were used to develop targets? In these first two years, have any of these assumptions been revised?

15. How are the programs doing against their goals? Where are the specific areas where the programs are not performing as expected, if any? Are the program designs effective in meeting the program's goals? Do you think your future goals are realistic and achievable?

16. What recommendations do you have to achieve higher levels of participation?

Program Implementation

17. What implementation challenges have occurred and have they been overcome? If so, how? If not, why not? What is being done to address these challenges?

18. Have you made any changes to program design? If yes, what changes and why? Do you plan to make any changes to the program design? If so, what are they? What factors would determine success in order to expand this program?

19. Do you think that your program designs align well with your customer base?

20. What about the levels of incentives (rebates)? Do you think they are about right to stimulate participation? Would you recommend any changes to incentive levels?

21. [IF APPLICABLE] What is the process for determining what measures are recommended for a particular customer?

22. What is the current thinking on adding (or deleting) to program offerings for years 3 – 5 of the current 5-year plan? How are these changes researched and approved? If *measures* are either added or deleted: Do you obtain input from stakeholders, trade allies and/or evaluators on measures? On what conditions/basis would you drop a measure?

Program Design and Participation

23. What are some reasons why customers participate in the programs? What are some reasons why they do not participate?

24. What is the system in place to track program progress? Please describe.

25. What do you perceive to be the level of participant satisfaction with program processes, as well as the measures installed as part of the programs? Are participating customers generally satisfied with their program experience?

26. What fraction of customers think they saved money/energy? What is your best estimate of the proportion of targeted customers who are aware of the programs***? Anecdotal answers are fine here if no research is available***

27. Do the programs offer energy education to participants? What materials are provided? Are these helpful? Are they adequate?

28. [IF APPLICABLE] Is there any system in place to gather customer feedback related to the services they receive from the contractors? If so, how does this process work? How might you consider gathering this information in the future?

Marketing & Outreach

29. Could you please describe the marketing and promotion of the programs? [PROBE FOR PR EFFORTS, GENERAL MARKETING, PROGRAM WEBSITE AND REFERRALS BY TRADE ALLIES]. If you have created any marketing or other program materials beyond those on the takeCHARGE web site (audit forms, rebate forms, program power point, training manuals, low cost ways to save energy), can we arrange to obtain copies?

30. How are marketing and outreach efforts delivered to customers? What is the format of outreach? How often does outreach occur? Are the messages within the outreach clear and actionable? Do the messages align with customers' key motivations and drivers?

31. Does your program promote other federal programs to program participants? [IF YES] To which programs? Do you have a way to track channeling to these programs?

32. Do you think the level of marketing and promotion is appropriate for the programs? Do you think promotional efforts are successful? Do you think they reach the right audience? Do you feel current efforts are sufficient in reaching potentially interested customers?

33. Can you estimate what percent of the eligible market has participated? How does this vary by program?

34. Are their alternative marketing strategies you are considering to increase program participation? Possibilities include: change marketing approach, increase or decrease

incentives, sell non energy benefits, work with different trade allies, develop new mechanisms to target and provide feedback to customers, co-market program with other utility services.

Program Tracking

35. Please describe the types of data you collect for the programs. What is your role in this data collection process? Who is responsible for maintaining these data?

36. What types of reports are produced to track program progress? (Ask for copies of reports) How often are these reports produced?

37. Do you find the information in the reports is adequate to give a comprehensive view of program status? Are there additional reports, or a different format for the current reports, that you think would improve program status tracking? (If yes) What are they?

38. [IF APPLICABLE] Do you track conversion rates, e.g. number of audits converted to measure installations? [ASK IF YES] What is your estimated conversion rate?

39. [IF APPLICABLE] Do you track project timing, e.g. how long it takes for a participant to apply for the program and have measures installed?

40. [IF APPLICABLE] What types of reporting do trade allies provide? Is reporting provided in a timely manner? How are these data provided to Newfoundland Power? Is the information easy to use?

41. [IF APPLICABLE] Do you find that the information that trade allies provide is adequate to give a comprehensive view of program status?

Quality Assurance & Control [AS APPLICABLE]

42. What are the procedures for program quality assurance and quality control? Who is responsible for their implementation? (If not mentioned above in reporting) Are there any reports/procedures in place to document QA/QC? If yes, could you describe these reports and provide me with copies?

43. Are measure installations (or audits) subject to inspection? IF YES, approximately what percentage of all [INSERT AUDIT/PROJECT] are pre-inspected and post-inspected? How do you determine if a [INSERT AUDIT/PROJECT] requires inspection (both pre- and post)?

44. [IF CONDUCT INSPECTIONS] Who conducts inspections and how are they documented?

45. Are the reported savings adjusted for findings from the QA/QC work? (If yes) Can you describe how the savings are adjusted? (Probe for site specific adjustments vs. extrapolation to population)

46. Do QA/QC results affect program design? If so, how?

47. Do you have any suggestions for improving QA/QC procedures?

Trade Allies [AS APPLICABLE]

48. Could you please describe the application process for trade ally "registration" with a program? [Probe for qualifications or training requirements.] Is there one staff member that oversees the program ally network?

49. How are trade allies recruited for the programs? Which types of trade allies are choosing to participate in the program(s) and which are not? What are the main benefits associated with participation?

50. What, if any, kind of training is provided to trade allies? What role do they have in marketing the program(s)? What kind of support, if any, is provided to them for marketing the program(s) to their customers?

51. What is expected of program allies? Are there any specific responsibilities that come with their involvement in programs?

52. Have retailers or contractors requested any other types of support/collateral, etc. If so, what have they requested and how are you responding to their requests?

Coordination with Other Organizations

53. Can you describe any coordination activities you may have with other organizations in terms of program planning or implementation? Do the retailers/contractors coordinate in any manner? How so?

54. Are there any ways that coordination could be improved?

Staffing and Communication

55. [IF NOT COVERED IN "PROGRAM ROLES"] Could you please describe how the program management responsibilities are divided among staff at your utility? (Probe for number of staff and responsibilities of each)

56. Do you find that the responsibilities are divided in an optimal way? Are there any changes in roles and responsibilities that you think might improve the management and implementation of the programs?

57. Do you think you have the right level of staffing to manage the programs? (If no) What additional staff would you need?

58. Do you find that the communication between you and other staff at your utility is effective?

59. Are the program staff under marketing, regulatory, or a different department in your utility? Do you think this is the appropriate department?

60. Do the program staff get the needed support from management? What changes might you recommend?

Evaluation Priorities

61. What do you see as the top priorities for program evaluation?

62. Are there any research areas that evaluations should explore that would provide you the information you need to improve your programs?

Thank you very much for taking the time to assist us with this evaluation. Your contribution is a very important part of the process. May we follow-up with you by phone or e-mail later, if additional questions arise?

Appendix D. Trade Ally Interview Guide

THE CADMUS GROUP, INC.

Process Evaluation: Newfoundland Power takeCHARGE Energy Saver Rebate Programs

Participating Trade Ally Interview Guide

December 13, 2010 - DRAFT

Name of Interviewee: _____ Date: _____

Company: _____

The following questions are designed to learn more about the programs, including program design, implementation and the involvement of retailers and contractors. This interview will provide key inputs that the evaluation team can review to provide actionable recommendations for program design and implementation efforts. The Energy Saver Rebate programs we are studying are:

- Insulation Rebate Program
- Thermostat Rebate Program
- ENERGY STAR Window Rebate Program
- Commercial Lighting Program

Program Involvement

1. Could you please briefly summarize your involvement with the program(s)? What are your typical activities with respect to the program(s)? [DETERMINE IF INVOLVED WITH ONE OR MORE OF THE PROGRAMS, AND HOW TO DISTINGUISH IN THE INTERVIEW]

2. With whom do you most frequently interact with in your program involvement? What are the formal and informal communication channels between your company and the program(s)?

3. From your perspective, what program-related activities are performed by the utilities? What program related activities are performed by the retailers and contractors?

4. Based on your experience, could you please briefly describe how the program(s) operate?

Program Goals and Objectives

5. What do you see as the goals of the programs (e.g. anticipated outputs/outcomes)? [PROBE TO IDENTIFY ADDITIONAL GOALS, PRIORITIES OF THOSE GOALS, IDENTIFY SHORT-TERM LONG-TERM OBJECTIVES] What are your objectives for participating in the programs?

6. Do you think the goals and objectives of the program(s) are clearly defined for the participating retailers and contractors? Are you aware of any conflicts between the program goals and day-to-day operations of your company?

7. What do you see as the target market for the residential programs? [IF APPROPRIATE] For the commercial lighting program? Please describe the [market segments/customers] that you think are targeted by the program and why?

8. What other segments would you like the program to market to?

9. Are the programs targeting the appropriate trade allies? If others could be involved, what types?

10. What do you think could increase market demand? [E.G. MEASURES OFFERED, MARKETING AND OUTREACH, ETC]

11. What do you see as the barriers to program participation? How does your company, and the programs more generally, seek to overcome potential market barriers?

12. Do you have an opinion as to how the programs are doing against their goals? Are the program designs effective in meeting the program's goals?

13. What recommendations do you have to achieve higher levels of participation?

Program Implementation

14. Have you experienced any problems or challenges with implementing the programs as a participating retailer/contractor? What implementation challenges have occurred and have they been overcome? If so, how? If not, why not? What is being done to address these challenges?

15. Do you think that the programs as designed are well-suited to the targeted customers?

16. What about the level of incentives? Do you think they are about right to stimulate participation? [PROBE FOR REACTIONS/OPINIONS]

17. [IF APPLICABLE] What is the process for determining what measures are recommended for a particular customer?

18. Do you have any advice regarding either adding or deleting specific energy saving measures? [IF APPLICABLE, PROBE FOR REASONS] Have you provided this input to the programs?

Program Design and Participation

19. In your experience, what are some reasons why customers participate in the programs? What are some reasons why they do not participate?

20. What do you perceive to be the level of participant satisfaction with program processes, as well as the measures installed as part of the programs? Are participating customers generally satisfied with their program experience?

21. In your experience, what fraction of customers think they saved money/energy? What is your best estimate of the proportion of targeted customers who are aware of the programs***?***

22. Do the programs offer energy education to participants? What materials are you involved with providing? Are these helpful? Are they adequate?

23. [IF APPLICABLE] Is there any system in place for you to provide to the programs any customer feedback you receive about the programs? If so, how does this process work? How might you consider gathering and providing this information in the future?

Marketing & Outreach

24. Could you please describe any marketing and promotion of the programs that involves your company? [PROBE FOR PR EFFORTS, GENERAL MARKETING, PROGRAM WEBSITE AND REFERRALS BY TRADE ALLIES].

25. Are the messages within the marketing outreach clear and actionable? Do the messages align with customers' key motivations and drivers?

26. Do the programs promote other federal programs to program participants? [IF YES] Are you involved with these promotions?

27. Do you think the level of marketing and promotion is appropriate for the programs? Do you think promotional efforts are successful? Do you think they reach the right audience? Do you feel current efforts are sufficient in reaching potentially interested customers?

28. Can you estimate what percent of the eligible market has participated? How does this vary by program?

29. Are their alternative marketing strategies that you think should be considered? [IF YES] What are they?

Program Tracking

30. Please describe any types of data or reporting you provide to the programs. [IF APPROPRIATE] How is the information provided to the programs? What is your role in this reporting process?

31. [IF APPLICABLE] Do you track conversion rates, e.g. number of audits converted to measure installations? [ASK IF YES] What is your estimated conversion rate?

32. [IF APPLICABLE] Do you track project timing, e.g. how long it takes for a participant to apply for the program and have measures installed?

Quality Assurance & Control [IF APPLICABLE]

33. Are measure installations (or audits) subject to inspection? IF YES, approximately what percentage of all [INSERT AUDIT/PROJECT] are pre-inspected and post-inspected? How is it determined if a [INSERT AUDIT/PROJECT] requires inspection (both pre- and post)?

34. [IF CONDUCT INSPECTIONS] Who conducts inspections and how are they documented?

35. Do QA/QC results affect program design? If so, how?

36. Do you have any suggestions for improving QA/QC procedures?

Trade Allies [AS APPLICABLE]

37. Could you please describe the application process for trade ally "registration" with a program? [Probe for qualifications or training requirements.]

38. How are retailers and contractors recruited for the programs? Which types of contractors are choosing to participate in the program(s) and which are not? What are the main benefits associated with participation?

39. What, if any, kind of training is provided to trade allies?

Coordination with Other Organizations

40. Can you describe any coordination activities you may have with other organizations in terms of your participation in the programs? For example, do the retailers/contractors coordinate in any manner? How so?

41. Are there any ways that coordination could be improved?

Staffing and Communication

42. Do you find that the communication between your company and program staff is effective?

Thank you very much for taking the time to assist us with this evaluation. Your contribution is a very important part of the process.

Appendix E. Nonparticipant Trade Ally Interview Guide

THE CADMUS GROUP, INC.

Process Evaluation: Newfoundland Power takeCHARGE Energy Saver Rebate Programs

Nonparticipating Trade Ally Interview Guide

January 10, 2011 - DRAFT

Name of Interviewee: _____ Date: _____
Company: _____

Hello, my name is _____ and I am calling from The Cadmus Group on behalf of Newfoundland Power.

Newfoundland Power has asked that I speak with _____. This short interview is about the takeCHARGE Energy Saver Rebate programs that are sponsored by Newfoundland Power and Newfoundland Labrador Hydro. I can assure you that your individual responses will not be revealed to anyone, and the interview should only take about 10 minutes.

We are trying to learn more about the programs, including whether there are specific reasons why some retailers and contractors have not participated in the programs. We may learn of changes that could be made to encourage more participation by retailers and contractors. The Energy Saver Rebate programs we are studying are:

- Insulation Rebate Program
- Thermostat Rebate Program
- ENERGY STAR Window Rebate Program
- Commercial Lighting Program

Do you sell or specify products for which the programs provide rebates? Which products or services does your company sell?

Program Awareness

1. Have you heard of the takeCHARGE rebate programs? [IF YES] How did you become aware of the programs?

2. Have you previously, or currently, considered getting involved with one or more of the programs?

3. Have you ever been contacted by Newfoundland Power or Newfoundland Labrador Hydro about becoming involved in the programs?

Reasons for Not Participating

4. What has been your primary reason for **not** participating in the Energy Saver Rebate programs? Do you have any other reasons for not getting involved with the programs?

5. Are there changes that the programs could make that would lead you to consider participating? [IF YES] What are those possible changes?

Interest in Participating in the Future

6. Would you be receptive to future participation in the programs?

7. What would be your primary reason for choosing to get involved with the rebate programs?

8. What are your primary reasons for not considering future involvement with the programs?

9. Is there additional information about the programs that you would like to receive? [IF YES] What kinds of information would be helpful, and what is the best way to provide you with that information?

Thank you very much for taking the time to assist us with this evaluation. Your contribution is a very important part of the process.