PROGRAM EVALUATION PLAN

Energy Efficiency and Renewable Programs

New Jersey Clean Energy Collaborative

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I. INTRODUCTION

This document describes the planned evaluation strategies and activities for the energy efficiency and renewable energy programs approved by Board Order dated March 9, 2001 and subsequently described in a Program Compliance Filing made on April 9, 2001 in the Comprehensive Resources Analysis (CRA) of Energy Programs proceeding, Docket Nos. EX99050347, EO99050348, EO99050349, EO99050350, EO99050351, GO99050352, GO99050353, and GO99050354. It provides evaluation plans for 2001-2002 and preliminary evaluation recommendations through 2004. Program evaluation is best done in steps over several years. Although the Commission has not yet determined how these programs will be administered in the future, a multiyear evaluation strategy is recommended.

Periodic evaluations are vital to track progress and inform program designs to meet the targeted objectives of different programs. In addition to achieving energy savings, many programs are intended to reduce barriers to the penetration of new efficient technologies. A few programs have customer education as a primary goal, and the low-income program is designed to reduce arrearages as well as energy consumption. Therefore, evaluations will include a variety of activities, ranging from focused engineering studies to market assessments. The evaluation efforts build upon and improve the methods that have been developed in New Jersey and other states over the past 15 years. It is important to note, however, that market transformation and evaluation of market transformation programs are relatively new concepts. Both the programs and the evaluation methods are evolving and may change with practical experience.

The process of planning program evaluations is dynamic. This document provides a snapshot of the activities currently underway or recommended through 2004. As programs evolve and evaluation results become available, evaluation plans will be modified accordingly. Program evaluation results and needs will be assessed when annual budgets and goals are developed.

II. OVERVIEW OF THE EVALUATION PLAN

A. REPORT ORGANIZATION

This Section describes the purposes of energy efficiency program evaluation in general. It briefly describes the three broad types of evaluation activities: process evaluations, market assessments, and energy impact assessments. It also identifies how the results will be used and lists some of the most important sources of baseline and program data.

The remaining sections of this plan present summary information as well as evaluation plans for the statewide programs approved by the NJ BPU that are subject to evaluation. The programs are described in the same order as they appear in the Plan. Each program section covers evaluation needs specific to the program, and recommended evaluation activities for 2001-2004.

B. PROGRAM EVALUATION GOALS AND OBJECTIVES

The chief goal of evaluation is to objectively study the effects of the programs. *Qualitative effects* involve customers' awareness and understanding of the benefits of the programs and the energy efficient technologies. They also include: assessments of the program's design and implementation; barriers that limit program performance; changes to codes and standards, and other actions that signify progress towards the goal of market transformation. *Quantitative effects* include kW, kWh and therm reductions due to efficiency improvements resulting from the program. *Performance indicators* include quantitative and qualitative measures specifically designed to monitor progress towards the goal of market transformation. Performance indicators for market transformation programs evolve over time. Specific performance indicators presented in this document for each program reflect that progression, starting with indicators of awareness. As the programs evolve, understanding and behavioral change will also be assessed. It is important to note that many indicators have not been explored in NJ markets, and that indicators may change with practical experience.

The objectives of evaluations of the programs include:

To assess how well each program is meeting its goals. This entails measuring and documenting performance indicators and documenting achievement of metrics.

To support assessments of energy impacts, lost revenues, and cost-effectiveness. Results of such assessments may also be used to support performance incentives for program administration. Protocols define the process for computing energy and demand savings from energy efficient technologies. Certain protocols require evaluation inputs to measure appropriate market parameters (e.g. volume, market shares, etc.) for energy efficient products being promoted, or technical inputs (operating characteristics, market baselines, etc). As evaluation results from these programs become available, protocols will be updated and the new values will be used going forward. The cost-effectiveness analyses use inputs that are consistent with and constructed from the protocols. This objective also entails tracking program data related to participation and expenses.

To provide timely feedback to program managers. Evaluation will be used to inform and improve program design and implementation in a timely manner. Marketing campaigns, energy efficient products available, and barriers to program performance will be reviewed.

To provide the necessary information for decision-making. For many programs, this entails market assessments and periodic status reports that can be provided to regulators, as well as market actors, and program planners who all play roles in support of market transformation and other energy efficiency activities.

While program evaluation is driven by these broad objectives, it is important to emphasize that evaluations must be tailored to the specific needs of each program. The approved statewide programs differ widely in accordance with the customers targeted, services provided, program designs, and specific objectives. These programs have different approaches to evaluation. In addition, the need for timely feedback means that

program evaluation depends on the implementation schedule of the program and evolves according to changing needs, rather than serving as a static, annual snapshot.

C. EVALUATION APPROACH METHODS AND ACTIVITIES

Evaluations generally fall into three categories: process, market assessment, and energy impact. These have different goals, although the same data are often used. Process evaluation tends to involve qualitative analyses; impact evaluation tends to involve quantitative analyses, and market assessments involve a mix.

The following is a broad overview of various evaluation methods that may be used in different programs over time, and general characterizations of their applicability to different evaluation objectives. It is presented as background supporting more specific plans presented in Sections III and IV.

1. Process Evaluation

Process evaluations are concerned with a program's design and operational efficiency. They typically examine both customers' and implementers' reactions to the program. Results of process evaluations can lead to improvements in the cost-effectiveness of the program. They can also uncover barriers to participation in the program. A process evaluation typically addresses some of the following issues:

Implementation Effectiveness. How consistent is the implementation with the planning? Are joint utility arrangements effective?

Operational Efficiency. Are there any bottlenecks, unnecessary bureaucratic obstacles, staff shortages or other problems affecting delivery of the program?

Satisfaction and Attitudes. How satisfied are program participants? This includes customers, vendors, and others, such as retailers, manufacturers, or trainers, involved in the program.

Program Acceptance. This includes the effectiveness of promotions and incentives as well as why customers, retailers, or manufacturers choose to participate or not. Is the program's promotion reaching the targeted groups? Is the message understood? Do the promotions and incentives encourage participation?

In addition to answering these questions, process evaluations often provide an important opportunity to document the details of a program's design, goals, implementation, and progress. This information is otherwise seldom available in one report.

a) Methods:

Process evaluations use a variety of data sources and methods to gauge customer and staff reactions. These include:

Telephone and Mail Surveys. Typically random samples of participants and non-participants are surveyed. Surveys generate quantitative and qualitative results.

In-Person Interviews. These often entail open-ended probing questions to learn the reactions of customers, utility staff, and other market actors.

Focus Groups. The interactions among the participants (typically 8 – 10 people) can yield information not forthcoming in individual interviews.

Formal process evaluations will be done by an outside contractor. A contractor's independence ensures that respondents can express their reactions more freely. The evaluations are usually the earliest feedback available to program managers. They can usually be initiated much earlier than other evaluations or market assessments since there is no wait to collect data on post-installation usage or market responses. For programs with long-term goals, such as market transformation programs, process evaluations provide the only short-term feedback available to optimize the program.

2. Energy Impact Evaluation

Protocols document the processes for measuring the quantitative results and energy impacts of programs. While evaluation activities are required to support market effect inputs to those protocols, some additional work may be required to update demand, load shape, and energy usage effects. This will be done on a case-by-case (by program or measure) basis as needed. Typically, some of the following issues are addressed:

Measurement versus Estimation. How close are actual program impacts to engineering estimates at the measure, building, and program level?

Appropriateness of Measures. What costs and savings can typically be expected from certain measures in specific settings?

Amount and Distribution of Savings. What are the savings at different times of the year? Do the savings vary within the state? How do they vary regionally? Are they persistent?

a) Methods:

Energy impact evaluations use several methods to obtain results. In some cases, more than one methodology is used to assess program impacts and the results are compared or used as upper and lower bounds for planning purposes. The methods include:

Billing Data Analysis. Usage prior to participation is compared to usage after participation. Usage is often adjusted for weather and other factors, such as household or commercial characteristics. Often a control group is used. Depending on the type of program and measures installed, this method can generate results at the end-use level or by building unit. It can also generate savings estimates or realization useful in applying or adjusting engineering estimates.

Metering. This method provides time-of-use and length of use information. If it is planned early in the program, it can be used to provide before- and after-usage information. It is most commonly used for studying commercial, industrial, or residential high-use projects.

Simulation Modeling. Simulation modeling of energy usage is beneficial in cases when billing and metering data are unavailable, such as new construction programs. It may also

be used in conjunction with other methods, to help separate out energy savings from load changes in billing or metered data.

Engineering Estimates. In certain cases, engineering estimation may be the only available technique for interim savings estimates.

On-site observations. It is often useful to visit sites and observe how equipment is being used, or the condition and layout of the building. This method is also used in evaluations that assess technical assessments and comprehensiveness of services delivered to a customer through a program.

3. Market Assessment

A third important class of evaluations is market assessments. These include a mix of qualitative and quantitative analyses. They are concerned with the effects of market transformation programs on markets. Changes in the market are measured by a set of market indicators. In order to evaluate changes in the market, it is important to evaluate changes over time in relation to baseline market conditions. Performance indicators that are used to assess changes in the market address the following issues:

Awareness and Attitudes. Are customers and suppliers aware of the benefits of the efficient products or services? Are purchasers satisfied with the products? Have attitudes and awareness changed over time from baseline conditions?

Specific Program Activity. How many rebates have been issued? How many retailers have received training? How many promotional special events have been held? How many contractors have been certified? These are examples of ways of measuring program activity.

Availability and Common Practice. Is the efficient product readily available? How does its availability compare with conventional products? To what extent are energy efficient products stocked, labeled, used by building managers or in specifications? How has this changed from baseline conditions? Are manufacturers or retailers investing in marketing this product through coop advertising or on their own?

Prices. What is the average retail price of the efficient products and how does this compare with conventional products?

New Products. Are there new or modified versions of energy efficient products that would reduce barriers to customer acceptance or otherwise increase the penetration of energy efficient technologies?

Labels, Codes and Standards. Have any changes been made to labels, building codes, or federal standards that would exert influence on the market for the efficient products or services?

Amount and Distribution of Savings. What are the estimates of individual and aggregate energy savings associated with the market transformation program? What assumptions are appropriate, in the absence of complete information about product sales and usage characteristics of program participants?

Market share. What is the market share (percent of total sales) of the efficient products and how has this changed over time?

a) Methods:

Market Assessments use several methods to assess the issues described above. As with the impact evaluations, in some cases, more than one method or data source is used to obtain results, and the results are compared. The basic tools used in market assessments are comparable to those used for some process and impact evaluations, but they have a broader focus on markets and market dynamics. They include:

Telephone and Mail Surveys. Bounce-back cards from customers who have received rebates for purchases of energy efficient equipment are sometimes used. In addition, customers, participating and nonparticipating retailers are surveyed.

Primary and Secondary Research. Pricing and market share information frequently requires investigation of state, federal or industry resources. Judgment is required to assess the applicability of secondary research to local markets. Primary research might involve direct information from such sources as local distributors and dealers, price quotes to local customers or catalogue information.

Market assessments can vary in scope. Their purpose is to provide timely, useful feedback to guide market transformation programs. They include status reports that are periodic, brief updates of program performance and market indicators for which data are readily available. They also include more extensive studies that assess the market overall and systematically measure progressive changes in market behavior over time relative to baseline information. Baseline updates should be conducted after a program has been underway for a significant period of time.

D. BASELINE INFORMATION SOURCES

Baseline information is vitally important to assessing market changes. It provides insight on what would have been done without a program, and thus provides the basis for measuring changes attributable to the program. Often utility customer saturation surveys or other market penetration studies provide useful information about baseline conditions from the customer perspective. Formal surveys of market information from the supplier perspective are difficult to obtain – because of time lags associated with assembling market-level information or because of confidentiality concerns of manufacturers and retailers. Therefore, data used to update market shares and prices and other market indicators typically includes a mix of sales data from formal sources, such as trade associations and subcontractors to the EPA ENERGY STAR® program, and from results of surveys conducted by independent contractors as part of the evaluation activities. Ideally baseline studies and baseline updates should include predictions of how the market would evolve in the absence of the market transformation program, and a clear assessment of the reliability of the estimate. Any assessment of changes in market should be supportable with a systematic approach with clear indication of statistical confidence and accuracy.

One of the differences between traditional energy efficiency and market transformation programs relates to the target audience for the programs. In traditional programs, utilities are usually able to track and identify the specific customers who participate and to measure how much energy is saved at the individual customer level. Since the goal of market transformation programs is to move the market, which is larger than any service territory or state, the target audience is typically broader than in traditional programs. This difference between programs is reflected in the recommended evaluation activities. Market transformation program evaluations focus on changes in the market compared to baseline conditions. These evaluations and the data sources to support them are currently evolving as the programs develop. By comparison, evaluations of traditional programs, such as the NJ low income program, focus more narrowly on understanding and characterizing behavior of individual participating customers.

Table II.1 summarizes the baseline information sources for New Jersey that are currently in use.

Table II.1 Recent Market Evaluation Studies

NJ BASELINE STUDIES	**Author**	**Date**
Baseline Data Projection Book	GRI Baseline Center	January 2000
New Jersey Statewide Market Assessment Prepared for the New Jersey Utilities Working Group	Xenergy	August 1999
Commercial & Industrial Studies		
NJ New Construction, Renovation, and Equipment Replacement baseline study (HVAC, Lighting, and Other)	RLW	Winter 2000
Compressed Air Systems Market Assessment in PSE&G's Territory	Aspen Systems	March 2000
Commercial & Industrial O&M Market Segment Baseline Study, for the NE/NJ Utilities	RLW	June 1999
Northeast Premium Motor Initiative Market Baseline and Transformation Assessment	Easton Consultants	August 1999
PSE&G Motor Baseline Study	Easton Consultants	October 1996
PSE&G Commercial Lighting Design Assessment - Addendum to the New Jersey Commercial Baseline Study	Robert Sardinsky	January 2000.
Commercial/Industrial Chiller Market Database - Draft Report; Prepared for Richard F. Hoernlein, Public Service Electric & Gas of New Jersey (in draft: chiller inventory for PSE&G and program issues.)	Les Tumidaj, Fred Gordon, Steven Scott, Pacific Energy Associates, Inc.	July 2000
The Market for Operations and Maintenance Training in New Jersey - Final Report Public Service Electric and Gas of New Jersey and Conectiv Power Delivery;	Frederick M. Gordon, Gary Smith, Will Miller, Pacific Energy Associates, Inc.	May 2000
Residential Studies		
Baseline Study of the New Jersey Residential Lighting Market; to Northeast Energy Efficiency Partnerships and Public Service Electric and Gas Company, GPU, and Conectiv Power Delivery	Opinion Dynamics Corporation and Regional Economic Research	November 1999
Baseline Study of the NJ Appliance and Window Markets	RLW	October 2000
Baseline Study of Attitudes and Awareness of Key Market Actors in the NJ Residential New Construction and Renewable technology market	Roper-Starch and Xenergy	June 2001
Baseline Study of Gas and Electric Residential HVAC Market	Xenergy	expected July 2001

E. PROGRAM DATA COLLECTION (TRACKING)

One of the factors critical to successful program evaluation planning is ensuring that the appropriate data are available for analysis. Therefore, it is important for an evaluation plan to consider data collection and monitoring measures replaced or installed, where appropriate. Systems are needed to collect, organize, verify, and report the necessary data in a timely manner. The data collection systems are determined by the program's goals and the type and number of customers involved. Tracking systems need to support consistency of results, consistent reporting and a sound basis for evaluation. Review of tracking systems is generally part of a process evaluation.

F. IMPLEMENTATION OF EVALUATION PLANS

Evaluation contractors will be hired in 2001 and specific evaluation projects will begin in 2002, after programs have been in place for 9 to 12 months. The contracts will be competitively bid and the budget is recommended not to exceed 5% of the total approved budget.

1. Organizational Structure for Program Evaluation

Working groups were formed to work on a program-by-program basis, focusing on the task appropriate to the program's lifecycle. A working group may be involved in program development, marketing design, implementation planning, evaluation planning, monitoring, tracking, and evaluation at different stages for a particular program.

In addition to program-specific working groups, an Evaluation Group will focus on evaluation planning, evaluations, and coordination of related activities such as protocols development and verification and support to regulatory reporting of program results. This group has responsibility for coordination and other support of evaluation activities. Reports on evaluation activities will be included in quarterly reports. Meetings with the BPU Staff and other parties will be held from time to time as appropriate to maintain timely and effective communication regarding program evaluations.

2. Recommended Strategy and Schedule for Implementation of Evaluation Plan

Evaluations will be supported by work from outside contractors. The requests for evaluation proposals should be structured to meet the goals of competitive bidding, achieving economies of scale for the program administrators, and matching contractors' expertise with program needs. Evaluations of programs that target similar customer segments, have similar program designs and are on similar implementation schedules will be coordinated. The following clusters of evaluation activities are proposed to meet the 2001 evaluation milestones and objectives:

- Process Evaluation and Tracking Review for Low Income and Residential Retrofit Programs. Independent vendor to be hired by October 1, 2001.
- Process Evaluation and Tracking Review for residential market transformation programs, including Residential New Construction, ENERGY STAR Windows,

ENERGY STAR Appliances, ENERGY STAR Lighting, Residential Electric HVAC, and Residential Gas HVAC. Independent vendor to be hired by December 15, 2001.

- Evaluation of Commercial and Industrial Construction and Building and Operations Maintenance, to include Process Evaluation, Tracking Review, Energy Savings Study of New Commercial Measures (if needed), and Evaluation of Pilot Program. Independent vendor to be hired by December 31, 2001.
- Process Evaluation for Compressed Air Challenge Program. Independent vendor to be hired by December 31, 2001.
- Process Evaluation of Customer Sited Clean Generation Program. Independent vendor to be hired by October 15, 2001.
- Market Share Monitoring Study to explore market share estimation methodology and data sources for residential market transformation programs and selected measures in the Commercial and Industrial Energy Efficient New Construction program.

III. RESIDENTIAL PROGRAMS

A. RESIDENTIAL PROGRAM SUMMARY

Residential programs share the objective of promoting energy efficiency within this customer segment. The overarching objectives are to raise the profile of the national ENERGY STAR label on consumer products, and to increase energy savings by residential customers in New Jersey by increasing energy efficient practices by homebuilders, HVAC contractors and customers as well as increasing market shares and availability of energy efficient products.

All residential programs were launched as joint utility programs in May 2001.

Table III.1 summarizes the evaluation plans for residential programs in the 2001-2004 period. The purpose of this table is to highlight elements that are common to all or many programs, and elements that are unique. The table also identifies evaluation activities addressed in the next year (commissioned in 2001), and other activities (denoted by "X") that will take place as appropriate for program needs in future years.

Table III.1: Overview of Proposed Residential Program Evaluation, 2001 – 2004[1]

EVALUATION TYPE→	Process Evaluation[2]		Market Share Monitoring	Impact Evaluation	Market Assessment	
INDICATORS → PROGRAMS	Tracking System	Customers, Allies and Implementers[3]		Program Specific[4]	Customers & Trade Allies[5]	Product Availability and/or Incremental Cost
Electric & Gas HVAC	Commission by Dec 15 , 2001	Commission by Dec 15, 2001	X	Market Share	X	X
ENERGY STAR Windows, Appliances, & Lighting	Commission by Dec 31, 2001	Commission by Dec 31, 2001	X	Market Share	X	X
Residential New Construction	Commission by Dec 31, 2001	Commission by Dec 31, 2001		TBD	X	X
Low Income	Commission by Oct 1, 2001	Commission by Oct 1, 2001	NA	Billing Analysis; Affordability; & Comprehensive ness Evaluation	NA	NA
Residential Retrofit Program	Commission by Oct 1, 2001	Commission by Oct 1, 2001	NA		NA	NA

[1] X in the table denotes future evaluation activities to be undertaken where feasible and when appropriate.

[2] The commissioning dates listed satisfy evaluation milestones in the 2001 Compliance filing.

[3] Customers, Allies, Implementers & Trade Ally: awareness, perception & satisfaction with program outreach and delivery

[4] Evaluation projects are required to update impacts of various kinds. All programs will have protocol-based impact calculations to report energy savings.

[5] Customers & Trade Allies: awareness, training, values, behavior with energy efficient measures & practices

B. RESIDENTIAL ELECTRIC HVAC PROGRAM

Status

The Residential Electric HVAC Program helps promote energy efficient HVAC equipment and is designed to transform the market for HVAC equipment and installation practices. The Residential Electric HVAC Program offers rebates for central air conditioners and heat pumps. It also offers training and certification for HVAC technicians and contractors.

A baseline study assessing the gas and electric residential HVAC equipment market in New Jersey will be completed in 2001. The baseline study will provide estimated values for program performance indicators that can be revisited in a future evaluation.

Evaluation Activities

For 2002, an outside contractor will conduct the following evaluation activities:

Process Evaluation. Within 9 – 12 months after implementation of the program has begun, the contractor will conduct a process evaluation. Process evaluation is needed to identify potential strategies for improvement or modification in the program design and delivery. It is necessary to wait 9 – 12 months after implementation so that participation and sufficient experience with the program is available for evaluation. The process evaluation will include a Tracking System review. The contractor will evaluate the tracking system to review what is being tracked, how the data are coordinated statewide, and whether the tracking system includes all the data fields needed to meet the utilities' needs for evaluation.

Key questions for the process evaluation will include:

- Are the joint delivery strategies effective?
- Is the contractor training effective?
- What are the existing barriers to participation and how could they be reduced?

Market Share Monitoring. An outside contractor will be hired to conduct a statewide survey to collect data on market shares of high efficiency central air conditioners and heat pumps. This survey will be conducted periodically throughout the life of the program.

Recommended for 2003:

Initial Market Assessment. A market assessment will monitor the changes in the market for electric HVAC equipment and installation practices. It will also update estimates used as program performance indicators. It is intended to be a brief, focused status report based on data that are readily available.

In 2003, a determination will be made as to whether it is necessary to conduct a process evaluation, based on a review of the results of the 2002 process evaluation and on

whether the program design has changed significantly since the beginning of the program.

Similarly, the program administrators will review the results of the market share monitoring and determine whether it is necessary to conduct an impact evaluation to update inputs to the energy savings protocols.

Recommended for 2004:

Market Assessment. A market assessment is needed to update the baseline study and estimates used as performance indicators. It is intended to be more extensive than the previous market study. It will assess the market overall, the influence of utility programs and other forces on the market since program implementation, existing barriers, and expected market trends. In addition, it will recommend future directions for the program, such as reduction of rebates.

Performance Indicators

Residential Electric HVAC Program	**Performance Indicator**	**Data Source**
Rebate volumes and energy savings	Number of central A/C and heat pump rebates	Program tracking data and protocols
HVAC training	Number of technicians participating in utility sponsored training on Manual J, charging/airflow, duct design, etc. Number of HVAC firms with at least one technician that has participated in utility-sponsored training	Program tracking.
Rebate inspections	"Passing" rate for inspections of rebate systems	Program tracking.
Contractor certification	Number of HVAC technicians and/or contractors that have been certified	Data from independent authority the Utilities will work with to promote certification.
Awareness/Attitudes	% of customers aware of benefits of efficient equipment and quality installations; % of contractors using and/or aware of benefits and key elements of efficient equipment and quality installations	Baseline study/Market Assessment
Market share monitoring	Sales of high efficiency A/C and heat pumps as % of total NJ sales if possible	Baseline study/Market Assessment

C. RESIDENTIAL GAS HVAC PROGRAM

Status

The evaluation needs of the Residential Gas HVAC Program and the Residential Electric HVAC Program are very similar. Both programs help promote energy efficient HVAC equipment and both are designed to transform these markets. The Residential Gas HVAC Program offers rebates for high efficiency furnaces, boilers and water heaters. It also offers sales training for HVAC technicians and contractors.

A baseline study assessing the gas and electric residential HVAC equipment market in New Jersey will be completed in 2001. The baseline study will provide estimated values for program performance indicators that can be revisited in a future evaluation.

Evaluation Activities

In 2002, an outside contractor will conduct the following evaluation activities:

Process Evaluation. Within 9 – 12 months after implementation of the program has begun, the contractor will conduct a process evaluation. Process evaluation is needed to identify potential strategies for improvement or modification in the program design and delivery. It is necessary to wait 9 – 12 months after implementation so that participation and sufficient experience with the program is available for evaluation. The process evaluation will include a Tracking System review. The contractor will evaluate the tracking system to review what is being tracked, how the data are coordinated statewide, and whether the tracking system includes all the data fields needed to meet the utilities' needs for evaluation.

Key questions for the process evaluation will include:

- Are the joint delivery strategies effective?
- Is the contractor training effective?
- What are the existing barriers to participation and how could they be reduced?

Market Share Monitoring. An outside contractor will be hired to conduct a statewide survey to collect data on market shares of high efficiency furnaces, boilers, and water heaters. This survey will be conducted periodically) during the life of the program.

Recommended for 2003:

Initial Market Assessment. A market assessment will monitor the changes in the market for gas HVAC equipment and update estimates used as program performance indicators. It is intended to be a brief, focused status report based on data that are readily available.

In 2003, a determination will be made as to whether it is necessary to conduct a process evaluation, based on a review of the results of the 2002 process evaluation and on whether the program design has changed significantly since the beginning of the program.

Similarly, the program administrators will review the results of the market share monitoring and determine whether it is necessary to conduct an impact evaluation to update inputs to the energy savings protocols.

Recommended for 2004:

Market Assessment. A market assessment is needed to update the baseline study and estimates used as performance indicators. It is intended to be more extensive than the previous market study. It will assess the market overall, the influence of utility programs and other forces on the market since program implementation, existing barriers, and expected market trends. In addition, it will recommend future directions for the program, such as reduction of rebates.

Performance Indicators

Residential Gas HVAC	**Performance Indicator**	**Data Source**
Participation and energy impacts	Number of HVAC incentives paid for furnaces, boilers and water heaters.	Program trackingand protocols
Trade Ally Training	Number of HVAC technicians and/or contractors that have received sales training.	Program tracking
Customer Awareness/Attitudes	Percent of customers aware of benefits and key elements of high efficiency equipment.	Market Assessment
Contractor Awareness/Attitudes	Percent of contractors aware of benefits and key elements of high efficiency equipment.	Market Assessment
Market share monitoring	Sales and installation of high efficiency water heaters, furnaces, and boilers as % of total NJ sales of these products if possible.	Surveys and Distributor Sales Data
Incremental Cost (long term impact)	Incremental cost of high efficiency water heaters, furnaces, and boilers relative to standard equipment.	Market Assessment

D. RESIDENTIAL ENERGY STAR® WINDOWS PROGRAM

Status

The evaluation needs of the Residential ENERGY STAR Windows Program are similar to the other residential programs that are designed to transform markets. However, the primary focus for this program is outreach to major trade allies – windows manufacturers, distributors, retailers, and contractors. One important need in this program is to periodically measure performance indicators using surveys. Since marketing of all ENERGY STAR products may be integrated, opportunities to combine evaluations of the ENERGY STAR product programs should be explored.

A baseline study assessing the ENERGY STAR windows and appliance markets in New Jersey was completed in 2001. The baseline study will provide estimated values for program performance indicators that can be revisited in a future evaluation.

Evaluation Activities

Beginning in 2002, following program implementation, an outside contractor will conduct the following:

Process Evaluation. Since this is a new program, an initial process evaluation will be performed to review the program design and delivery in order to identify potential strategies for improvement. It is necessary to wait 9 – 12 months after implementation so that sufficient experience with the program is available for evaluation.

The process evaluation will include a Tracking System review. The contractor will evaluate the tracking system to review what is being tracked, how the data are coordinated statewide, and whether the tracking system includes all the data fields needed to meet the utilities' needs for evaluation.

Key questions for the process evaluation will include:

- Are the joint-utility delivery strategies effective?
- Are market support activities effective?
- Are ENERGY STAR branding activities integrated with other programs?
- What are the existing barriers (e.g. product availability) to participation and how could they be reduced?
- Is statewide sales data readily available on a timely basis?

Recommended for 2003:

Market Assessment. A market assessment will monitor the changes in the market for ENERGY STAR windows and update estimates used as program performance indicators. It is intended to be a brief, focused status report based on data that are readily available.

In 2003, a determination will be made as to whether it is necessary to conduct a process evaluation, based on a review of the results of the 2002 process evaluation and on whether the program design has changed significantly since the beginning of the program.

Similarly, the program administrators will review the results of the market share monitoring and determine whether it is necessary to conduct an impact evaluation to update inputs to the energy savings protocols.

Recommended for 2004:

Market Assessment. A market assessment is needed to update the baseline study and estimates used as performance indicators. It is intended to be more extensive than the previous market study. It will assess the market overall, the influence of utility programs and other forces on the market since program implementation, existing barriers, and expected market trends. In addition, it will recommend future directions for the program, such as changes to marketing strategy.

Performance Indicators

Residential ENERGY STAR Windows	**Performance Indicator**	**Data Source**
Retailer Participation	Number of trade allies promoting or co-sponsoring promotions of ENERGY STAR windows.	Program Tracking
Manufacturer Participation	Number of manufacturers promoting or co-sponsoring promotions of ENERGY STAR windows.	Program Tracking
Product Availability	% of retail space devoted to ENERGY STAR windows relative to space to devoted to windows overall.	Market Assessment
Market share monitoring	Sales of ENERGY STAR windows as % of total NJ sales of these products.	Program Tracking
Public Awareness and Consumer Knowledge	% of customers aware of benefits and key elements of ENERGY STAR windows.	Market Assessment

E. RESIDENTIAL LOW INCOME PROGRAM

Status

The goals of the Residential Low Income Program are to reduce energy use and enhance affordability of energy for this target market. The evaluations address energy savings, arrearage reduction and comprehensiveness of installation measures.

Arrearage reductions are an aspect of program design that provide benefit to low income program participants over and above the energy efficiency benefits of the program. One of the evaluation needs is to quantify affordability benefits associated with this aspect of the program. This evaluation combines results of an energy impact evaluation with a statistical analysis of customer bill payment histories to estimate the effects of the program on affordability. Key questions for the affordability evaluation will include:

- What are the quantitative and qualitative benefits to the utility and to the participants?
- What are the barriers to enrollment in and completion of the arrearage reduction program and how can they be reduced?
- Are participants satisfied with the delivery and procedures of the arrearage reduction program?

Comprehensiveness is an aspect of program design that also reflects the program's goal of providing as much assistance as possible to each participant - in this case, by striving to install as many site-specific eligible energy efficiency measures as possible in a participant's home. A process evaluation will be used to assess and document results relating to comprehensiveness. On-site inspections will assess comprehensiveness of the measure installations. Two aspects of comprehensiveness will be examined: 1) measure selection with respect to available budget (whether all site-specific eligible measures were selected); and 2) installation quality and persistence (whether installation quality is sufficient to promote persistence of savings).

Information about energy savings associated with measures installed and weatherization treatments to low-income homes is currently available from evaluations of previous low-income programs in New Jersey and by other utilities. These are being used to establish protocols for 2001 and initial energy savings assumptions used in cost-effectiveness analysis. The protocols will be used for energy impact assessments until additional results from billing analysis become available.

In the longer run, evaluation of energy savings impacts is dependent on the availability of sufficient post-participation usage data. The evaluation will rely on tracking information, customer survey data, billing histories, and other sources of data, such as on-site monitoring.

Qualitative impacts from this program are also needed to identify potential strategies for improvement or modification of the program.

Evaluation Activities

In 2001 and 2002, an outside contractor will conduct the following evaluation activities:

Process Evaluation. Within 9 – 12 months after implementation of the program has begun, the contractor will conduct a process evaluation. It is necessary to wait 9 – 12 months after implementation so that participation and sufficient experience with the program is available for evaluation. The process evaluation will include a Tracking Systems review. The contractor will evaluate the tracking system to review what is being tracked, how the data are coordinated statewide, and whether the tracking systems include all the data fields needed to meet the utilities' needs for evaluation. The assessment will also address comprehensiveness of treatments.

Key questions for the process evaluation will include:

- Are the joint delivery strategies effective?
- Is the program training effective?
- What are the existing barriers to low income customer participation and how could they be reduced?
- Is the on-site inspection process effective? Does it ensure comprehensiveness in professional installation of all appropriate energy efficient measures?

Recommended for 2003:

Energy Savings Evaluation. This evaluation will analyze results from a sample of participants in the 2001 and 2002 programs. To estimate energy savings associated with weatherization programs, it is necessary to wait until sufficient post-participation billing histories including a heating season are available for analysis.

Affordability Evaluation. This evaluation will also analyze results based on a sample of participants in the 2001 and 2002 programs. The calculation of bill reductions associated with program activities is linked to the energy savings evaluation.

Results of the evaluation will be used to revise program planning estimates and inputs to impact protocols as needed.

In 2003, a determination will be made as to whether it is necessary to conduct a follow-up process evaluation, based on a review of the results of the 2002 process evaluation and on whether the program design has changed significantly since the beginning of the program.

Similarly, the program administrators will review the results of the comprehensiveness evaluation and determine whether it is necessary to conduct a similar evaluation for participants in the 2003 program.

Performance Indicators[6]

Residential Low Income Program	Performance Indicator	Data Source
Participation – energy efficiency	Number of participating households, by category.	Program tracking information
Participation – arrearage reduction	Number of participating households who enrolled in arrearage reduction agreements.	Program tracking information
Energy Savings per participant	Average annual energy savings per participating household, by category.	Energy Evaluation results
Comprehensiveness of treatment of efficiency measures	Is the on-site inspection process effective? Does it ensure comprehensiveness of measure installation?	Process Evaluation
Affordability benefits	Change in percent of bills paid per participant.	Affordability Evaluation results
Customer satisfaction	Percent of customers who are satisfied or very satisfied with installed measures and delivery of the affordability provisions of the program	Process evaluation results
Cost-effective savings per participant	Dollars spent per energy (kWh or therms) saved	Program tracking information; evaluation results

[6] Participating household is defined to be "contractor completed", i.e. job completed, inspected, and invoice paid. Evaluation results will be segmented by housing type, fuel type, and major end use. The criteria for assessing comprehensiveness of measure selection will be determined by evaluators in conjunction with working group and Collaborative advisors.

F. RESIDENTIAL NEW CONSTRUCTION PROGRAM

Status

A baseline study on attitudes and awareness of energy efficient new construction was completed in 2001. Results of this study will help inform the program objectives.

Evaluation Activities

In 2002, an outside contractor will conduct the following evaluation activities:

Process Evaluation. The effectiveness of the design and delivery of the program will be assessed within 9 to 12 months following implementation by all participating utilities. The process evaluation will include a Tracking System review. The contractor will evaluate the tracking system to review what is being tracked, how the data are coordinated statewide, and whether the tracking system includes all the data fields needed to meet the utilities' needs for evaluation.

Key questions for the process evaluation will include:

- Are the joint delivery strategies effective?
- Are the program marketing, builder outreach, and contractor training effective?
- Are participants satisfied with measures, interactions with vendor and/or utility staff, and with other market players (lenders, realtors, subcontractors, etc.)?
- Is the coordination of this program with the residential HVAC program effective?

Initial Market Assessment. A market assessment will be initiated to establish baseline performance indicators for the residential new construction market.

In addition, the contractor, program team and collaborative advisors will determine whether to conduct an impact evaluation to update energy savings estimates in the following year. The decision will be based on a review of the existing protocols and data sources used to calculate savings as well as on results of the initial market assessment.

Recommended for 2003:

In 2003, a determination will be made as to whether it is necessary to conduct a process evaluation, based on a review of the results of the 2002 process evaluation and on whether the program design has changed significantly since the beginning of the program.

Recommended for 2004:

Market Assessment. An in-depth market assessment is needed to update the baseline study and estimates used as performance indicators. It is intended to be more extensive than the initial market study. It will assess the market overall, the influence of utility programs and related activities influencing transformation of the new construction market since program implementation. It will also assess existing barriers and expected

market trends. In addition, it will recommend future directions for the program, such as inclusion of additional measures or reduction of rebates.

Performance Indicators

Residential New Construction	**Performance Indicator**	**Data Source**
Participation and energy savings	Number of homes certified (by single-family, townhouse, multifamily and affordable)	Program tracking and protocols.
Technical assistance to builders and subcontractors	Number of builders and subcontractors trained	Program tracking system and evaluation
Installation rates for efficient equipment	% of new homes built with qualifying ENERGY STAR gas and SEER 13+ HVAC equipment	Program tracking system
Supplemental measures	Number of lighting, appliance and ventilation installations	Program tracking system
Builder participation	% of builders for which Energy Star homes are a significant % of annual homes completed	Program tracking, market assessment and best available data on builders in NJ
Market share monitoring	Number of ENERGY STAR homes built as % of total NJ new residential construction	Program tracking system and best available data on new construction Initial market assessment of construction practices
Awareness/Attitudes concerning ENERGY STAR homes	% of consumers aware of benefits (including perceived value and quality) of ENERGY STAR homes; % of builders, realtors, other market actors aware of benefits of ENERGY STAR homes	Baseline survey and subsequent evaluation
Awareness/Attitudes concerning home energy ratings and mortgages	% of customers, builders, bankers, etc. aware of home energy ratings and energy efficient mortgage option; availability and use of home energy ratings and energy efficient mortgage options	Baseline survey and subsequent evaluation
Customer and builder satisfaction	% of participating home owners satisfied with energy efficiency of new ENERGY STAR home	Market Assessment

G. RESIDENTIAL RETROFIT PROGRAM

Status

The evaluation needs of the Residential Retrofit Program reflect the fact that the program has an educational focus.

Evaluation Activities

In 2002, an outside contractor will conduct a tracking system review.

Process Evaluation. The effectiveness of the design and delivery of the program will be assessed within 9 to 12 months following implementation by all participating utilities. The process evaluation will include a Tracking System review. The contractor will evaluate the tracking system to review what is being tracked, how the data are coordinated statewide, and whether the tracking system includes all the data fields needed to meet the utilities' needs for evaluation.

Key questions for the process evaluation will include:

- Are participants satisfied with measures, interactions with vendor and/or utility staff, and other program materials?
- Have participants used or acted on information about opportunities for energy efficiency?

Performance Indicators

Residential Retrofit	**Performance Indicator**	**Data Source**
Participation	Number of customers participating in all aspects of residential retrofit program services (mail in, telephone center, CD software, internet). Tracking for both contacts and completed audits	Program Tracking
Recommendation Follow-ups	Number of referrals to other efficiency programs.	Program Tracking

H. RESIDENTIAL ENERGY STAR LIGHTING PROGRAM

Status

The evaluation needs of the Residential ENERGY STAR Lighting Program are similar to the other residential programs that promote products and are designed to transform markets. This program's primary focus is on building trade ally participation through market support, sales training, and limited incentives. A baseline study assessing the ENERGY STAR lighting market in New Jersey was completed in 1999.

Evaluation Activities

In 2002, an outside contractor will conduct the following evaluation activities:

Process Evaluation. Since this is a new program, an initial process evaluation will be performed to review the program design and delivery in order to identify potential strategies for improvement. It is necessary to wait 9 – 12 months after implementation so that sufficient experience with the program is available for evaluation. The process evaluation will include a tracking system review. The contractor will evaluate the tracking system to review what is being tracked, how the data are coordinated statewide, and whether the tracking system includes all the data fields needed to meet the utilities' needs for evaluation.

Key questions for the process evaluation will include:

- Are the joint-utility delivery strategies effective?
- Are the joint-program consumer marketing campaigns effective?
- Are sales training and other market support, including labeling, effective?
- What are the existing barriers to participation and how could they be reduced?
- Is statewide sales data readily available on a timely basis?

Initial Market Assessment. A market assessment will monitor the changes in the market for ENERGY STAR lighting and update estimates used as program performance indicators. It is intended to be a brief, focused status report based on data that are readily available.

In 2003, a determination will be made as to whether it is necessary to conduct a process evaluation, based on a review of the results of the 2002 process evaluation and on whether the program design has changed significantly since the beginning of the program.

Similarly, the program administrators will review the results of the market share monitoring and determine whether it is necessary to conduct an impact evaluation to update inputs to the energy savings protocols.

Recommended for 2004:

Market Assessment. A market assessment is needed to update the baseline study and estimates used as performance indicators. It is intended to be more extensive than the previous market study. It will assess the market overall, the influence of utility programs and other forces on the market since program implementation, existing barriers, and expected market trends. In addition, it will recommend future directions for the program, such as changes to marketing strategy.

Performance Indicators[7]

Residential ENERGY STAR Lighting	**Performance Indicator**	**Data Source**
Retailer Participation	Number of trade allies promoting or co-sponsoring promotions of ENERGY STAR lighting.	Program Tracking
Trade ally Training	Number of allies and percent of allies trained	Program Tracking
Product Availability	Inventory and shelf space of qualified products available in retailer stores and compared to non-qualified products.	Program Tracking
Market share monitoring	Sales of ENERGY STAR lighting as % of total NJ sales of these products (includes separate estimate for new construction/retrofit market).	Program tracking
Product pricing	Change, over time, of product prices	Program Tracking
Public Awareness and Consumer Knowledge	% awareness of benefits of ENERGY STAR lighting.	Evaluation

[7] Each indicator will be assessed by product category (e.g. lamps, fixtures, torchieres)

I. RESIDENTIAL ENERGY STAR APPLIANCE PROGRAM

Status

The evaluation needs of the Residential ENERGY STAR Appliance Program are similar to the other residential programs that are designed to transform markets. However, the primary focus for this program is outreach to major trade allies – to manufacturers, distributors, retailers, and contractors. One important need in this program is to periodically measure performance indicators using surveys. Since marketing of all ENERGY STAR products may be integrated, opportunities to combine evaluations of the ENERGY STAR product programs should be explored.

A baseline study assessing the ENERGY STAR window and appliance markets in New Jersey was completed in 2001.

Evaluation Activities

Beginning in 2002, following program implementation, an outside contractor will conduct the followings:

Process Evaluation. Within 9 – 12 months after implementation of the program, the contractor will conduct a process evaluation. This is needed to identify potential strategies for improvement or modification in the program design and delivery. It is necessary to wait 9 – 12 months after implementation so that sufficient experience with the program is available for evaluation. The process evaluation will include a tracking system review. The contractor will evaluate the tracking system to review what is being tracked, how the data are coordinated statewide, and whether the tracking system includes all the data fields needed to meet the utilities' needs for evaluation.

Key questions for the process evaluation will include:

- Are the joint-utility delivery strategies effective?
- Are the joint-program consumer marketing campaigns effective?
- Are sales training and other market support effective?
- Is statewide sales data readily available on a timely basis?
- What are the existing barriers to participation and how could they be reduced?

Recommended for 2003:

Market Assessment. A market assessment will monitor the changes in the market for ENERGY STAR appliances and update estimates used as program performance indicators. It is intended to be a brief, focused status report based on data that are readily available.

In 2003, a determination will be made as to whether it is necessary to conduct a process evaluation, based on a review of the results of the 2002 process evaluation and on whether the program design has changed significantly since the beginning of the program.

Similarly, the program administrators will review the results of the market share monitoring and determine whether it is necessary to conduct an impact evaluation to update inputs to the energy savings protocols.

Recommended for 2004:

Market Assessment. A market assessment is needed to update the baseline study and estimates used as performance indicators. It is intended to be more extensive than the previous market study. It will assess the market overall, the influence of utility programs and other forces on the market since program implementation, existing barriers, and expected market trends. In addition, it will recommend future directions for the program, such as changes to marketing strategy.

Performance Indicators[8]

Residential ENERGY STAR Appliances	**Performance Indicator**	**Data Source**
Retailer Participation	Number of trade allies promoting or co-sponsoring promotions of ENERGY STAR appliances	Program Tracking
Sales Training	Number of sales associates trained in ENERGY STAR appliance products.	Program Tracking
Product Availability	Number of qualified products available and on display	Program Tracking
Market share monitoring	Sales of ENERGY STAR appliances as % of total NJ sales of these products if possible	Program Tracking
Public Awareness and Consumer Knowledge	% of awareness of benefits of ENERGY STAR appliances.	Evaluation

[8] Performance indicators will be estimated by appliance type (e.g. refrigerators, dishwashers, etc.)

IV. COMMERCIAL INDUSTRIAL AND CLEAN-SITED GENERATION PROGRAMS

A. COMMERCIAL & INDUSTRIAL AND CLEAN-SITED GENERATION PROGRAM SUMMARY

Commercial and industrial programs promote energy efficiency within a variety of customer segments. The overarching objectives are to increase energy savings by customers in New Jersey by transforming design, construction and operations practices as well as transforming the market for energy efficient products.

The Customer Sited Clean Generation program, on the other hand, has the objective of achieving environmental and generation and transmission benefits by encouraging the development of alternative generation technologies within NJ.

Table IV.I summarizes the evaluation plans for these programs in the 2001-2004 period. The purpose of this table is to highlight elements that are common to all or many programs, and elements that are unique. For example, all programs require process evaluations within a year after program implementation. In addition, the milestone dates by which evaluation contractors must be hired are common to all programs.

Table IV.1: Overview of Proposed Commercial and Industrial and Other Program Evaluation, 2001 – 2004[9]

EVALUATION TYPE→	Process Evaluation[10]		Market Share Monitoring	Impact Evaluation	Market Assessment	
INDICATORS → PROGRAMS	Tracking System	Customers, Allies and Implementers [11]		Program Specific[12]	Customers & Trade Allies[13]	Product Availability and/or Incremental Cost
Commercial Industrial Construction	Commission by Dec 31, 2001	Commission by Dec 31, 2001	X	Market Share	X:	X
Building Operation & Maintenance	Commission by Dec 31, 2001	Commission by Dec 31, 2001	X	Evaluation of Pilot Projects	X	X
Compressed Air System Optimization	Commission by Dec 31, 2001	NA		TBD	X	X
Customer Sited Clean Generation	Commission by Dec 31, 2001	Commission by Dec 31, 2001		Includes impact of systems installed on generation and distribution system.	NA	Includes baseline studies of relevant market segments

[9] X in the table denotes future evaluation activities to be undertaken where feasible and when appropriate.

[10] The commissioning dates listed represent planned targets to meet evaluation milestones in the 2001 Compliance filing.

[11] Customers, Allies, Implementers & Trade Ally: awareness, perception & satisfaction with program outreach and delivery

[12] Evaluation projects are required to update impacts of various kinds. All programs will have protocol-based impact calculations to report energy savings.

[13] Customers & Trade Allies: awareness, training, values, behavior with energy efficient measures & practices

B. COMMERCIAL & INDUSTRIAL ENERGY EFFICIENT CONSTRUCTION PROGRAM

Status

The evaluation needs of the C&I Energy Efficient Program are diverse, reflecting the umbrella character of the program and many utilities' previous history with commercial energy efficiency programs.

The program has two types of services: core offerings and specialized paths. Core program offerings include incentives and technical assistance for many types of energy efficiency measures, as well as designs and commissioning. Complex technologies, such as lighting redesigns, HVAC systems, and synergistic combinations of measures, are included in core programs.

Specialized program paths include initiatives intended to transform particular markets, primarily through training and technical support to key market players in conjunction with the core offerings.

While the program is offered statewide, some utilities already have significant experience and ongoing tracking and monitoring activities because they have provided similar core services in previous energy efficiency efforts. Some utilities have been involved in ongoing regional market transformation initiatives. This experience will be utilized as appropriate.

Energy savings relating to measures installed as well as custom projects may be used in updating lost revenues and in cost-benefit analysis. Independent estimation of savings for some newly introduced efficiency measures or selected custom projects recommended by the Commercial program technical committee are included among the evaluation needs of this program.

Market impacts include reductions in barriers to adoption of efficient measures and practices. They result from the combination of core offerings and specialized paths. Evaluations will include measurement of performance indicators as well as periodic market assessments.

Evaluation Activities

In 2002, an outside contractor will conduct the following evaluation activities:

Process Evaluation. Within 9 – 12 months after implementation of the joint utility marketing and training aspects of the program, the contractor will conduct a process evaluation. It is necessary to wait 9 – 12 months after implementation so that the utilities develop sufficient experience with the joint program delivery and with core and specialized program paths. The process evaluation will include a Tracking System review. The contractor will evaluate the tracking system to review what is being tracked, how the data are coordinated statewide, and whether the tracking system includes all the data fields needed to meet the utilities' needs for evaluation.

Key field and utility staff will be interviewed in confidence to gain insights on program strengths and weaknesses and suggestions for program improvements.

A survey of a sample of participants and non-participants will be conducted over the phone. The purpose of this survey is to determine whether the coordinated marketing strategy is effectively reaching all areas of the state, to determine customer satisfaction, and to identify any barriers to participation that are not being addressed by the current program design. In addition, the evaluation will assess the effectiveness of the schools initiative. The process evaluation will also include an assessment of the effectiveness of the commissioning process.

Market Share Monitoring. The evaluation contractor will explore the feasibility of conducting periodic market share monitoring. If feasible, market share monitoring will be conducted where appropriate.

Energy Savings Evaluation Activities. For some elements of the program, such as some custom projects and new commercial and industrial efficiency measures, independent evaluation can help reduce the uncertainty associated with existing energy savings estimates. The program's technical committee will identify which protocols would benefit from independent evaluation and recommend a schedule for conducting an evaluation based on when sufficient post-participation data are available. These activities are also proposed for future years, for any new or custom measures identified by the technical committee.

Recommended for 2003:

If the process evaluation in 2002 or other program actions resulted in significant changes to the program design or delivery, a follow-up process evaluation is recommended to assess the effects of the changes, and it should be included in plans for 2003 evaluations. Otherwise, no further process evaluation is planned.

Market Assessments. Initial market assessments, with a somewhat limited scope, including estimation of performance indicators for market transformation programs, and a review of readily available market data, will be conducted for all relevant markets.

Baseline updates will be conducted for programs where the baseline is at least one year old and significant market transformation activity has occurred.

Recommended for 2004:

Market Assessments. Baseline updates will be conducted for programs where the baseline is at least one year old and significant market transformation activity has occurred.

Performance Indicators[14]

Commercial Construction Program	Performance Indicator	Data Source
Energy and Demand Impacts	Program Savings	Protocols
Program Activity - separate estimates for new construction and retrofit	Number of projects. Projects as a % of new construction and renovation activity statewide.	Program tracking for number of projects. Market assessment for % of statewide activity (using best available data).
Program Activity – separate estimates for new construction and retrofit	Number and percent of repeat design professionals[15] in Comprehensive Design Assistance.	Program tracking
Distribution of Program Activity – separate estimates for new construction and retrofit	Number of prescriptive, custom, and CDA projects. Percent of energy savings from prescriptive, custom, and CDA projects, respectively.	Program tracking
Program Activity: Motors, HVAC, and Design Lights	Number of individuals trained, by specialized path and type of training.	Program tracking
Program Activity	Number of individuals certified, where appropriate.	Program tracking
Trade Ally Awareness	Percent of design professionals aware of the program, qualifying measures, and design practices.	Market Assessment
Customer Awareness	Percent of customers aware of the program, qualifying measures, and design practices.	Market Assessment
Market share monitoring	Periodic estimates (method TBD) of sales of energy efficient technologies as a percent of total NJ sales.	Market Share Monitoring
Market changes in energy efficient lighting design	Decrease in watts per square foot, for participants and non-participants, by building type.	Market Assessment

[14] The indicators will be developed for each appropriate market with a specialized path in Commercial Construction. For example, performance indicators will be measured for Motors, HVAC, and Lighting Design. Indicators for schools will be measured as subsets within the overall program indicators. Similarly, indicators for new construction and replacement markets will be measured as subsets within the overall program indicators. In addition, some performance indicators will assess the distribution of program activity within custom, prescriptive, and comprehensive design assistance categories.

[15] In this case, we define repeat customers to be those who make use the program for more than one site or facility.

C. COMMERCIAL & INDUSTRIAL BUILDING OPERATION & MANAGEMENT PROGRAM

Status

The Operation and Management (O&M) Program presently includes training and pilot projects.. Rolling out a formal program is a goal for 2 to 3 years in the future.

Baseline Studies. A baseline study was completed in 2000.

Evaluation Activities

In 2002, an outside contractor will conduct the following evaluation activities:

Process Evaluation. Within 9 – 12 months after implementation of the training courses, the contractor will conduct a process evaluation. The study will address the effectiveness of outreach for the training, effectiveness of the training, and whether the training courses are reaching the target audience. The study will also assess whether there are any modifications or improvements needed in implementing the pilot projects. The process evaluation will include a Tracking System review. The contractor will evaluate the tracking system to review what is being tracked, how the data are coordinated statewide, and whether the tracking system includes all the data fields needed to meet the utilities' needs for evaluation.

Pilot Impact Evaluation. For all pilot projects launched in 2001, the contractor will begin an impact evaluation. This will include interviews with key building staff as well as building monitoring or other surveys and comparison of pre- and post-participation building performance.

Recommended for 2003:

If the process evaluation in 2002 or other actions resulted in significant changes to the program design or delivery, a follow-up process evaluation will be conducted to assess the effects of the changes. Otherwise, no further process evaluation is planned.

Pilot Impact Evaluation. An outside contractor will continue to monitor pilot projects implemented in 2001. In addition, pilot projects from 2002 will be studied.

Market Assessment. The purpose of this study will be to update performance indicators and to conduct a follow-up survey of a sample of certified and trained individuals to assess the connection between training and implementation of O&M measures in building types. In addition, it will assess the market overall, the influence of utility programs and other forces on the market since program implementation, including existing barriers and expected market trends. It will recommend future directions for the program.

Recommended for 2004:

Pilot Impact Evaluation. An outside contractor will continue to monitor pilot projects implemented in 2003 to obtain a full year of post-participation data.

The program administrators will determine whether it is necessary to conduct an update of the baseline study, based on a review of the results of the 2003 market assessment and on whether the program design has changed significantly since the beginning of the program.

Performance Indicators

O&M Program	Performance Indicator	Data Source
Program Activity	Number of Pilot projects initiated.	Program tracking
Awareness	Number of individuals trained (by building type).	Program tracking
Participation	Number of individuals certified.	Program tracking
Program Activity	Number of training courses offered.	Program tracking
Customer Attitudes	Number of individuals who received training that have implemented O&M changes.	Market Assessment
Energy Impacts (from Pilot projects)	Average savings per building	Pilot Impact Evaluation
Other Impacts (from Pilot projects)	$/kWh or therm saved	Pilot Impact Evaluation

D. COMPRESSED AIR SYSTEM OPTIMIZATION PROGRAM

Status

The evaluation needs of the Compressed Air System Optimization Program are linked to other ongoing activities. The program is currently offered by GPU and will be offered by PSE&G. The program consists of a combination of co-sponsored vendor training and customer training through the nationally coordinated Compressed Air Challenge. In addition, it sponsors compressed air optimization studies for interested customers. Customers may participate in this program directly or as part of the custom path in the Commercial Construction program.

Evaluation Activities

In 2001 GPU will complete an evaluation of compressed air program potential in its service territory. The results of this evaluation will provide the basis for GPU revising the market transformation plan

In 2002, within 9 – 12 months after implementation, an outside contractor will conduct the following for any continuing programs:

Process Evaluation. The study will address the effectiveness of joint utility aspects of delivering the program, including outreach for training, and whether the training courses are reaching the target audience. The study will also assess whether there are any modifications or improvements needed in implementing the case studies.

Recommended for 2003:

If the process evaluation in 2002 or other actions resulted in significant changes to the program design or delivery, a process evaluation will be conducted to assess the effects of the changes. Otherwise, no further process evaluation is planned.

Recommended for 2004:

Market Assessment. The purpose of this study will be to update performance indicators and to conduct a follow-up survey of a sample of certified and trained individuals to assess the connection between training and implementation of Compressed Air systems. In addition, it will assess the market overall, the influence of utility programs and other forces on the market since program implementation, including existing barriers and expected market trends. It will recommend future directions for the program.

Performance Indicators

Compressed Air Program	Performance Indicator	Data Source
Program Activity	Number of individuals trained.	Program tracking
Program Activity	Number of training courses offered.	Program tracking
Customer Attitudes and Awareness	Number of optimization studies completed.	Program tracking
Vendor Attitudes	% of vendors who understand the benefits of compressed air system optimization.	Market Assessment
Vendor Awareness	% of vendors aware of the compressed air system program	Market assessment
Customer Awareness	% of recommendations in optimization studies that are implemented by customers.	Market Assessment

E. CUSTOMER-SITED CLEAN ENERGY GENERATION PROGRAM

Status

The evaluation needs of the Customer-Sited Clean Generation (CSCG) Program reflect the facts that the program addresses new markets, technologies and paradigms for electric power generation. Key elements of the program include: 1) direct incentives, 2) consumer education and marketing, 3) streamlining of interconnection requirements, 4) infrastructure development (e.g. training and certification for system installers), and 5) support for the development (as needed) of consumer-friendly financing for CSCG technologies.

The utilities will collaborate and hire one or more contractors to develop and implement evaluations to assess the program's impacts in terms of both the performance and direct energy savings attributable to clean energy systems installed as well as the market transformation impacts.

Due to the potential for rapid development and/or unexpected changes in the technologies and markets targeted by this program, regular, but flexible process, market and impact evaluations are needed. As the program and market develop, there may be a need to phase evaluations by technology rather than evaluating all technologies concurrently.

A baseline study on customer attitudes and perceptions in the residential new construction market was completed in 2001. This study includes collection of baseline information from other key market actors including builders, manufacturers, installers, lenders, building inspectors and appraisers.

New program tracking will be implemented along with the program itself.

Evaluation Activities

The evaluation activities recommended for this program are presented as a guide, designed to provide information to help optimize program delivery and performance. Regardless of how the program is administered, these activities would provide key checkpoints in the future.

In 2002, after program implementation, an outside contractor will conduct the following activities:

Process Evaluation. Since this is a new program, an initial process evaluation will be performed to review the technical and non-technical barriers to participation in this program and assess whether the initial program design is effective in removing or reducing the barriers. It will also assess the effectiveness the utilities' facilitation of training and certification activities. In addition, it will assess effectiveness of recruitment and implementation of initial projects and it will include system performance monitoring and process evaluation for interconnection and metering. As an early phase of the process evaluation, the contractor will evaluate the utility tracking systems that are designed and help develop a tracking system as needed soon after the contract has been awarded.

Impact Evaluation: An evaluation process will be established to support ongoing assessment of savings impacts using the protocols for the various eligible renewable technologies. This study will use monitoring results available from the initial projects in conjunction with selective monitoring and engineering analyses. Key questions to be answered include:

- What are the energy, capacity, and emissions impacts from individual systems?
- What is the impact on the distribution system?

Recommended Future Evaluations:

Baseline Studies of other relevant market segments, for example commercial/industrial and residential retrofit, are recommended to supplement the baseline information available for the residential new construction market.

Within two years of implementation, it is recommended that program administrators and managers assess whether it is necessary to conduct a follow-up process evaluation, based on a review of the results of the original process evaluation and whether the program design has changed significantly since the beginning of the program. Similarly, the managers should decide whether it is appropriate to conduct a market assessment of customer-sited clean generation technologies. The decision will be based on participation levels in the training and on other program indicators of growth in participation and the market.

Additional impact evaluation and a market assessment are recommended three to four years following program start-up. These should include retrospective analysis of projects installed during the first year as well as assessment of systems added in 2003. In addition, at this time it may be appropriate to estimate the impacts of clean-sited generation on the distribution system as a whole.

The recommended Market Assessment will monitor changes in the market for customer-sited clean technologies, update the baseline study or studies, and update estimates used as program performance indicators. It will assess the market overall, the influence of utility programs and other forces on the market since program implementation, existing barriers, and expected market trends. In addition, it will recommend future directions for the program.

Performance Indicators

Clean-Sited Generation	Performance Indicator	Data Source
Number of Installing Firms	The number of firms installing systems that qualify for incentives	Program Tracking
Program Participation, Energy and Capacity Impacts	Number, type and capacity of program installations (systems installed and /or demonstration projects).	Program Tracking; Impact assessment from protocols
Public Awareness and Consumer Knowledge	Baseline Study	Market Assessment (Consumer baseline surveys about awareness and attitudes on CSCG technologies)
Price (a long run indicator)	Average first cost for system, by type of system	Program Tracking