



FINAL PROCESS EVALUATION PLAN FOR CON EDISON'S AND ORANGE & ROCKLAND UTILITIES' RESIDENTIAL HVAC PROGRAMS

Prepared for:

Con Edison and Orange & Rockland



Navigant Consulting, Inc.
1717 Arch Street
Suite 4800
Philadelphia, PA 19103
215.832.4400
www.navigantconsulting.com

August 13, 2010

TABLE OF CONTENTS

Table of Contents	2
Introduction	4
Purpose and Use of this Evaluation Plan	4
Program Summary	5
Program Goals and Objectives	8
Program Start and Progress to Date	9
Program Theory and Logic Model	10
Process Evaluation Overview	13
Evaluation Objectives.....	13
Research Areas and Evaluation Activities	13
Evaluation Team and Budget.....	16
Team	17
Sample Methodology	18
In-depth Interviews.....	18
Utility and Implementation Contractor Program Staff Interviews.....	18
Participating Contractor Interviews.....	19
Non-Participating Contractor Interviews.....	19
Customer Telephone Surveys.....	19
Data Collection.....	23
Program and Marketing Materials Review.....	23
Tracking System Review.....	24
In-depth Interviews.....	24
Customer Telephone Surveys.....	24
Survey Design.....	25
Reducing Survey Error.....	26
Analysis	28
Program Planning.....	28
Infrastructure Development.....	28
Staffing Assessment.....	28
Policies and Procedures Review	28
Tracking System Review	29
Web Site Review.....	29
Marketing and Customer Acquisition	29
Program Delivery	30
Satisfaction with the Program.....	31
Interactions with Other Programs.....	31
Reporting.....	32

Evaluation Schedule34

INTRODUCTION

Purpose and Use of this Evaluation Plan

This document is the Process Evaluation Plan for the Residential Heating, Ventilation, and Air Conditioning (Res HVAC) Programs that Consolidated Edison (Con Edison) and Orange and Rockland (O&R) are delivering as part of their Energy Efficiency Portfolio Standard (EEPS) Utility Administered programs, as ordered by the New York Public Service Commission (NYPSC). The Department of Public Service (DPS) is the oversight agency for EEPS program evaluation.

Con Edison and Orange & Rockland (the Companies) are committed to independent and transparent program evaluations. The Companies selected Navigant Consulting, Inc. (Navigant Consulting) and its team (KEMA, APPRISE and SERA) to complete process evaluations for all of the Companies EEPS programs through a competitive bid process.¹

Navigant is leading the evaluations of the Res HVAC programs. Con Edison's Section Manager for Measurement, Verification & Evaluation will manage the process evaluation for both companies. This Section Manager reports directly to the Director of Energy Efficiency Programs to maintain internal independence.

The New York Department of Public Service (DPS) is the oversight agency for program delivery and evaluation. Con Edison will provide the DPS the opportunity to review and comment on key documents within a reasonable time frame² throughout the process evaluation. However, no DPS approval will be assumed if that time frame is exceeded. Key documents include this Plan, the customer survey sampling plan, the customer survey instruments, and the draft final report. Con Edison will provide a response to DPS comments identifying how each comment was addressed. In addition, Con Edison will invite the DPS to attend and provide input during key evaluation meetings.

This Process Evaluation Plan (PEP or the Plan) is the first product of the Res HVAC process evaluation. The evaluation team developed the Plan consistent with the NYPSC's evaluation guidelines of August 7, 2008³. The evaluation team will use this plan to guide the program evaluation work and to track evaluation progress against key milestones. We will identify any deviations from the plan or schedule in weekly update calls and include them in monthly reports provided to Con Edison and O&R with the monthly invoices. The evaluation team may identify program issues whose resolution can have near-term impacts in the current program year. In this case the Navigant team will inform the Con Edison Section Manager promptly and recommend modifications as appropriate.

The Plan identifies specific deliverables to be developed by the evaluation team and presents the schedule for their delivery and review. Where appropriate and as identified throughout

¹ Consolidated Edison will be issuing a separate request for proposals for the EEPS impact evaluations.

² We assumed 10 business days for DPS review when developing the evaluation schedule.

³ New York Department of Public Service *Evaluation Plan Guidance for EEPS Program Administrators*, August 7, 2008

this Plan, Con Edison and O&R, as the program administrator, will review draft deliverables and the DPS, as the evaluation oversight agency, will review draft final deliverables.

Program Summary

Con Edison and O&R designed their Res HVAC Programs for rapid deployment of energy efficiency measures to existing residential customers. The programs are open to customers in residential dwellings with one to four units who have either central air conditioning (electric program) or gas heating or hot water (gas programs). The programs provide cash rebates to customers for the installation of high efficiency gas and electric heating and cooling equipment. Per the NYPSC’s direction, both utilities’ programs have the same eligible equipment, efficiency requirements, and incentive levels. However, the O&R Res HVAC program was approved for gas measures only while the Con Edison program includes both gas and electric measures.

Both programs rely heavily on a network of contractors advising their customers of the availability of rebates. The Con Edison programs require that the customer’s installation contractor be certified through the program in order to be eligible for any equipment rebates except for programmable thermostats. Con Edison’s contractors must attend a free training course, submit proof of contractor’s license and appropriate insurance, and complete a program application in order to be approved as a participating contractor. The contractor training course includes training on the Air Conditioning Contractors of America (ACCA) Manual J load calculation for residential loads. Participating Con Edison contractors who submit a Manual J load calculation for central A/C and heat pumps receive a \$200 incentive. The O&R Res HVAC program does not have a participating contractor requirement.

Con Edison has contracted with Honeywell to implement the program in its service territory. O&R intended to contract with the same third-party program implementer, but decided to maintain the program in house when the electric portion of the program was not approved.

Table 1 summarizes the incentives for the gas and electric Res HVAC program energy efficiency measures.

Table 1: Summary of Res HVAC Program Incentives

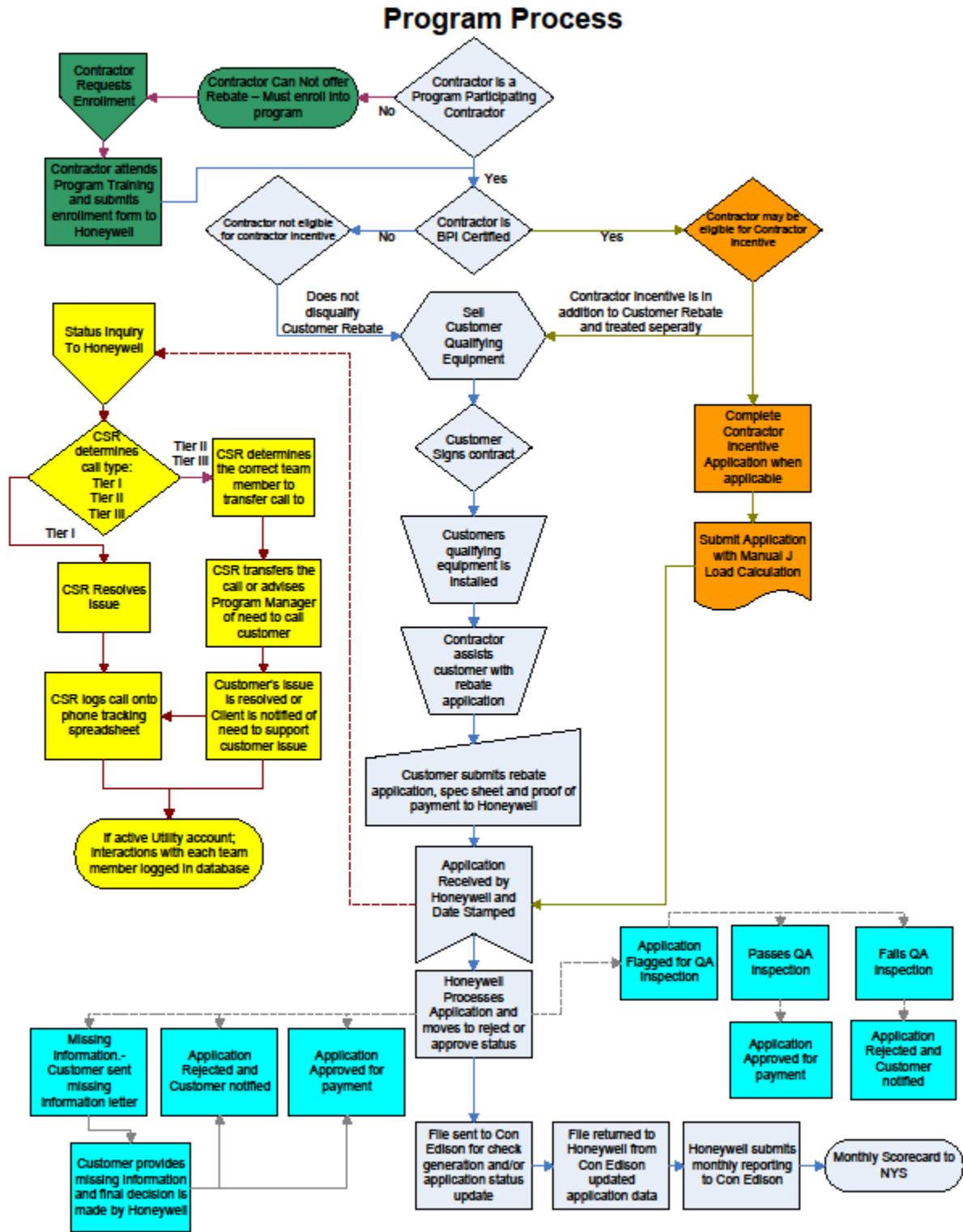
Measure	Requirement	Rebate
Central Air Conditioning	SEER ≥ 15 EER ≥ 12.5	\$400
	SEER ≥ 16 EER ≥ 13.0	\$600
Central Air Source Heat Pump	SEER ≥ 15 EER ≥ 12.0 HSPF ≥ 8.5	\$400
	SEER ≥ 16 EER ≥ 13.0 HSPF ≥ 9.0	\$600
Duct Blaster Guided Duct	Completed by a BPI-certified	\$300 (Con

Measure	Requirement	Rebate
Sealing	Building Analyst or Envelope Specialist	Edison) \$600 (O&R)
Blower Door Guided Air Sealing	Completed by a BPI-certified Building Analyst or Envelope Specialist	\$300
ENERGY STAR Thermostat	Installed with eligible equipment	\$25
ECM Furnace Fan	n/a	\$200
Electric Heat Pump Water Heater	Energy Factor >2.0	\$400
Gas Furnace	AFUE ≥ 90	\$200
	AFUE ≥ 92 w/ECM	\$400
	AFUE ≥ 94 w/ECM	\$600
Gas Water Boiler	AFUE ≥ 85	\$500
	AFUE ≥ 90	\$1000
Steam Boiler	AFUE ≥ 82	\$500
Gas Boiler Reset Control	n/a	\$100
Gas Indirect Water Heater	n/a	\$300

Table 2 summarizes the program process flow for the Con Edison's Res HVAC program, showing the contractor and customer intake and flow through the program participation process. Both Con Edison and O&R's process flows will be reviewed, with supplemental information provided through feedback from participating and non-participating contractor interviews and customer surveys. The tracking system review will supplement the process review with time frames for various steps in the participation process. As part of this review, we will identify bottlenecks and possible issues in consistently delivering a quality customer experience.

Con Edison requires trained and certified contractors whereas O&R does not. We will examine the difference that these requirements have upon program participation and the customer experience.

Table 2: Con Edison Res HVAC Program Process Flow



Program Goals and Objectives

The Res HVAC program is designed to cost-effectively contribute to New York State's and New York City's energy efficiency goals.

The program has the following objectives⁴:

- Increasing customer knowledge of the performance, reliability and energy savings associated with high-efficiency heating, cooling and water heating equipment and where to obtain energy efficient equipment;
- Increasing the market penetration of energy efficient heating, cooling and hot water equipment in customer homes;
- Helping customers to reduce energy costs and increase the comfort and value of their homes through the proper installation of high-efficiency heating, cooling and hot water equipment;
- Generating customer awareness of energy efficiency programs available through Con Edison, O&R, NYSEERDA and other entities to support their energy efficiency objectives;
- Maximizing available energy and cost savings for every participant by recommending efficiency opportunities supported by NYSEERDA and other programs;
- Monitoring customer perception of the performance and reliability of high-efficiency HVAC equipment and the savings achieved;
- Training program allies such as plumbing and HVAC contractors on the benefits of high-efficiency equipment and on quality installation and service procedures;
- Effectively driving the adoption of quality installation methods among residential HVAC installation contractors;
- Building higher-level customer, trade ally and stakeholder relationships by providing value-added energy efficiency services, training, education, financial incentives, verification and customer support;
- Supporting the local economy by helping to reduce customer utility costs and promoting the adoption of high-quality equipment; and
- Reducing night-time peak demand in residential networks, reducing the need for transmission and distribution facilities and improving reliability in those networks, while also contributing to a reduction in coincident system peak demand.

Table 3 and Table 4 summarize the Res HVAC program participation and savings goals for Con Edison and O&R, respectively, taken from the NYPSC orders approving each utility's electric

⁴ The program objectives were adapted from the Con Edison and O&R Res HVAC Program Implementation Plans filed with the NYPSC on August 21, 2008 and the joint plan filed on May 15, 2009.

and gas programs⁵. Due to delays in program start-up, the Program Implementation Plan goals for 2009 and 2010 were combined into a single goal to be achieved by December 31, 2010. The 2011 goals remain unchanged.

Table 3: Con Edison – Res HVAC Savings Goals

Program Type	2009/2010	2011	Total
Electric (MWh)	4,630	2,646	7,276
Gas (dekatherms)	70,150	46,767	116,917

Table 4: O&R – Res HVAC Participation and Savings Goals⁶

Program Type	2009/2010	2011	Total
Gas (dekatherms)	6,534	4,356	10,890

Program Start and Progress to Date

Con Edison and O&R filed their respective implementation plans for gas and electric Res HVAC programs with the NYPSC on August 21, 2008. The electric Res HVAC programs were approved by the NYPSC for one year on January 16, 2009 and the gas Res HVAC programs were approved on April 9, 2009. Con Edison and O&R issued a joint RFP for a third-party implementation contractor but began implementing the Res HVAC programs internally with the intention of transitioning administration to the selected implementer.

During the time it took to run the solicitation process, the NYPSC determined that the electric portion of the O&R Res HVAC program was not cost-effective and, therefore, did not approve the program beyond 2009. O&R decided to continue implementing the gas Res HVAC program internally because it was already running effectively and the program budget was very small.

Con Edison awarded its gas and electric Res HVAC implementation contract to Honeywell in September of 2009.

Table 5 and Table 6 summarize Con Edison’s program progress to date.

⁵EEPS Order Approving “Fast Track” Utility-Administered Electric Energy Efficiency Programs with Modification – January 16, 2009. EEPS Order Approving “Fast Track” Utility Administered Gas Energy Efficiency Programs with Modifications (Residential HVAC) – April 9, 2009.

⁶ The Implementation Plan filed by Con Edison and O&R on May 15, 2009 included electric goals for O&R. However, the NYPSC did not approve the electric program so we have not included those goals here.

Table 5: Con Edison – Electric Savings Progress through April 2010*

	2009/2010	Percent of 2009/2010 Goal
Acquired Cumulative Net kWh Savings	50,540	<1%
Acquired Cumulative Net kW Savings	21.95	<1%

* Based on April 2010 monthly report from Con Edison

Table 6: Con Edison – Gas Savings Progress through April 2010*

	2009/2010	Percent of 2009/2010 Goal
Acquired Cumulative Net First Year Therms	39,492	<1%

*Based on April 2010 monthly report from Con Edison

Table 7 summarizes O&R’s progress to date.

Table 7: O&R – Gas Savings Estimate*

	2009/2010	Percent of 2009/2010 Goal
Savings (dekatherms)	~7,100	109%

*As reported by O&R via personal communication

Program Theory and Logic Model

The Res HVAC program is designed to address several market barriers to energy efficiency in the residential (1- to 4-unit) market segment. Many customers are price-sensitive and are unwilling to spend the additional amount required to purchase high-efficiency heating and air conditioning equipment. Most are also unaware of the long-term financial benefits of higher efficiency equipment over standard efficiency models. Installation contractors typically lack the motivation to up-sell to high efficiency equipment because they want to offer the lowest cost project bid to their customers, and are concerned that a lengthy or complicated rebate application process will discourage their customers or that equipment may not be readily available from their distributors. Therefore, rebate programs are designed to facilitate the purchase of higher efficiency equipment by providing financial incentives to offset the higher first costs and a robust pool of trade allies to facilitate the rebate application process and ensure the availability of eligible equipment. Table 8 summarizes the market barriers and program design approaches to overcome the barriers.

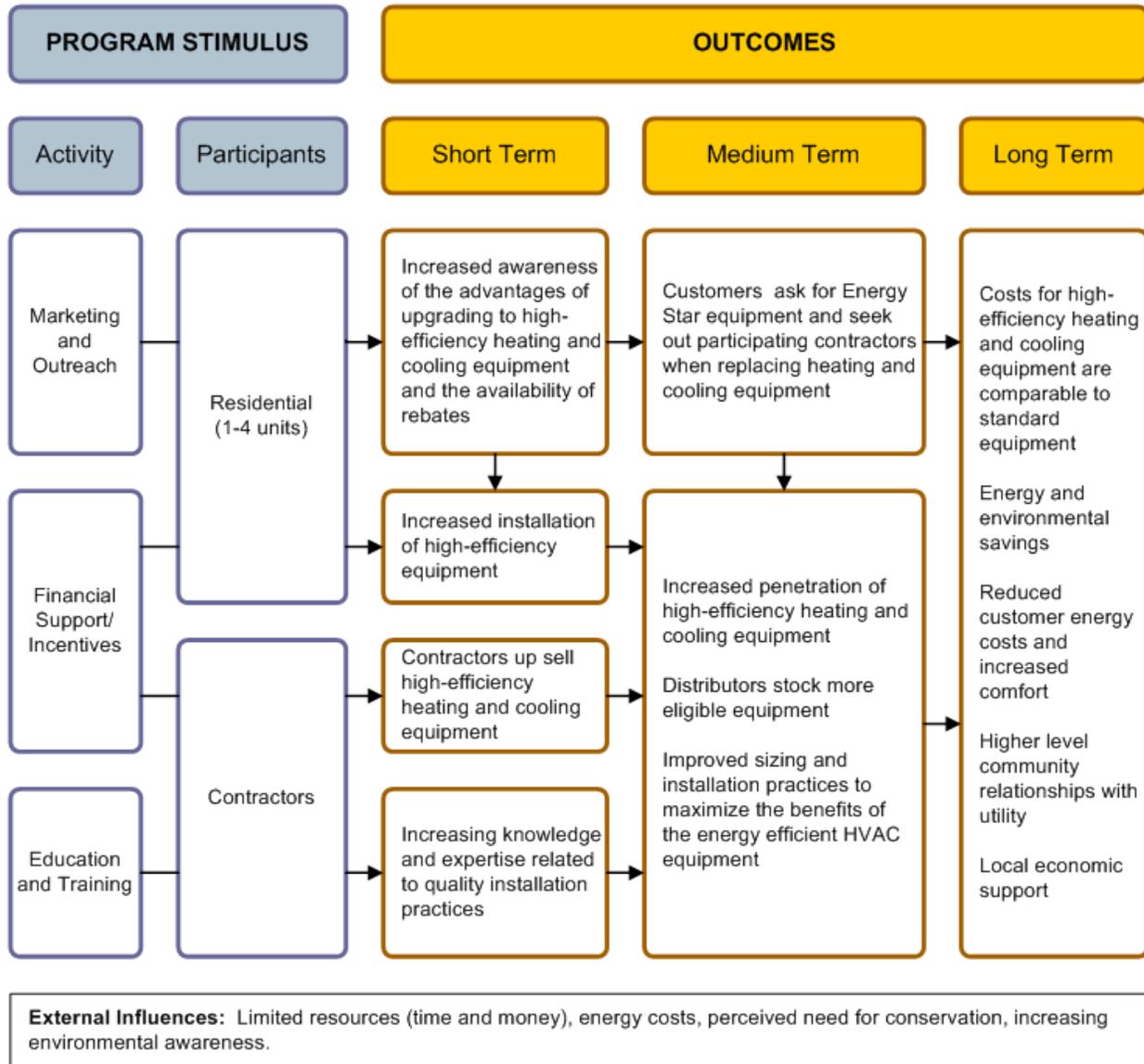
Table 8: Market Barriers and Program Strategies to Overcome⁷

Market Barriers	Mitigation Strategies
Higher first cost of energy-efficient equipment	<ul style="list-style-type: none"> • Offer rebates to offset higher incremental cost; • Educate customers on the long-term energy cost-saving benefits of higher efficiency equipment
Time required to fill out rebate forms	<ul style="list-style-type: none"> • Provide simple rebate forms through a variety of media (mail-in, online); • Allow trade allies to fill in rebate forms for customers at the time of equipment purchase
Customers don't bother to look for qualifying measures	<ul style="list-style-type: none"> • Trade ally training to help customers quickly identify appropriate measures and products; • In-store brochures and collateral; • Market program and general efficiency awareness to customers
Contractors and dealers do not up-sell to high-efficiency equipment	<ul style="list-style-type: none"> • Provide trade ally training and outreach to explain the benefits of selling higher efficiency equipment; • Market program and general efficiency awareness to trade allies; • Generate leads and customer referrals for high-performing contractors; • Offer contractor rewards program for highest-performing contractors
Lack of availability of qualifying equipment	<ul style="list-style-type: none"> • Promote programs to customers so they ask for qualifying equipment and dealers stock it; • Trade ally training; • Work with NYSERDA to provide upstream market support
Customers don't understand the long-term value of high-efficiency equipment	<ul style="list-style-type: none"> • Train trade allies to explain life-cycle costs to customers; • Market program and general efficiency awareness to customers; • Provide efficiency education to customers
Customers are not educated about efficiency or how to install measures	<ul style="list-style-type: none"> • Answer customer questions through call center and vendor support; • Provide free Energy Efficiency Kits with installation instructions and efficiency tips wheel
Dealers are unaware of program	<ul style="list-style-type: none"> • Provide outreach and marketing to dealers
Over-sized equipment and/or installation issues may significantly reduce the efficiency of the installed equipment.	<ul style="list-style-type: none"> • Furnaces and air-conditioners must be installed by certified contractors who have completed appropriate training.

⁷ Con Edison SBDI 60 Day EEPS Filing, August 21, 2008, page 45.

A preliminary Res HVAC program logic model is presented in Figure 1 below. The program logic model presents the goals of the program, the activities that are necessary to accomplish those goals, and causal relationships between the program activities and the effects. Over the course of the evaluation, the Res HVAC program logic model will be refined as additional program barriers and methods for overcoming them are identified.

Figure 1. Res HVAC Program Logic Model



PROCESS EVALUATION OVERVIEW

Evaluation Objectives

The overall objective of the Res HVAC process evaluation is to assess the effectiveness and efficiency of program design, delivery and implementation processes. The evaluation will result in clear and actionable recommendations to support the program in improving operations and meeting its savings goals.

The process evaluation will address the following six program processes:

- Program planning;
- Infrastructure development;
- Marketing and customer acquisition;
- Program delivery;
- Satisfaction with the program; and
- Interactions with other programs.

Goals for both the Con Edison and O&R Res HVAC programs are substantial and aggressive. Con Edison is committed to meeting these goals and most interested in process evaluation findings that will assist it in accelerating program activity. O&R is poised to exceed its energy savings goals and is seeking recommendations that can help to improve the program processes for the participating customers and to inform and improve other programs in development. Navigant Consulting will prioritize the process evaluation activities with these objectives in mind.

Research Areas and Evaluation Activities

Navigant Consulting plans multiple research activities for this process evaluation. They include interviews with utility and implementation staff, review of program documentation and tracking data, interviews with trade allies, and phone surveys with program participants and non-participants. Table 9 below provides a summary of the research activities to address the key evaluation research issues. These issues may be modified as more is learned about the program and the relative importance of various issues to the evaluation and the program's success.

Table 9. Res HVAC Research Areas and Evaluation Activities

Research Areas		Utility and Implementer Staff Interviews	Database, Document & Website Review	Trade Ally/Contractor Partner Interviews	Program Participant Surveys	Non-participant Surveys
Program Planning and Design						
1	Identify possible improvements for cost-effectiveness, energy savings, and increased contractor and customer participation.	✓	✓	✓	✓	✓
2	Identify program process and design limitations that impede the program’s ability to meet goals.	✓		✓	✓	✓
3	Identify beneficial measure additions or necessary changes to existing measures.	✓	✓	✓		
4	Determine whether incentive levels are appropriate relative to the customer’s incremental cost.	✓		✓	✓	✓
5	Gauge customer acceptance of loan and on-bill payment options.			✓	✓	✓
6	Assess customer and contractor perceptions regarding the program’s value proposition			✓	✓	✓
7	Assess the effectiveness and value of (Con Edison) contractor training, and the extent to which certification control is maintained over time	✓	✓	✓	✓	
8	Assess the relative effectiveness of Con Edison’s 3 rd -party implementation approach vs. the in-house approach used by O&R	✓	✓	✓		
Infrastructure Development						
9	Determine whether program staffing levels and capabilities are appropriate.	✓		✓		
10	Determine whether the program is gathering all info needed for program management and reporting.	✓	✓	✓		
11	Determine whether the tracking systems contain appropriate data fields for effective program management, reporting and evaluation		✓			
12	Assess each tracking system’s ability to access necessary data and prepare reports.	✓	✓			
13	Determine whether the tracking systems contain accurate data.		✓			
14	Evaluate each tracking system’s interface with other tools.		✓			

Research Areas		Utility and Implementer Staff Interviews	Database, Document & Website Review	Trade Ally/Contractor Partner Interviews	Program Participant Surveys	Non-participant Surveys
15	Assess the quality control procedures of the data entered into each tracking system.	✓				
16	Review each program's quality control procedures to determine whether they are sufficient to ensure that reported savings are real and verifiable.		✓	✓	✓	
Marketing & Customer Acquisition						
17	Determine customer awareness of the program and understanding of program requirements.				✓	✓
18	Assess whether marketing partners and channels are appropriate and effective.	✓	✓	✓	✓	✓
19	Determine whether marketing approaches are appropriate and effective, and whether marketing materials are being leveraged by contractors.	✓	✓		✓	
20	Assess effectiveness of and customer satisfaction with the customer service call center.	✓	✓		✓	✓
21	Evaluate the effectiveness of each program's website to both customers and contractors.		✓	✓	✓	
22	Identify customer and contractor participation drivers and barriers, including customer response to program value proposition.			✓	✓	✓
23	Identify the factors that motivate customers to upgrade to high efficiency equipment.			✓	✓	
Program Delivery						
24	Determine whether the programs are successful at presenting the programs' value proposition to effectively recruit the participation of contractors.			✓		
25	Identify contractor perceptions of the benefits of program participation.			✓		
26	Identify possible bottlenecks in the customer participation process.	✓	✓	✓	✓	
27	Identify opportunities for streamlining the program delivery processes.	✓		✓	✓	

Research Areas		Utility and Implementer Staff Interviews	Database, Document & Website Review	Trade Ally/Contractor Partner Interviews	Program Participant Surveys	Non-participant Surveys
28	Compare Con Edison's third-party and O&R's in-house implementation approaches in terms of customer and contractor satisfaction and enrollment rates.					
Satisfaction with Program						
29	Assess participating customer's satisfaction with programs and identify possible improvements.			✓	✓	✓
30	Determine whether customers are satisfied with the timing of rebate payments.		✓	✓	✓	
31	Determine whether participating customers recommend the program to other customers.				✓	
32	Assess contractor satisfaction with the programs.			✓		
33	Assess participant willingness to implement further energy efficiency				✓	
Interactions with Other Programs						
34	Identify areas of potential program overlap with other programs.	✓	✓			
35	Determine whether there are any areas of contractor or customer confusion about the program due to having multiple programs in market.			✓	✓	✓
36	Identify double-counting of program savings or synergistic effects, if applicable.		✓	✓	✓	✓
37	Determine whether customers and contractors are aware of other EE programs.			✓	✓	✓
38	Determine whether the programs encourage participation in other EE programs.			✓	✓	

Evaluation Team and Budget

The process evaluation budgets for each utility are summarized in Tables 10 and 11.

Table 10: Summary of Process Evaluation Budgets for Res HVAC

Utility	Program Budget	Five Percent of Program Budget	Process Evaluation Budget	Percent of Program Budget
Con Edison Electric	\$10,384,000	\$519,200	\$193,535	1.9%
Con Edison Gas	\$7,006,016	\$350,301	\$126,089	1.8%
O&R Gas	\$498,917	\$24,946	\$12,000	2.4%
Residential HVAC Program Group	\$17,888,933	\$894,447	\$331,624	1.9%

Table 11: Residential HVAC Program Evaluation Budget, by Task

Task	Budget			
	Labor	Outsourced Surveys & Interviewing	Other Direct Costs*	Total
Contribution to Overall Work Plan & Project Management	\$12,300	\$0	\$1,000	\$13,300
Program Group Evaluation Plan	\$28,950	\$0	\$1,000	\$29,950
Sample Methodology	\$31,500	\$0	\$0	\$31,500
Data Collection	\$33,300	\$84,474	\$2,000	\$119,774
Analysis	\$105,300	\$0	\$0	\$105,300
Reporting	\$29,800	\$0	\$2,000	\$31,800
Total	\$241,150	\$84,474	\$6,000	\$331,624

*Includes travel costs

Team

The Navigant team is completing all EEPS process evaluations for the Companies. This team includes KEMA, APPRISE and SERA Consulting. Craig McDonald of Navigant is serving as the Project Director, with Steve Hastie of Navigant as the overall day-to-day Project Manager. Bobbi Tannenbaum of KEMA is serving as the Deputy Project Manager for the process evaluations.

Navigant Consulting is the lead firm for the Res HVAC process evaluation. Jennifer Barnes of Navigant Consulting will serve as Project Manager for the Res HVAC programs. Under the direction of David Carroll, APPRISE will manage survey data collection, provide support for survey instrument review, and conduct trade ally interviews. Con Edison’s Section Manager for Measurement, Verification & Evaluation will oversee the process evaluation for both Con Edison and O&R.

SAMPLE METHODOLOGY

Evaluation studies analyze data from program participants, non-participants, and the market. Unless data from all relevant members of a group are obtained (a census), some type of sampling is used in order to cost-effectively complete the evaluations. In this section, we describe the sample sizes for in-depth interviews and computer-aided telephone interviews (CATI surveys), including our approach to achieving a 90 percent confidence level with a 10 percent precision for the larger sample of telephone surveys.

In-depth Interviews

Table 12 summarizes the sample sizes planned for in-depth interviews. The in-depth interviews are focused on key utility, implementation, and HVAC contractor staff to understand the program operations, their awareness and opportunities for improving the program reach.

Table 12: In-depth Interview Sample Sizes

Target	Con Edison	O&R	Total
Utility program staff	7	2	9
Implementation contractor staff	6	0	6
Participating contractors (gas and, for Con Edison, electric)	12	6	18
Non-participating contractors (gas and, for Con Edison, electric)	12	6	18
Total	37	14	51

Utility and Implementation Contractor Program Staff Interviews

Navigant Consulting will complete fifteen in-depth interviews with Con Edison, O&R and Honeywell program staff for this process evaluation. Most of these interviews have been completed, although a few staff interviews remain to be scheduled or completed. The primary objectives of these interviews are to understand staff roles and responsibilities, discuss how the program is operating, and identify key research issues to focus on for the process evaluation, which have been incorporated into Table 3.

Below is a summary of the types of staff that Navigant Consulting plans to interview:

- **Con Edison Energy Efficiency, Sales and Communications.** We will conduct in-depth interviews with the Res HVAC program manager, energy efficiency department section managers, department managers, call center and corporate communications staff.
- **O&R Energy Efficiency.** We will conduct in-depth interviews with the Res HVAC program manager and the department manager who oversees energy efficiency programs at O&R.
- **Honeywell.** We will complete in-depth interviews with Honeywell staff, including the senior program manager, the program manager responsible for the day-to-day program

operations, the marketing lead, rebate processing manager, and information technology manager.

Participating Contractor Interviews

APPRISE will complete a total of eighteen in-depth interviews with participating contractors. Navigant Consulting will request a list of participating installation contractors, including contact name, company name, email address, phone number, date of participation with the program, and number of installations completed (i.e., number of sites). Navigant Consulting will select contractors for interviews based on program participation, size, and the types of equipment installed. The sample will include high-performing contractors, as well contractors who have relatively low participation. For Con Edison, we will also interview both gas and electric equipment installation contractors.

Non-Participating Contractor Interviews

APPRISE also will conduct a total of eighteen in-depth interviews with non-participating contractors. These non-participating contractors will be selected from a broad listing of heating and cooling contractors working in the Con Edison and O&R territories maintained by NYSERDA, supplemented as needed by commercial listings. Contractors who have participated in the O&R Res HVAC program and contractors approved as a “participating contractors” in Con Edison’s Res HVAC program (regardless of whether they have completed a project or not) will be removed from the non-participant interview list.

Customer Telephone Surveys

Navigant Consulting will request a tracking database extract of the complete population of Res HVAC program participants from Honeywell and the application tracking spreadsheet from O&R, for the CATI surveys. We will also request data on qualified non-participating customers, from which to develop the non-participant sample frames.

Table 13 and Table 14 summarize the estimated sample sizes for the customer telephone surveys, relative to the current population available for the target customers (participant versus non-participant). The participant population data is based on Con Edison’s April 2010 monthly reports to the NYPSC and discussions with O&R.

Table 13: Con Edison – Sample Sizes for Customer Telephone Surveys

Target	Sample Size	Population (as of April 2010)
Participants	Up to 50% of the participants (~100 electric; ~200 gas)*	183 applications for electric measures 396 applications for gas measures
Non-participants	Min. 100 (electric) Min. 100 (gas)	210,000 215,000

* Estimates assume attempts to survey all participants (8 call attempts)

Table 14: O&R – Sample Sizes Customer Telephone Surveys

Target	Sample Size	Population (as of April 2010)
Participants	Up to 100	~400 applications
Non-participants	100	110,000

We will request that Honeywell and O&R provide the datasets of Res HVAC program participants to Navigant Consulting by June 25, 2010. We expect that these datasets will include a larger number of program participants than what is listed in the tables above. Once Navigant Consulting receives this data, we will examine the distribution of installed measures, housing type, installation contractor, and location. If participation dramatically increases prior to June 25, we will use this information to develop a sampling plan that may include stratification by one or more of these characteristics. An early review of the Con Edison HVAC program (electric and gas) database showed fewer than 300 participants. While our original target was to survey a sample of 300 participants in each program, we will instead attempt a census of the participants and hope to achieve completions with about half. Early participation levels for the O&R HVAC program showed about 400 program participants. The completion target is 100 for this group.

Navigant Consulting will also develop a combined sampling strategy of non-participants across three residential Con Edison residential programs: Residential Gas HVAC, Residential Electric HVAC, and Room Air Conditioning. Up to 350 residential non-participants will be surveyed as part of this effort. While, for the HVAC programs, we ideally would want to speak to those who actually purchased a non-qualifying unit during the program period, it is likely to be cost prohibitive to identify these customers beforehand. As a result, the non-participants for the HVAC program surveys will most likely be defined as those who have central air conditioning (for the electric HVAC program) or gas heating (for the gas HVAC programs). Details regarding sampling for the non-participant (and participant) surveys will appear in a sampling plan, to be submitted to the DPS in a separate document. Separate extracts of Con Edison’s customer data for residential customers (in 1- to 4-unit dwellings) with gas heating and with electric central air conditioning will be requested. From these extracts, surveys will be completed with at least 100

in each of these Res HVAC program subgroups. However, to the extent that there is overlap between the two populations, the number of survey completions for each will be higher. Further, for many of the non-participants survey questions, responses are not likely to differ with respect to the whether a customer has gas heat or central AC, and results from a separate sample frame used as the non-participant pool for the Room AC program are likely to be applicable also to those in the HVAC targeted populations. The sample frame will be cleaned to remove low-potential customers, such as those with zero usage, usage below and above set thresholds, and program participants.⁸

A non-participant data set for the O&R Residential Gas HVAC program will be developed using a similar strategy as for the Con Edison residential HVAC programs. An extract of residential customers with gas heating will be cleaned to remove low-potential customers, such as those with zero usage, usage below and above set thresholds, and program participants. A total of 100 completions with O&R program non-participants is targeted.

If either the Con Edison or O&R customer data do not indicate the heat source and/or the presence of central air conditioning, Navigant Consulting will develop an algorithm based on gas and electric seasonal usage patterns to identify appropriate customers.

The Con Edison participant sample sizes will be sufficient to achieve 90% confidence at +/- 10% relative precision. Some of the remaining samples will only achieve 90% confidence at +/- 10% absolute precision (or achieve +/- 10% relative precision only if the split in responses is greater than the worst-case 50/50 scenario assumed in sampling). This lower precision level is justified, considering the following:

- In many cases, additional surveys will be completed. For example, many of the other residential non-participants will also be qualified non-participants for the HVAC program (e.g., a portion of the randomly sampled Residential Direct Install program non-participants are expected to have central air conditioning and therefore qualify for the Residential electric HVAC program).
- Evaluation costs increase, because surveys which typically serve both impact and process evaluation must now be done separately (i.e., twice). Achieving 90/10 relative precision is not always cost effective under the circumstances. The process evaluations are being performed early in the program, to gain insights to improve program implementation (and, presumably, performance) as early as possible.
- As noted above, in some cases, maintaining the EAG guideline of 90/10 relative precision (for the process evaluations) is too costly and unnecessary. The decisions that will be made based strictly on process evaluation surveys do not hinge upon whether the precision is relative or absolute precision. For example, if 50% of the customers said that they were less than fully satisfied with their installation, the decision to expend additional resources and training to increase satisfaction will likely be the same regardless of whether this satisfaction is measured at 50% with an error band of 45-55%

⁸ This will require inclusion of billing data in the dataset or pre-screening by the utility to achieve the same end.

(10% relative precision) or with an error band of 40-60% (10% absolute precision). Both ranges signal a strong need to enhance satisfaction.

Our plan is to develop the participant and non participants sampling strategy for a minimum 10 percent absolute precision at the 90 percent confidence level for each program for each utility.

We will submit a draft sampling plan that includes both the HVAC contractor and customer surveys to Con Edison and O&R, with comments due back within five business days. Once this draft plan is finalized it will be submitted to the DPS for review and comment, and then finalized.

Deliverables:

- Draft sampling plan for Con Edison and O&R review
- Draft final sampling plan for DPS review
- Final sampling plan

DATA COLLECTION

This section summarizes the data collection activities, purpose, and research objectives to be addressed. We discuss the program and marketing materials review, database review, in-depth interviews and customer (participant and non-participant) surveys.

Program and Marketing Materials Review

Navigant Consulting will review program materials, including program implementation plans, contracts with implementation contractor, training materials, marketing plans, and marketing materials (e.g. brochures, flyers, etc). At a minimum, documents to be reviewed will include the following:

- Program filings for the Res HVAC programs. This will include relevant PSC orders, the 60-day filings and program implementation plan filings.
- Requests for Proposals (RFPs) used to select Con Edison's program implementation contractor, and the proposals of the bidders.
- Contract between the Con Edison and Honeywell.
- Marketing plans and other materials developed for the programs.
- Internal utility documents related to the programs.
- Program web sites and web-based tools.
- Program operations manuals.

We will review the program documents to determine the initial plan for the programs and the implicit self interest of the program administrator/implementation contractors in the program. Navigant Consulting will also assess the extent to which modifications to these documents over time have improved or lessened the likelihood of success for achieving program goals. The document review will focus on the following specific research areas:

- **Program planning design.** In reviewing program materials, Navigant Consulting will also assess the eligible measures and rebate levels in combination with contractor interviews and the participant phone survey to assess whether some measures should be removed and others added, and whether the rebate levels seem appropriate.
- **Marketing and customer acquisition.** Navigant Consulting will assess whether the marketing channels are functioning effectively for both customers and participating contractors and whether the appropriate marketing materials are available to enable the participating contractors to effectively leverage the program. We will also look at the intensity of the marketing rates, the pipeline and the conversion rates from prospects to participants.
- **Program delivery.** Navigant Consulting will examine the implementation plans and modifications to the plans to assess the effectiveness of the programs.

- **Interactions with other programs.** We will assess the extent to which the Res HVAC programs may overlap with other programs being offered to the same customers and/or contractors by other agencies or organizations.

Furthermore, Navigant Consulting will use these materials to develop appropriate questions for the interview and survey efforts.

The Navigant Consulting team submitted an initial data request on May 9, 2010 for the materials needed for this review. To date, most items have been provided to the Navigant team. A follow-up data request with specific items identified through the staff in-depth interviews has been submitted.

Tracking System Review

Navigant Consulting will review each program's tracking system: the BBCS system used by Honeywell and the application tracking spreadsheet used by O&R. This activity will primarily investigate research issues associated with "Infrastructure Development" of the Res HVAC programs as identified in Table .

In-depth Interviews

As mentioned in the Sampling Strategy section, a large number of in-depth surveys are included in this evaluation project. The purpose of these interviews is to investigate the research areas discussed in Table . Navigant Consulting conducted most of the utility and implementation contractor staff interviews in-person during the project kick-off meeting. The remainder of the in-depth interviews were conducted by telephone in June.

Under Navigant Consulting's guidance, Apprise will interview participating and non-participating contractors.

Interview guides will be developed and provided to Con Edison and O&R for review and comment to be returned within five (5) business days. Navigant Consulting will revise the guides based on Con Edison and O&R comments and deliver draft final guides for DPS review and comment, to be delivered within ten (10) business days.

Deliverables:

- Two draft contractor interview guides for Con Edison and O&R review
- Two final contractor interview guides

Customer Telephone Surveys

APPRISE will manage the implementation of the participating and non-participating customer surveys, including CATI programming, pre-testing, data collection and the development of initial banners. Navigant Consulting will develop two (2) draft telephone survey instruments, one for participating customers and one for non-participants, differentiated by utility, as necessary, for internal review and comment among the evaluation team. Navigant Consulting

will work closely with APPRISE to carefully review the survey instruments for substantive issues and conduct peer pretests for length and readability.

Navigant Consulting will then submit the draft telephone survey instruments to Con Edison and O&R, with comments due back within five (5) business days. Navigant Consulting will revise the survey instruments based on Con Edison and O&R comments and deliver draft final guides for DPS review and comment, to be delivered within ten (10) business days. Navigant Consulting will incorporate edits into final survey instruments to be submitted to APPRISE for computer programming.

Computer-aided telephone surveys enable the project to cost-effectively reach a large sample of the population, and minimize bias by using trained telephone interviewers following a script that is strictly adhered to. Con Edison and O&R survey instruments will be similar in most areas, except for different references to the utility, eligible measures (gas versus electric) and participating contractor requirements. However, respondent samples and survey data will be distinct for each utility, and results will be reported separately for each utility.

Once all issues from the reviews have been addressed, APPRISE will conduct pretests with actual respondents for clarity, consistency, and skip pattern logic. The pretest will ensure that surveys are operating and proceeding as designed. Where possible, APPRISE will use the pretests to develop pre-codes for open-ended questions. APPRISE will develop a detailed pretest memo containing any issues found during the pretest. After those issues are addressed, APPRISE conducts a final review of the instrument and prepares it for CATI programming.

When email or mail contact information is available, APPRISE will send out advance notifications informing respondents of the upcoming survey. Non-participants are likely to receive a mailed advance letter due to lack of e-mail addresses. APPRISE will send out advance letters three (3) business days before surveying begins. Participants will receive an advance e-mail if e-mail addresses are consistently available for all cases in the sample, otherwise, they will receive an advance notification in the mail.

APPRISE's standard dialing protocol is to attempt contact at least eight (8) times during different days of the week and times of the day before phone numbers are retired. Interviewers will leave a scripted message when they encounter an answering machine that includes a toll-free number, which respondents can call to complete an interview at their convenience. Messages are left initially and every three (3) days thereafter.

Survey Design

The telephone surveys will address the objectives describe above. Table 15 summarizes the survey objectives and related issues that we will examine in the participant and non-participant surveys.

Table 15. Overview of Participant and Non-participant Surveys

Survey Question Areas	Participant	Non-participant
How customer heard about the Res HVAC program		
Awareness of program	✓	✓
Sources of program information	✓	✓
Recall of program marketing	✓	✓
Preferred methods to receive information	✓	✓
Effectiveness of program websites	✓	✓
Effectiveness of call centers	✓	✓
Verification of measure installation		
Confirm measure(s) installation	✓	
Satisfaction with measures	✓	
Satisfaction with installation process and timeliness	✓	
Reasons for participation (and non-participation)		
Reasons for selecting /not selecting high-efficiency equipment option	✓	✓
Reasons for participating or not participating in program	✓	✓
Participant satisfaction with the process and measures		
Overall satisfaction with the Res HVAC programs	✓	
Length of time between program activities	✓	
Satisfaction with timing	✓	
Satisfaction with measures offered	✓	✓
Whether would recommend program to others	✓	
Interactions with other energy efficiency programs		
Awareness of other energy efficiency programs	✓	✓
Participation in other programs, which ones	✓	✓
Participant characteristics		
Type of dwelling (1-4 units)	✓	✓
Demographics	✓	✓
Years in residence	✓	✓

Reducing Survey Error

The evaluation team is taking multiple approaches to reducing survey error. As discussed in the sampling section, we plan to complete surveys with a relatively large group of program participants to achieve 10 percent relative precision at the 90 percent confidence level. Surveys with non-participants will achieve minimum percent absolute precision at the 90 percent confidence level. We are selecting non-participant samples to ensure that they align with

participant populations. APPRISE will send advance notification of the surveys (via mail or email) to businesses sampled, to increase the response rate (which reduces errors associated with non-response.)

In order to improve data reliability associated with the data collection, we will carefully word questions to be neutral and to minimize confusion. The survey pretests will help us finalize survey designs whose wording is clear to the respondents. We will keep surveys as short as possible, including only questions designed to meet the research objectives. Finally, as discussed above, we will monitor the interviewers to assure that questions are asked as written, that respondents understand the questions, and that responses are recorded accurately.

Deliverables:

- Two (2) draft customer survey instruments for Con Edison and O&R review
- Two (2) draft final customer survey instruments for DPS review
- Two (2) final customer survey instruments

ANALYSIS

The process evaluation analyses will be structured around six major processes:

- Program planning
- Infrastructure development
- Marketing and customer acquisition
- Program delivery
- Satisfaction with the program
- Interaction with other programs

The final report for each evaluation will also present findings and recommendations in the context of these six processes. The analyses will draw on all of the research conducted to address each of these processes. Table 9. Res HVAC Research Areas and Evaluation Activities 9 above presented a matrix showing how each of the evaluation research activities will provide data, insights, and observations to address the key issues for each of the six major processes. Below, we highlight the primary data and process evaluation activities that will be used to address each process.

Program Planning

Analysis of program planning activities will rely primarily on qualitative analysis of the in-depth interviews with utility implementation and support staff and Honeywell, though participant and non-participant survey data will be quantitatively analyzed, as appropriate. A timeline of regulatory filings and approvals, solicitation and contract dates, and program launch dates will be developed to determine the series of events during program development and the length of each activity. The timeline will be examined with an eye towards identifying delays and areas for improvement of future program planning activities.

Infrastructure Development

Each program's infrastructure development will emphasize program staffing, policies and procedures, tracking system adequacy, and Web site features and functionality, as described below.

Staffing Assessment

The staffing assessment will rely upon interviews with program staff, implementer staff, and trade allies. These interviews will cover adequacy of staffing levels, skills, and training.

Policies and Procedures Review

A thorough examination of each program's procedures, as documented in operations manuals, program data bases, and tracking and reporting documents will be conducted. Utility and

program implementation staff interviews will supplement the review of the program documentation by providing contextual information and background about the various policies and procedures.

Tracking System Review

The tracking system review is designed to achieve multiple goals: determining whether that necessary data are being tracked, providing the sample frame for customer surveys, and ensuring that data is accurate and sufficient quality control is in place. It also provides an assessment of the reach of the program in terms of participation types. Specifically, the dataset extracted from each program's tracking system is expected to enable Navigant Consulting to conduct the following quantitative analysis:

- Distribution of housing types participating
- Distribution of participation across installation contractors
- Distribution of measure types and efficiencies installed
- Distribution of energy savings by housing and measure type
- Average project sizes across different housing types, geographies, and participating contractors

Other results of the tracking system review will be reported qualitatively. This may include issues such as whether the system contains the necessary data fields, completed data fields, and effectiveness quality control processes.

Web Site Review

A review of each program's Web site will include both an examination of the site's content, features, and functionality as well as input from trade allies, staff interviews and customers regarding the usefulness of the Web site and the available tools and information.

Marketing and Customer Acquisition

The primary sources of information for the analysis of the Res HVAC programs' marketing and customer acquisition strategies will be a review of marketing materials, input from the participating and non-participating contractor interviews, and, customer surveys – all in the context of the level and types of participation observed in the tracking systems. The analysis will be approached from two perspectives: the customer and the participating contractor. The analysis will rely on two key frameworks:

- Value proposition: A value proposition creates a picture of how a product or service creates benefits for each actor in the value chain relative to that actor's needs. Each actor along the value chain must find adequate value in a product or service offering if the product or service is to achieve market acceptance. The analysis will determine the value of the products offered by the Residential HVAC program and the related services. It

will seek to understand any barriers in the market adoption of high-efficiency heating and cooling equipment through this lens.

- Value chain analysis: Each product or service has a unique value chain that brings the product or service to the end user. The way in which the market actors interact with each other has several unique characteristics: level of cooperation or competition, ease of entry, reward structures, basis for competition, and the sources of power. The marketing and customer acquisition analysis will determine how these relationships and unique characteristics influence the overall success of the Res HVAC programs.
- Pipeline management, including developing an adequate pipeline to support the “deal-flow” required to meet participation goals. This will include assessment of the need to increase/change marketing to increase the number of prospects, as well as changes to the value proposition and program processes to improve the conversion rate of prospects to participants and increase the number of measures adopted per participant.

Interviews with non-participating contractors will also assess the value proposition to contractors and focus on barriers to their involvement in the program. In addition, Con Edison’s program requires trained and certified contractors whereas O&R’s does not. We will examine the difference that these requirements have upon program participation and customer experience.

Program Delivery

Program delivery will be assessed from a variety of perspectives, based on interviews with utility and implementation contractor staff, review of program documents and Web sites, contractor interviews, and customer surveys. Program delivery focuses around a few core issues:

- Timeliness
- Quality
- Rectification of problems as they occur
- Feedback into the program to minimize future problems

All of the interviews and surveys are used to address these core issues and opportunities to improve program performance. Roles and responsibilities of individuals and organizations in each step in the program delivery process will be assessed through utility and Honeywell staff interviews. These interviews will also be used in evaluating communications effectiveness both within and between the different organizations involved in implementing the program. In combination with the tracking system review, the interviews will support the evaluation of the effectiveness of the program managers (both utility and Honeywell) in monitoring the programs and providing guidance as needed. Participant survey and trade ally results may also provide some indication of each program manager’s effectiveness, especially if unresolved or slowly resolved issues are identified.

The program document review supports the analysis of the extent to which program tools such as templates, websites and reporting protocols are both useful and functioning effectively for program delivery.

Satisfaction with the Program

Program satisfaction will be assessed from the perspective of both customers and participating contractors. Participant and non-participant survey data will be analyzed to determine the level of customer satisfaction with in-depth interview responses providing additional insights and context. Satisfaction with various program aspects, such as rebate check processing times, the ease of the application process, and rebate levels, will be evaluated.

The customer surveys will include a battery of questions related to their satisfaction with the program including satisfaction with the services received, propensity to participate in additional programs, satisfaction with the contractor, perception of changes in comfort and energy bills, and areas for improvement. They will also investigate the customer response to the program's value proposition and explore circumstances under which non-participants would participate. Finally, they will explore the role of the contractor in customer decision-making regarding the targeted equipment.

Interviews with participating program contractors will be used to gauge satisfaction with each program's customer and equipment eligibility requirements, ease of participation, and rebate levels. Interview data from participating Con Edison contractors will also be reviewed to assess the satisfaction with the contractor training and application requirements and process.

Interactions with Other Programs

Navigant Consulting will summarize results from the interviews with installation contractors on how they interact with other efficiency programs in Con Edison and O&R territories. We will analyze whether contractors appear to be double-dipping across multiple programs, causing energy savings to be double-counted, and whether the contractors favor certain programs over others (including other Con Edison or O&R programs). We will examine whether customers benefit from having multiple energy efficiency messages from multiple organizations.

REPORTING

The Navigant Consulting team will use a program management model that supports frequent and pro-active communication with the client to meet project schedule and quality concerns. This includes:

- Weekly status updates via telephone to discuss progress, upcoming activities, data needs and outstanding issues in need of resolution.
- Monthly status updates in writing.

Navigant Consulting will provide the results of the Res HVAC process evaluations in a final written report. Navigant Consulting will first submit a draft report for review by each of the Companies. The process evaluation report will contain the following sections, differentiated by utility, where applicable:

- Executive summary
- Introduction
 - Program description
 - Evaluation objectives
 - Overview of Methodology
- Key findings (by research area)
 - Program planning and design
 - Infrastructure development
 - Marketing and customer acquisition
 - Program delivery
 - Satisfaction with the program
 - Interactions with other programs
- Conclusions and recommendations (by research area)
 - Program planning and design
 - Infrastructure development
 - Marketing and customer acquisition
 - Program delivery
 - Satisfaction with the program
 - Interactions with other programs
- Appendices
 - Participant Survey
 - Non-Participant Survey
 - Survey Sampling plans
 - More detailed methodology discussion (if warranted)
 - Additional tables or figures (if warranted)

Deliverables:

- Draft Report for Con Edison and O&R review

- Draft Final Report for DPS review
- Final Report

EVALUATION SCHEDULE

The Res HVAC process evaluation project was officially started on May 12, 2010. Below is a summary of the project schedule, with key milestones and deliverables (draft, comment period and final). The draft final report is scheduled for completion by November 24, 2010.

Table 16: Res HVAC Process Evaluation Timeline

Res HVAC Process Evaluation		May			June			July			August			September			October			Nov			Dec			Jan											
Task	Description	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14
1	Overall Work Plan																																				
	Project initiation	█																																			
	Project work plan for all programs	█	█	█	█																																
2	Process Evaluation Plan																																				
	Initial interviews and New York visits	█																																			
	Develop Draft Evaluation Plan		█	█	█	█																															
	Client review of Draft Evaluation Plan																																				
	Develop Draft Final Evaluation Plan																																				
	PSC Review of Draft Final Evaluation Plan																																				
	Prepare Final Evaluation Plan																																				
3	Sample Methodology																																				
	Tracking data pulled & sampling plan																																				
	Prepare Draft Sampling Plan																																				
	Client review of Draft Sampling Plan																																				
	Prepare Draft Final Sampling Plan																																				
	PSC Review of Draft Final Sampling Plan																																				
	Prepare Final Sampling Plan																																				
4	Data Collection Tasks																																				
	Con Ed, O&R, and Honeywell in-depths	█	█	█	█																																
	Prepare Draft Contractor IDI Guides																																				
	Client review of Draft Contractor IDI Guides																																				
	Prepare Draft Customer Surveys																																				
	Client review of Draft Customer Surveys																																				
	Prepare Final Contractor IDI Guides																																				
	Conduct participating contractor IDIs																																				
	Conduct non-participating contractor IDIs																																				
	Prepare Draft Final Customer Surveys																																				
	PSC review of Draft Final Customer Surveys																																				
	Prepare Final Customer Surveys																																				
	CATI programming and pre-test																																				
	Conduct customer surveys																																				
5	Analysis																																				
	Final tracking system review																																				
	Contractor IDI analysis																																				
	Customer survey data analysis																																				
6	Process Evaluation Report																																				
	Prepare Draft Evaluation Report																																				
	Client Review of Draft Report																																				
	Prepare Draft Final Evaluation Report																																				
	PSC Review of Draft Final Evaluation Report																																				
	Prepare Final Report																																				
	Final report presentation																																				

Key dates:

- June 25, 2010 – Con Edison/O&R to provide extract of participant database to Navigant Consulting
- July 26, 2010 – Navigant Consulting to provide draft telephone survey instrument to Con Edison and O&R
- September 7, 2010 – Telephone survey finalized and begin programming and pre-test of survey
- October 15, 2010 – APPRISE completes telephone surveys
- November 24, 2010 – Draft report completed