Catherine L. Nesser
Assistant General Counsel

June 18, 2010

VIA ELECTRONIC MAIL

Honorable Jaclyn A. Brilling, Secretary
New York State Public Service Commission
Three Empire State Plaza
Albany, New York 12223-1350

Re: Case 08-E-1133 – Petition of Niagara Mohawk Power Corporation for Approval of an Energy Efficiency Portfolio (EEPS) Utility-Administered Electric Energy Efficiency Program

Order on Rehearing Granting Petition for Rehearing

Revised Implementation Plan

Dear Secretary Brilling:

Enclosed please find for filing the "Energy*Wise* Program – Revised Implementation Plan" by Niagara Mohawk Power Corporation d/b/a National Grid in compliance with the Commission's April 19, 2010 Order in the above proceeding which requires that a revised implementation plan be filed within 60 days of order issuance incorporating modifications discussed within the order.

Thank you for your attention to this matter.

Respectfully submitted,

/s/ Catherine L. Nesser
Catherine L. Nesser

Enc.
cc: Floyd Barwig, DPS Staff, w/enclosure
Michael Townsley, DPS Staff, w/enclosure
Robert Visalli, DPS Staff, w/enclosure
Edward White, w/enclosure (via electronic mail)
Janet Gail Besser, w/enclosure (via electronic mail)
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Niagara Mohawk Power Corporation d/b/a National Grid

Case 08-E-1133

Case 09-G-0363

Energy*Wise* Program
Revised Implementation Plan

June 18, 2010

Niagara Mohawk Power Corporation d/b/a National Grid

Case 08-E-1133

Case 09-G-0363

Energy*Wise* Program
Revised Implementation Plan
June 18, 2010

I. Introduction

On July 27, 2009, the State of New York Public Service Commission ("Commission") issued an order approving Energy Efficiency Portfolio Standard ("EEPS") multifamily energy efficiency programs with modifications (the "Order").[1] The Order required Niagara Mohawk Power Corporation d/b/a National Grid ("National Grid" or the "Company") to submit a compliance filing to the Commission by September 25, 2009 per Staff Guidelines for Program Administrators entitled "Energy Efficiency Program Implementation/Operating Plans" and "Budget Categories for Energy Efficiency Programs" ("Staff Guidelines") as attached to the August 11, 2009 letter[2] to National Grid from Floyd Barwig, Director of the Office of Energy Efficiency and the Environment.

On April 19, 2010, the Commission granted the relief sought by National Grid in the Company's August 26, 2009 petition for reconsideration of the Commission's Order (the "April 2010 Order").[3] In its petition National Grid requested that the Commission permit

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[1] Case 08-E-1133, *et al.*, *Petition of Niagara Mohawk Power Corporation for Approval of an Energy Efficiency Portfolio Standard (EEPS) Utility-Administered Electric Energy Efficiency Program*, *et al.*, Order Approving Multifamily Energy Efficiency Programs with Modifications (issued and effective July 27, 2009).

[2] The August 11, 2009 transmittal letter was subsequently amended and re-issued on August 18, 2009 to correct the filing date for the implementation plans.

[3] Case 08-E-1133, *et al.*, *Petition of Niagara Mohawk Power Corporation for Approval of an Energy Efficiency Portfolio Standard (EEPS) Utility-Administered Electric Energy Efficiency Program*, *et al.*, Order on Rehearing Granting Petition for Rehearing (issued and effective April 19, 2010).

the inclusion of compact fluorescent lamp ("CFL") fixtures in its multifamily energy efficiency program. Upon reconsideration, the Commission allowed "the inclusion of cost-effective light fixture replacements that are designed to accommodate both CFL and LED bulbs in National Grid's Energy*Wise* program."[3] The April 2010 Order also required the Company to "submit a revised implementation plan that incorporated the modifications."[4]

The Company's revised implementation plan for the Energy*Wise* Program addresses efforts planned for the remainder of 2010 through 2011. The 2009 budget and savings goals are included herein to provide a comprehensive program view. The only material change to the implementation plan is in Section XVI, Savings Assumptions, which includes the calculation of savings that stem from CFL fixtures. The addition of this measure will not change the electric component of the Energy*Wise* Program's budget or savings goals.

II. Energy*Wise* Program Description

National Grid's Energy*Wise* Program targets multifamily buildings with five to fifty dwelling units. The program is being delivered by an implementation contractor who provides participants with a complementary comprehensive energy use assessment and with financial incentives for actions that will improve the electric and gas energy efficiency in multifamily buildings. The Energy*Wise* Program's eligible customers include National Grid multifamily customers of record that are building owners and property managers on commercial rates, and individual dwelling unit customers on residential rates.

The Energy*Wise* Program provides incentives for installation of building envelope measures such as insulation, sealing, attic ventilation, ductwork and air infiltration testing, lighting, and refrigerator replacement. In addition, the Energy*Wise* Program may identify additional measures for which participants may be eligible for incentives under other National Grid energy efficiency programs.

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[3] *Id*. at 4.
[4] *Id*. at 5.

The Energy*Wise* Program, in combination with other National Grid energy efficiency programs, helps to overcome the barriers that often exist between landlord/owners who are not responsible for paying utility bills and tenants who are responsible for paying those bills but who do not own the buildings in which they reside.

III. Budgets, Energy Savings, and Customer Participation

The National Grid Energy*Wise* Program is available to National Grid electric and gas customers of record in buildings with between five and fifty dwelling units. Program budgets and goals, below, are aligned with those set forth in the Order.[5]

While the program is available to all National Grid customers of record, whether they are electric or gas customers, owning, operating or residing in five to fifty dwelling unit multifamily buildings, the Company recognizes that some of those customers may be dual fuel (electric and gas) National Grid customers. Program delivery and financial tracking will assure that funds collected from electric customers will be used for electric savings investments, and funds collected from gas customers will be used for gas savings investments.

A. Electric and Gas Program Budgets And Savings Goals[6]

Energy*Wise* Program Annual Electric Budget and Savings Goals 2009 – 2011

[5] *See* Order, Appendix 1, at 1.
[6] Budget totals reflected in the tables of this section reflect the inclusion of the allowed shareholder incentive incremental to the approved budgets.

Annual Budget and Savings Goals

Program	2009 Annual Utility Cost	2009 Annualized MWh Savings	2010 Annual Utility Cost	2010 Annualized MWh Savings	2011 Annual Utility Cost	2011 Annualized MWh Savings
Energy*Wise* Electric Program	$ 266,150	317	$ 1,065,967	1,303	$ 1,065,967	1,303

Cumulative Budget and Savings Goals

Program	2009 Cumulative Utility Cost	2009 Cumulative MWh Savings	2010 Cumulative Utility Cost	2010 Cumulative MWh Savings	2011 Cumulative Utility Cost	2011 Cumulative MWh Savings
Energy*Wise* Electric Program	$ 266,150	317	$ 1,332,117	1,620	$ 2,398,084	2,923

Energy*Wise* Program Annual Gas Budget and Savings Goals 2009 – 2011

Annual Budget and Savings Goals

Program	2009 Annual Utility Cost	2009 Annualized Therms Savings	2010 Annual Utility Cost	2010 Annualized Therms Savings	2011 Annual Utility Cost	2011 Annualized Therms Savings
Energy*Wise* Gas Program	$ 293,070	77,180	$ 1,128,390	158,760	$ 1,128,390	158,760

Cumulative Budget and Savings Goals

Program	2009 Cumulative Utility Cost	2009 Cumulative Therms Savings	2010 Cumulative Utility Cost	2010 Cumulative Therms Savings	2011 Cumulative Utility Cost	2011 Cumulative Therms Savings
Energy*Wise* Gas Program	$ 293,070	77,180	$ 1,421,461	235,940	$ 2,549,851	394,700

B. Customer Participation

Projected Annual and Cumulative Energy*Wise* Program

Electric Customer Participation 2009 – 2011

Annual Customer Participation and Savings Goals

	2009		2010		2011	
Program	**Annual Customer Participation**	**Annualized MWh Savings**	**Annual Customer Participation**	**Annualized MWh Savings**	**Annual Customer Participation**	**Annualized MWh Savings**
Energy*Wise* Electric Program	350	317	2,800	1,303	2,800	1,303

Cumulative Customer Participation and Savings Goals

	2009		2010		2011	
Program	**Cumulative Customer Participation**	**Cumulative MWh Savings**	**Cumulative Customer Participation**	**Cumulative MWh Savings**	**Cumulative Customer Participation**	**Cumulative MWh Savings**
Energy*Wise* Electric Program	350	317	3,150	1,620	5,950	2,923

Projected Annual and Cumulative Energy*Wise* Program

Gas Customer Participation 2009 – 2011

Annual Customer Participation and Savings Goals

	2009		2010		2011	
Program	**Annual Customer Participation**	**Annualized Therms Savings**	**Annual Customer Participation**	**Annualized Therms Savings**	**Annual Customer Participation**	**Annualized Therms Savings**
Energy*Wise* Gas Program	525	77,180	1,800	158,760	1,800	158,760

Cumulative Customer Participation and Savings Goals

	2009		2010		2011	
Program	**Cumulative Customer Participation**	**Cumulative Therms Savings**	**Cumulative Customer Participation**	**Cumulative Therms Savings**	**Cumulative Customer Participation**	**Cumulative Therms Savings**
Energy*Wise* Gas Program	525	77,180	2,325	235,940	4,125	394,700

IV. Annual Budgets by Spending Categories

Annual program budgets are reported below in conformance with Staff Guidelines.

Energy*Wise* Program Electric Budget 2009 – 2011

Energy*Wise* Electric Program				
Cost Category	**2009**	**2010**	**2011**	**2009 - 2011**
General Administration	$32,474	$187,423	$187,423	$407,321
Program Planning	$8,119	$46,856	$46,856	$101,830
Program Marketing	$30,593	$224,279	$224,279	$479,151
Trade Ally Training	$10,000	$10,000	$10,000	$30,000
Incentives and Services	$38,181	$261,741	$261,741	$561,664
Direct Program Implementation	$121,779	$234,279	$234,279	$590,337
Program Evaluation	$12,692	$50,767	$50,767	$114,226
Total Utility Cost without Shareholder Incentive	$253,837	$1,015,346	$1,015,346	$2,284,529
Shareholder Incentive	$12,313	$50,621	$50,621	$113,555
Total Utility Cost with Shareholder Incentive	$266,150	$1,065,967	$1,065,967	$2,398,084
Participant Cost	$2,532	$525	$525	$3,582
Total Cost	$268,682	$1,066,492	$1,066,492	$2,401,665

Energy*Wise* Program Gas Budget 2009 – 2011

Energy*Wise* Gas Program

Cost Category	2009	2010	2011	2009 - 2011
General Administration	$35,314	$382,614	$382,614	$800,542
Program Planning	$8,828	$95,654	$95,654	$200,135
Program Marketing	$31,246	$232,028	$232,028	$495,302
Trade Ally Training	$2,000	$10,000	$10,000	$22,000
Incentives and Services	$137,293	$108,818	$108,818	$354,929
Direct Program Implementation	$42,276	$198,714	$198,714	$439,705
Program Evaluation	$13,524	$54,096	$54,096	$121,716
Total Utility Cost without Shareholder Incentive	$270,481	$1,081,924	$1,081,924	$2,434,329
Shareholder Incentive	$22,589	$46,466	$46,466	$115,522
Total Utility Cost with Shareholder Incentive	$293,070	$1,128,390	$1,128,390	$2,549,851
Participant Cost	$68,906	$196,721	$196,721	$462,348
Total Cost	$361,976	$1,325,111	$1,325,111	$3,012,199

Note: Budget shows activity in program year dollars, not present valued to 2009 dollars.

The budgeted shareholder incentive for gas is equal to $3.00 per projected annual MCF savings attributable to the program.[7] The budgeted shareholder incentive for electric is equal to $38.85 per projected annual megawatt (MWh) savings attributable to the program.[8]

If internal costs are specifically associated with an individual program, the costs are charged directly to that program. If internal costs are associated with several programs, the Company allocates those internal costs to the appropriate programs based on the direct spending relationship of that program to direct spending in all programs. The types of internal costs related to the energy efficiency programs are outlined below. All expenses are recovered through the System Benefits Charge ("SBC"):

[7] *See* Case 07-M-0548, *Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard*, Order Establishing Targets and Standards for Natural Gas Efficiency Programs (issued and effective May 19, 2009) at 30.
[8] *See* Case 07-M-0548, *Proceeding on Motion of the Commission Regarding and Energy Efficiency Portfolio Standard,* Order Concerning Financial Incentives (issued and effective August 22, 2008).

Expense	Direct/Allocated Expense	Accounting.
Staff Salaries: Management Staff Program Managers Accounting Staff Evaluation Staff Regulatory Staff Admin & Support Staff	Direct and/or Allocated	908000
Employee Expense	Direct and/or Allocated	908000
Benefits	Allocated	926000
Overhead: Supplies Computer hardware & software Telecommunications	Allocated	908000
Staff Training	Direct and/or Allocated	908000
Association Expenses & Memberships	Allocated	908000

V. Target Customer Market and Energy End Uses

The National Grid Energy*Wise* Program is being marketed to building owners, building managers and property management companies of multifamily buildings with five to fifty dwelling units that are National Grid electric and/or gas customers. The program is being delivered by an implementation contractor.

Targeted end-uses addressed in this program include heating, ventilation and air conditioning, water heating, lighting, and residential refrigeration. Energy savings will be achieved through building envelope improvements and upgrades, replacement and upgrades to lighting fixtures, refrigerator replacements, and referrals to other National Grid energy efficiency programs providing incentives for heating, water heating and central air conditioning units.

VI. Eligible Energy Efficiency Measures and Associated Customer Incentives

A. Eligible Measures and Referrals to Additional Programs

Eligible customers and/or property managers or associations will receive a comprehensive energy audit, energy education, and the installation of low-cost efficiency measures at no direct cost. Low-cost efficiency measures will include compact fluorescent bulbs, low flow showerheads, aerators, minimal domestic hot water pipe wrap, and domestic hot water tank wrap. Major measures that will be installed under the Energy*Wise* Program include: attic insulation, wall insulation, basement/crawl space insulation, rim joint insulation, duct insulation, heating system pipe insulation, attic ventilation (in conjunction with attic insulation), ductwork leakage testing, ductwork leakage sealing, air infiltration testing, air infiltration sealing, lighting fixture upgrades, and refrigerator upgrades. Other measures may be added to the program menu, upon demonstration of cost-effectiveness and subject to available funding.

In addition, participating customers will be eligible for participation in other applicable energy efficiency program offered by National Grid.

Energy*Wise* Program Eligible Measures

MEASURE	REBATE
Attic insulation	25% of measure cost
Wall insulation	25% of measure cost
Basement/crawl space insulation	25% of measure cost
Rim joist insulation	25% of measure cost
Duct insulation	25% of measure cost
Heating system pipe insulation	25% of measure cost
Attic ventilation (in conjunction with attic insulation)	25% of measure cost
Ductwork leakage testing	25% of measure cost
Ductwork leakage sealing	25% of measure cost
Air infiltration testing	25% of measure cost
Air infiltration sealing for gas heated property where National Grid is the gas utility	25% of measure cost
Refrigerators	25% of measure cost
Lighting fixtures	Participant will pay $20
Compact fluorescent bulbs	100% of measure cost
Low flow showerheads	100% of measure cost
Aerators	100% of measure cost
Minimal domestic hot water pipe wrap	100% of measure cost
Domestic hot water tank wrap	100% of measure cost

B. Incentives to Building Owners / Property Managers

The building owners/property manager participants will pay 75% of the cost of major measures installed under the Energy*Wise* Program (e.g., insulation) and $20 per new lighting fixture in common areas. The Energy*Wise* Program will pay $300 toward the cost of each new refrigerator for electric customers participating in the program.

C. Incentives to Residential Customers residing in Multifamily Dwellings

National Grid electric and gas residential customers residing in multifamily building units will apply for incentives for residential-sized equipment through National Grid's Residential High Efficiency Heating and Water Heating and Controls Program.[9]

D. Commercial Multifamily Natural Gas Customers

Facilities with central heating plants and domestic hot water systems that are interested in natural gas savings measures will be served through the Commercial High-Efficiency Heating and Commercial Energy Efficiency Programs.

VII. Customer Outreach and Education / Marketing

The Energy*Wise* Program is being promoted by National Grid's implementation contractor, in conjunction with program information made available through the Company's website and other marketing activities. A toll-free number is available for all customers to learn more about National Grid's energy efficiency programs.

A. Target Customer Market and Detailed Marketing Plan

Program participants include property owners and property managers of multifamily facilities with five to fifty dwelling units that are National Grid electric and/or gas customers of record, along with residents of such multifamily dwellings who are National Grid electric and/or gas customers of record on an individual living unit basis. Participants may be commercial or residential customers depending on how the facilities' meters are configured and billing is established.

Examples of potential participants include: property, real estate, and facility management firms of master- or individually- metered facilities for electricity or gas in five to fifty dwelling unit buildings such as high-rise, mid-rise, low rise and garden style structures,

[9] On April 6, 2010, National Grid's Residential Heating, Water Heating and Controls Program was suspended due to program funding having been exhausted. Resumption of such program will require the Commission to authorize additional spending.

transitional and assisted living facilities, dormitories, apartments, condominiums, townhouses, etc.

The implementation contractor responsible for installing and servicing measures works with architects, builders, engineers, remodeling contractors, technicians, retailers, equipment suppliers, and related channel intermediaries.

In addition, National Grid is using its corporate marketing resources to support the efforts of the implementation contractor. Corporate resources include:

- *The National Grid Website* – allow target audience customers to easily determine program eligibility using a zip-code lookup function and offer interactive content to learn more about program features, incentives and eligibility.
- *Direct mail* – periodic and segmented print mailings to the various target audiences.
- *Email blasts* – periodic and segmented emails to the various target audiences.
- *Collateral* – program forms, brochures, applications and related material as necessary in both print and electronic format.
- *Events and outreach* – selected participation, sponsorship and/or hosted events (in-person and/or via webinars) to educate key target audiences and stimulate participation.
- *Customer and trade e-newsletters* – periodic email newsletter to the various target audiences that includes articles communicating information about the program, benefits, case studies, etc.
- *Print advertisements* – selected print ad placements in identified publications, newspapers as associated with the various target audiences.

Efforts are directed to the various target audiences and utilize a cross-channel marketing approach where appropriate. A cross-channel marketing approach is the process of using a combination of marketing tactics in sequence to influence the target audience behavior.

Specific marketing tactics will be implemented and modified accordingly based on the measured effectiveness and results achieved. National Grid proposes to utilize a portion of the marketing dollars to conduct research on the various target audiences in order to perform more enhanced and segmented target marketing.

B. Budget

National Grid has budgeted a total of $673,220 dedicated to Program Marketing and Trade Ally Services for the Energy*Wise* Program through December 31, 2011. A significant portion of this budget is being managed by the implementation contractors, RISE Engineering Inc., partnering with ICF International, as customer outreach is a significant activity in participant recruitment.

Program Marketing and Trade ally Services	**2009**	**2010**	**2011**	**2009-2011**
Electric	$ 13,482	$ 71,218	$ 71,218	$ 155,918
Gas	$ 33,246	$ 242,028	$ 242,028	$ 517,302
Total	$ 46,728	$ 313,246	$ 313,246	$ 673,220

Press releases, one-page collateral materials, and National Grid's website have generated program interest from building owners and property managers. The remaining budget will be allocated to corporate energy efficiency marketing efforts, and targeted multifamily mailings.

C. Outreach, Education and Marketing Vehicles

O&E/ Marketing Vehicles to be Used	
Method	**Description**
Direct Mail & Bill Inserts	Direct campaigns to target audiences
Collateral & Print Ads	Program forms, brochures, applications in print & web format
Digital Presence	Website, Search and organic key work as placements, and periodic e-newsletters and e-blasts
Events/Outreach, Education/ Training, Sponsorships	Trade events, seminars, and consumer outreach

Budget allocations for corporate marketing efforts for above vehicles will be broken out with approximately 50% going towards direct mail and bill inserts and 25% going toward digital efforts. The remaining 25% will be used for collateral and outreach depending on need and market climate.

Timeline – Marketing Tactic Implementation

Marketing Tactics	**2009**	**2010**				**2011**			
	Q4	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Direct Mail & Bill Inserts	X	X	X	X		X	X	X	
Collateral & Print Ads	X	X	X		X	X	X		
Digital Presence	X	X	X	X	X	X	X	X	X
Events/Outreach/Training	X	X	X	X		X	X	X	

D. Integration with other Marketing Activities

The O&E marketing efforts will complement existing National Grid communications efforts to create a singular voice and seamless experience for customers. Whether it is a safety message, a promotion of a program or service or an energy efficiency campaign, the customer will receive a branded communication that is recognizable as coming from National Grid.

Corporate identity and brand guidelines are used to provide a foundation for a single company experience and tone consistent with our brand promise: National Grid will be the energy management partner dedicated to taking action that improves customers' lives and communities.

All communications will include the National Grid "The Power of Action" tagline and will be designed using the approved National Grid font and color palette. Copy and images will show action or the positive results of taking action and make it easy for customers to recognize National Grid as their energy partner.

The marketing schedule for the Energy*Wise* Program will coordinate with the general company communications schedules in order to communicate with customers at the

appropriate time, with the appropriate message and to avoid gaps in communications efforts. All marketing campaign tactics for energy efficiency programs will work in sequence with separately funded Brand and Natural Gas Conversion Marketing campaigns; however, such campaigns will be clearly differentiated to ensure clarity of understanding among National Grid's customer base. Communications will also leverage other energy efficiency program marketing efforts where possible to in order to emphasize a whole facility approach to customers and highlight the benefits of implementing energy efficiency measures on a larger scale.

E. Communication Overlap

Marketing materials and collateral clearly state the applicable region. Regional mailing lists are obtained from National Grid's Market Intelligence group and direct mail is customized per customer/target audience type and region. Print advertising appears in regional publications and details information that applies to each specific region. If more than one region is covered in a publication, copy directly states which programs are available in each region. Marketing materials invite customers to visit National Grid's energy efficiency website for specific program information. The information on the Company's website is separated by a zip code look-up so customers are only given details on the programs that they are eligible for.

VIII. Roles and Responsibilities

A. National Grid Program Administrator

National Grid is managing the Energy*Wise* Program implementation contractor, RISE Engineering Inc., who is partnering with ICF International, in delivering program services to customers.

Customers with inquiries related to the Energy*Wise* Program are directed to the Company's implementation contractor. Contact information for the implementation contractor is also made available to customers.

If inquiries and complaints are unresolved, the implementation contractor will contact:

Ms. Amy Barry
National Grid
Senior Analyst, New York Residential Energy Efficiency Programs
300 Erie Blvd. West
Syracuse, NY 13202
Tel: 315-460-1228

-or-

Ms. Lisa Tallet
National Grid
Manager, New York Residential Energy Efficiency Programs
300 Erie Blvd. West
Syracuse, NY 13202
Tel: 315-460-1103

These individuals or their designees will then be responsible for contacting the customer to ensure that all issues are resolved.

B. National Grid Program Management

National Grid has local management and program managers who oversee this program from its Syracuse, New York offices. These employees are responsible for the Company's energy efficiency programs including delivery, contractor oversight, coordination of marketing efforts, regulatory support, and coordination with NYSERDA and other New York utilities and their respective energy efficiency programs. National Grid closely tracks spending, achieved savings, and participation compared to budget, savings goals and participation goals in order to achieve desired program objectives at or below budgeted costs. Program managers oversee the planning, coordination, resource management, project execution, and project performance and progress of the programs. National Grid's program managers are responsible for working closely with implementation vendors to

ensure that all reasonable efforts are being undertaken to achieve desired program goals and to work through any issues that vendors encounter in the field.

National Grid also has program management functions that are performed for the New York program from its Waltham, Massachusetts offices. This includes supervision of the New York-based staff and regulatory support.

C. Program Evaluation Staff

Employees in the Energy Products Group at National Grid have no program implementation responsibilities. These employees, located in Waltham, Massachusetts; Brooklyn, New York; and Syracuse, New York are responsible for defining the scope of program evaluation study efforts, developing Requests for Proposals ("RFPs") to hire independent evaluation consultants to conduct studies, reviewing bidders' responses to RFPs, selecting vendors, managing the efforts of vendors under contract, and communicating results with program implementation team members and other key stakeholders. These employees provide copies of completed evaluation studies to program implementation personnel and often include program implementation personnel in the presentation of final evaluation study results. Employees in the Energy Products Group also routinely attend program implementation staff meetings to stay current on issues that affect National Grid's efficiency programs. Program evaluation staff report to the Director of Energy Products Policy & Evaluation, who reports to the Vice President of Energy Products. Program implementation staff report to the Director of Energy Products Program Operations – Residential, who reports to the Vice President of Energy Products.

D. Marketing and Training Staff

Energy efficiency marketing, training and communications staff is part of the National Grid corporate communications team. This team develops marketing communications plans, advertising, direct mail, collateral materials, bill inserts, and training plans for

internal and external audiences supporting workforce development initiatives, including cooperative advertising with trade allies. This group also maintains the Company's energy efficiency website and coordinates email and search engine marketing campaigns. Events and outreach efforts directed by this group include community, business, trade and industry events aimed at building awareness of energy efficiency programs and stimulating participation.

E. Program and Policy Staff

National Grid employees who are not part of the Company's Energy Products organization independently review energy efficiency charges in the general ledger accounts to verify that only appropriate charges have been directed to these energy efficiency implementation and evaluation accounts. Employees in this area are located in Waltham, Massachusetts and report to the Director of Energy Solutions Support who reports to the Vice President of Energy Solutions Delivery.

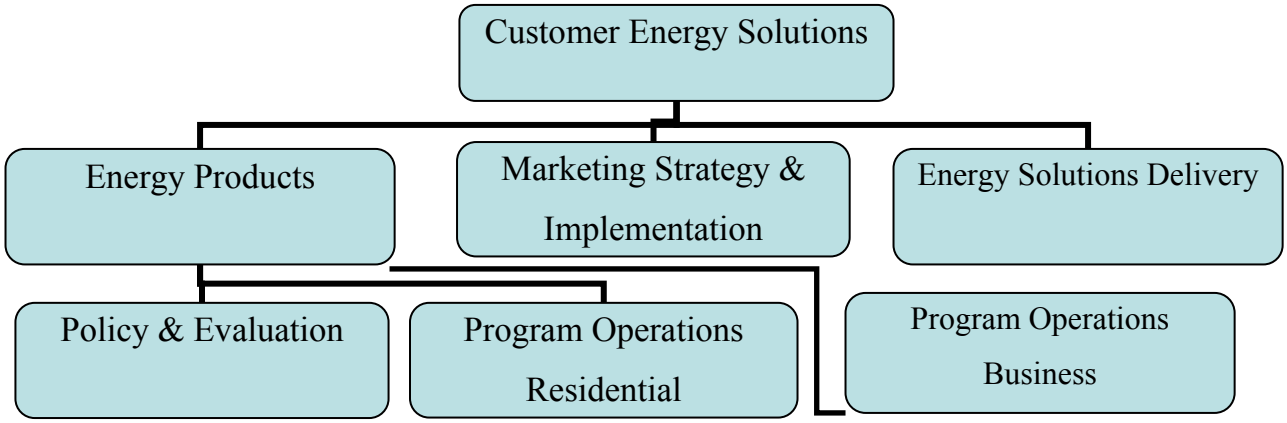
National Grid uses an activity-based accounting system that supports the tracking of both implementation-related expenses and evaluation-related expenses by program. The Company's general ledger system is used to track expenses by activity, project and expense type. When an employee with the appropriate authority approves an invoice for payment, they must supply the activity, project and expense type that the invoice should be charged to, in addition to authorizing payment of the invoice. Each of the energy efficiency programs has a separate project in the general ledger system. Evaluation and implementation have separate activity types in the general ledger system.

F. Vendor Program Implementation

National Grid hires vendors who have demonstrated experience and expertise to provide the services that are required in any given energy efficiency program.

Organizational Chart

The organizational chart below shows various entities involved with the energy efficiency programs at National Grid and their relationships to each other.



IX. Procedures for Customer Enrollment

The implementation contractors are responsible for customer enrollment and managing delivery of program services. Customers that contact National Grid with interest in the program are referred to the implementation contractors. The implementation contractors manage all aspects of customer participation in the program from initial enrollment through the energy use assessment and measure installation.

X. Training for Appropriate Trade Allies

National Grid hires vendors who have demonstrated experience and expertise to provide training and technical expertise for the applicable program. These vendors provide training to contractors and their employees working directly in the field, including quality assurance

inspectors, and typically provide detailed orientation and training plans on behalf of National Grid as part of their contracted services to the Company.

XI. Contractor Training and Program Orientation Plan

Contractor training and program orientation is the responsibility of the implementation contractors. Weekly training meetings have been conducted regarding the following: measure screening tools, data to be collected for savings calculations, and other implementation details.

XII. Quality Assurance Plan

National Grid's implementation contractors will randomly select a portion of completed projects for a follow-up inspection. The standard will be to verify that the installation contractor adhered to state and local laws in installing the equipment.

National Grid will inform the customer and installation contractor in writing of installation problems that are discovered. National Grid will contact the customer to ensure that installation issues are resolved. However, as the contract for the equipment installation work is between the customer and the contractor, it will ultimately be the customer's responsibility to pursue resolution through consumer protection laws and/or any other means available to the extent that the customer is not satisfied.

XIII. Coordination with other New York Energy Efficiency Programs and Program Administrators

The Energy*Wise* Program is an electric and gas energy efficiency program that is being delivered throughout the Niagara Mohawk service territory. The Energy*Wise* Program may overlap with programs offered by NYSERDA, as well as other utilities' programs where National Grid is not the provider of both electricity and natural gas. National Grid coordinates with NYSERDA and other utilities to avoid duplication and confusion

resulting from overlapping/neighboring programs; and ensure no double-counting of savings achieved; and to ensure no more than one incentive payment is provided for installed energy efficiency measures. National Grid's program manager communicates with NYSERDA periodically to ensure that both parties are aware of any issues or new marketing campaigns.

National Grid makes customers aware of various energy efficiency options available. When appropriate, National Grid will refer customers to NYSERDA or other utilities' programs. Such instances may include a customer's desire for a "whole building" approach, when a multifamily dwelling has more than fifty units, when National Grid is not the fuel provider for the end-uses the customer is interested in addressing, or the customer qualifies as low income.

XIV. Evaluation Plan

The Energy*Wise* Program will be evaluated using a combination of process, market assessment and impact evaluations as described below. Since the electric and gas portions of the program will be delivered together, most evaluation activities will be undertaken simultaneously.

A. Process Evaluation

In 2009 National Grid began a process evaluation of all electric and gas energy efficiency programs delivered in New York. PA Consulting was selected through a competitive bid process to carry out that evaluation. The RFP was designed so the resulting studies meet the Evaluation Plan Guidance for EEPS Program Administrators issued by Staff in 2008.

The early effort will focus on EEPS programs that have been approved in 2009 and that National Grid began to implement by September 2009. In 2010, the process evaluation effort will focus on newly approved programs and some interim programs. The Energy*Wise* Program process evaluation will commence once the Company's implementation plan has been approved and the program has been in operation for at least three to six months, probably in early to mid 2010.

The Energy*Wise* Program process evaluation will focus on identifying how the program is operating during the start-up phase with the objective of identifying improvements that can be made to the implementation process. The evaluation will continue into 2011 when the program will have more participants to study. The Company understands the value of getting early feedback so that any needed program modifications can be identified and implemented quickly, resulting in improved results and value to customers. To meet this objective, interim reports are requested from the contractors so that modifications to the implementation effort can be adopted quickly where it appears that a change is likely to lead to improved results in the program.

This first year process evaluation will document program processes, during start-up and the first six months of the program launch, and will gather, at a minimum, the following information:

- Level of customer satisfaction
- Vendor selection process
- Company staff and vendor training
- Effectiveness of the program delivery mechanism
- Effectiveness of program promotion
- Barriers to program participation including an assessment of why some customers choose to not participate in the program
- Review of measures offered through the program, i.e., are they acceptable, appealing, and valued by the customers
- Identification of lessons learned and specific actionable recommendations for program improvement
- A review of program tracking databases to ensure that the appropriate data that will likely be required to support future program evaluation efforts, including impact evaluations and New York's program reporting requirements, are being collected

To help facilitate the collection and analysis of the above, a telephone survey of participating and non-participating customers and vendors will be conducted.

Process evaluation efforts will continue in 2011 when more customers have participated in the program. The costs for these process evaluations for National Grid's Energy*Wise* Program are estimated in the table below:

	2010	2011	2010-2011
Electric	$ 8,900	$ 11,200	$ 20,100
Gas	$ 9,500	$ 11,900	$ 21,400
Total	$ 18,400	$ 23,100	$ 41,500

B. Market Evaluation

National Grid participates in the Evaluation Advisory Group (EAG) and the working groups that have been established in support of EAG efforts. The EAG Studies Working Group has been discussing the possibility of conducting a market characterization study to help determine key characteristics of the multifamily market in New York. This type of study lends itself to joint utility cooperation. The overall objective is to perform a baseline study of multifamily building stock, and the saturations of energy (electric and gas) consuming equipment and the penetrations of energy efficient characteristics, equipment and practices. This study is expected to assess multifamily (5+ units) facilities and their energy-using equipment/appliances with regard to the following types of information:

- Water heating equipment and fuel saturation
- Room and central air conditioning penetration
- Household appliances (refrigerators, dehumidifiers, washers, dryers, wine coolers)
- Plug loads (cable boxes, faxes, printers, computers, game systems, cell phone chargers, etc.)
- Heating equipment (furnace, boiler, air & ground water heat pumps, etc)
- Building shell characteristics (type of construction, vintage, size, windows, insulation, shell)
- Lighting
- Facility make-up including number of buildings and number, distribution and common characteristics of units (i.e., number and typical size of studio, one bedroom, two bedroom, etc.);
- Main heating fuel and delivery system;
- Tenant contribution to energy bills;
- Common or individual laundries;

- Common area attributes (i.e., tennis courts, health club, exercise facility, pool areas, clubhouses, etc.)
- Other attitudinal and behavioral information of interest, including conservation behavior and attitudes, purchasing behavior, awareness of energy efficiency technology, satisfaction with energy efficiency technology;
- The desire for additional educational information among facility managers, and if so what types of information, and
- Common area energy efficiency practices.

This data will be collected using a combination of telephone, on-site and vendor surveys. Details of the work plan will be developed by the EAG Studies Subcommittee. National Grid has allocated a total of $56,100 ($22,300 electric, $23,800 gas) for this study to be conducted in 2010.

C. Impact Evaluation

In 2011, when the program has enough participants with one year of post-installation billing data, National Grid plans to conduct a billing analysis which will provide evaluated results of the gross energy savings from the program. National Grid's affiliates have conducted numerous billing analyses of New England multifamily retrofit programs and the Company will use a similar approach in New York.[10] [11]

A billing analysis consists of an econometric analysis using billing data (both pre- and post-participation consumption information), program tracking data, and weather data. Billing data for all participants is included, providing maximum participant coverage at a

[10] Impact Evaluation of National Grid's 2003 Energy*Wise* Multifamily Program, August 2, 2004, prepared by Quantec and Summit Blue Consulting.

[11] Impact Evaluation of the 2005 Energy*Wise* Program, September 1, 2006, prepared by Summit Blue Consulting.

low cost. Results of this method have been used in the two studies cited above, offering a very cost-effective and robust method for the estimation of gross realization rates.

A realization rate is the ratio of evaluated kWh savings divided by the tracking system estimate of kWh savings for projects included in the billing analysis. The realization rate determined through the billing analysis is then applied to the initial estimate of savings in the Company's tracking system to arrive at evaluated gross energy savings for the population of program participants. While savings are tracked at the measure level as required in the EAG Technical Manual, the resulting realization rate will be applied in aggregate to the tracking estimate of savings from each measure.

Generally, a participant will be included in the billing analysis unless there is a defensible reason to exclude them. Defensible reasons include indications that the billing data of the account included in the analysis does not represent the facility or part of the facility where the measures were installed or the estimates of savings are greater then the pre-installation consumption. Review of billing data is critical to a successful analysis, but these reviews require individual attention, rather than blanket cut-offs. The approach is to flag potentially erroneous or misleading billing histories, review these with staff knowledgeable about program data collection and quality requirements, and only then determine if the observations are appropriate for the analysis.

National Grid will work jointly on this evaluation with the other New York energy efficiency program administrators if their final program designs are similar enough to National Grid's to use the same evaluation techniques. If possible, the program administrators will issue a joint RFP for consultant services so that each program administrator determines results in a consistent way. However, the intent is to develop separate results for each of the program administrators. This ensures a similar methodology and potentially lower costs to determine results. The estimated cost for National Grid's Energy*Wise* Program share of this effort is approximately $17,800 for the electric portion and $19,000 for the gas portion.

D. Miscellaneous Impact Evaluation

In 2011, National Grid tentatively plans to conduct some separate metering studies of measures that may not lend themselves to more straightforward billing analysis. In addition, the Company will try to study the peak load impacts of this program which cannot be determined through billing analysis. Details of these additional studies will be determined once one to two years of participation data has been collected. The estimated cost for National Grid's share of this effort is approximately $22,300 for the electric portion and $23,800 for the gas portion of the Energy*Wise* Program.

National Grid plans to conduct a survey in 2010 to assess free-ridership and spillover in the Energy*Wise* Program. The results of this analysis will be used to determine net savings from program efforts. The methodology used for that survey will be developed jointly in consultation with the EAG and Staff. The Company plans to design the survey sample such that free-ridership and spillover results will have a precision of +/- 10% at 90% confidence as specified by Staff's Evaluation Guidelines.

National Grid estimates the costs for this survey to be $25,000 if done jointly with other New York energy efficiency program administrators and possibly for more than one program at a time.

When evaluated net savings for this program become available, the Company plans to use those results to support planning efforts that focus on this market and technologies. This will include assessing program cost-effectiveness using these evaluated results in place of initial planning assumptions.

E. Steps to Identify and Mitigate Threats to Data Reliability

The Company will review the evaluation plan submitted by the selected evaluation contractors for consistency with the EAG guidelines, the requirement to maintain a 90%

confidence interval with +/- 10 % precision, and the overall need to identify and mitigate threats to reliability of the results. The evaluation contractors will be required to insure data reliability to the greatest practical extent, including methods for minimizing systematic and random error and techniques for reducing uncertainty introduced by necessary assumptions and adjustments to the data. The selected evaluation contractors will be asked to include a discussion about threats to data reliability in their reports.

F. Logic Model

As part of its 2010 and 2011 process evaluation, National Grid's evaluation consultant will be required to develop logic models for the Energy*Wise* Program.

G. Administrative Structure

Employees in Energy Products' Policy & Evaluation at National Grid have no program implementation responsibilities. These National Grid employees are responsible for defining the scope of program evaluation study efforts, developing RFPs to hire independent evaluation consultants to conduct studies, reviewing bidders' responses to RFPs, selecting vendors, managing the efforts of consultants under contract, and communicating results with program implementation team members and other key stakeholders through in-house presentations, summary reports and regulatory filings. These employees provide copies of completed evaluation studies to program implementation personnel and often include program implementation personnel in the presentation of final evaluation study results. Employees in Energy Products' Policy & Evaluation also routinely attend program implementation staff meetings to stay current on issues that are affecting the efficiency programs. Program evaluation staff report to the Director of Energy Products Policy & Evaluation. Program implementation staff report to the Director of Energy Products Program Operations - Residential.

H. Data Collection and Management Process.

Program data will be collected from customer application forms, site visits and surveys of participants and non-participants. National Grid's tracking system supports program evaluation through the collection of all relevant data pertaining to customer rebates and installed equipment. Customer name, account, premise level and other non-program

specific data is captured in the system. Measure-specific data as appropriate will also be captured. Examples of measure-specific data that will be collected can include:[12]

- Date of contract/agreement to install measure(s)
- Date of beginning of installation process
- Installation completion date
- Installation contractor
- Installation location
- Project or work order number
- Type of measure
- Annualized energy savings
- Measure life
- Total measure installed cost
- Incremental measure cost
- Incentive payment amount
- Project completion date
- Evaluation inspection/commissioning date
- Date of evaluation of measure or program
- Types of evaluation conducted
- Result of evaluation

I. Detailed Evaluation Budget

Consistent with the Order, National Grid has budgeted 5% of program implementation costs to fund evaluation efforts. The different between the program budgets discussed above and summarized below, and the total evaluation budget, is payroll for evaluation and tracking for this program.

[12] Please note that not of all the measure specific data listed here are going to be captured for this program.

	Internal	Consultant	Total (Approved)
Electric	$ 22,795	$ 91,431	$ 114,226
Gas	$ 24,289	$ 97,427	$ 121,716
Total	$ 47,083	$ 188,859	$ 235,942

Listed below are the evaluation consultant budgets for the Company's electric and gas Energy*Wise* Programs by study type for each program.

National Grid Energy*Wise* Program Evaluation Study Budget 2010-2011[13]

	Electric	**Gas**	**Total**
Process Phase I	**$8,900**	**$9,500**	**$18,400**
Process Phase II	**$11,200**	**$11,900**	**$23,100**
Impact Billing Analysis	**$17,800**	**$19,000**	**$36,800**
Misc. Metering Studies	**$22,300**	**$23,800**	**$46,100**
Net to Gross Study	**$8,900**	**$9,500**	**$18,400**
Joint Utility Baseline Studies	**$22,300**	**$23,800**	**$46,100**
Total	**$91,400**	**$97,500**	**$188,900**

The Company plans to make copies of completed evaluation studies available at: www.nationalgridus.com/EnergyEfficiencyReports.asp

[13] In compliance with the Order, the Company will track expenditures on evaluation-related market research for future scrutiny by the Commission.

XV. Benefit/Cost Ratios

The Order directed that: "Each type of measure to be installed must be cost effective on a stand-alone basis such that the type of measure has a total resource cost (TRC) value of at least one. Further, program administrators should determine that the project as a whole will be cost effective after inclusion of all program administrative and evaluation, measurement, and verification costs." National Grid will project benefits, costs, and the benefit/cost ratios for the projects included in Multifamily Program in 2009 – 2011 using the protocols specified in the "New York Standard Approach for Estimating Energy Savings from Energy Efficiency Measures in Multifamily Programs" dated July 9, 2009.

The Order directed the utilities to use the estimates of electric Long Run Avoided Costs ("LRACs") set forth in the Commission's January 16, 2009 order approving "fast track" utility-administered electric energy efficiency programs with modifications (the "January 16, 2009 Order")[14] to evaluate all energy efficiency proposals currently pending before the Commission. Accordingly, National Grid revised its projected benefit/cost analysis using those LRACs and accounting for ordered program changes.

Avoided electric energy and capacity values used for the analysis below are from Table 1 and 2 of the January 16, 2009 Order. Table 1 presents avoided electric energy values for the New York Independent System Operator ("NYISO") Zones in 2008 dollars. NYISO Zone A – I is used in the Company's analysis because it represents upstate New York. The avoided electric energy values include company-specific avoided transmission capacity values. Table 2 presents marginal capacity values for upstate New York and New York City in 2008 dollars. Upstate New York is used in the Company's analysis because it represents the Niagara Mohawk service territory.

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[14] Case 08-E-1014, *et al*., *Petition of Niagara Mohawk Power Corporation for Approval of an Energy Efficiency Portfolio Standard (EEPS) "Fast Track" Utility-Administered Electric Energy Efficiency Program*, *et al*., Order Approving "Fast Track" Utility-Administered Electric Energy Efficiency Programs with Modifications (issued and effective January 16, 2009).

Avoided distribution capacity values used in the analysis are from Table 2 of the January 16, 2009 Order. Table 2 presents marginal distribution capacity values for upstate New York and New York City in 2008 dollars. Upstate New York is used in the Company's analysis because it represents the Niagara Mohawk service territory.

Avoided natural gas values used for the analysis below are from Appendix 2, Table 1 of the Commission's April 9, 2009 Order. Table 1 presents avoided natural gas costs for upstate New York for both winter and summer in 2008 dollars. The avoided natural gas cost values include commodity, pipeline capacity and marginal local distribution values. This table was used in the Company's analysis because it represents the upstate New York service territory.

Avoided CO_2 emissions used for the analysis below are $15 per ton of CO_2, from the Commission's June 23, 2008 EEPS Order. The Staff-developed assumption that a MWh saved at any time avoids 0.5 tons of CO_2 emissions and a billion BTUs of gas (1,000 Dth) avoids 58.5 tons of CO_2 emissions were used to convert MWh and Dth savings to tons of CO_2 emissions.

To escalate the avoided costs into 2009 constant dollars, the Staff-developed inflation rate of 2.98% was applied.

Demand and energy loss factors are applied to the avoided costs to account for local distribution losses from the point of delivery to the distribution company's system to ultimate customer's facility. Distribution line losses of 7.2% from the January 16, 2009 Order are used in the Company's analysis.

The following table summarizes the expected benefits, costs, and the benefit/cost ratios for the Energy*Wise* Program in 2009-2011.

Summary of Benefits, Costs (2009 $s)
Total Resource Cost Test

Program	2009 TRC Benefit/ Cost	2009 Total NPV Benefits ($000)	2009 Total NPV Costs ($000)	2010 TRC Benefit/ Cost	2010 Total NPV Benefits ($000)	2010 Total NPV Costs ($000)	2011 TRC Benefit/ Cost	2011 Total NPV Benefits ($000)	2011 Total NPV Costs ($000)	2009 - 2011 TRC Benefit/ Cost	2009 - 2011 Total NPV Benefits ($000)	2009 - 2011 Total NPV Costs ($000)
Energy*Wise* Gas Program	2.09	$ 756	$ 362	1.18	$ 1,486	$ 1,256	1.28	$ 1,526	$ 1,191	1.34	$ 3,768	$ 2,809

Summary of Benefit , Costs (2009 $s)
Total Resource Cost Test with Carbon Adder

Program	2009 TRC Benefit/ Cost	2009 Total NPV Benefits ($000)	2009 Total NPV Costs ($000)	2010 TRC Benefit/ Cost	2010 Total NPV Benefits ($000)	2010 Total NPV Costs ($000)	2011 TRC Benefit/ Cost	2011 Total NPV Benefits ($000)	2011 Total NPV Costs ($000)	2009 - 2011 TRC Benefit/ Cost	2009 - 2011 Total NPV Benefits ($000)	2009 - 2011 Total NPV Costs ($000)
Energy*Wise* Gas Program	2.27	$ 822	$ 362	1.29	$ 1,618	$ 1,256	1.40	$ 1,661	$ 1,191	1.46	$ 4,101	$ 2,809

Summary of Benefits, Costs (2009 $s)
Total Resource Cost Test

Program	2009 TRC Benefit/ Cost	2009 Total NPV Benefits ($000)	2009 Total NPV Costs ($000)	2010 TRC Benefit/ Cost	2010 Total NPV Benefits ($000)	2010 Total NPV Costs ($000)	2011 TRC Benefit/ Cost	2011 Total NPV Benefits ($000)	2011 Total NPV Costs ($000)	2009 - 2011 TRC Benefit/ Cost	2009 - 2011 Total NPV Benefits ($000)	2009 - 2011 Total NPV Costs ($000)
Energy*Wise* Electric Program	1.11	$ 298	$ 269	1.06	$ 1,076	$ 1,011	1.35	$ 1,289	$ 958	1.19	$ 2,663	$ 2,238

Summary of Benefit , Costs (2009 $s)
Total Resource Cost Test with Carbon Adder

Program	2009 TRC Benefit/ Cost	2009 Total NPV Benefits ($000)	2009 Total NPV Costs ($000)	2010 TRC Benefit/ Cost	2010 Total NPV Benefits ($000)	2010 Total NPV Costs ($000)	2011 TRC Benefit/ Cost	2011 Total NPV Benefits ($000)	2011 Total NPV Costs ($000)	2009 - 2011 TRC Benefit/ Cost	2009 - 2011 Total NPV Benefits ($000)	2009 - 2011 Total NPV Costs ($000)
Energy*Wise* Electric Program	1.16	$ 313	$ 269	1.12	$ 1,136	$ 1,011	1.41	$ 1,349	$ 958	1.25	$ 2,798	$ 2,238

XVI. Savings Assumptions

The Order directed the utilities to estimate savings using the technical reference manual entitled "New York Standard Approach for Estimating Energy Savings from Energy Efficiency Measures in Multifamily Buildings" dated July 9, 2009 (the "technical manual"). The savings estimates incorporated in National Grid's benefit/cost analysis reflect the savings estimation approaches in the technical manual in its projection of expected benefits.

The following measures are addressed in the technical manual:

Measures in National Grid Energy*Wise* Program	**Included in Technical Manual**
CFL	Yes
Light Fixture	Yes
Refrigerator	Yes
Air Sealing	Yes
Low Flow Showerhead	Yes
Faucet Aerator	Yes
Boiler Reset Control (1 Stage)	Yes
Boiler Reset Control (Multistage)	Yes
Steam Trap	No
R-19 Roof Insulation	Yes
R-30 Roof Insulation	Yes
Wall Insulation	Yes
Floor Insulation	No
Pipe Insulation	Yes

For the above measures, the technical manual presents gross energy savings estimates and approaches for obtaining those estimates. In addition the technical manual presents a 0.90 factor that represents spillover net of free-ridership. The manual states that the gross savings estimates presented in the manual must be multiplied by 0.90 to arrive at an estimate of net energy savings for each measure and also presents measure lives for the above measures. To calculate life-cycle savings, the annual net first-year energy savings must be multiplied by the measure life.

A. Expected Benefits for the Energy*Wise* Program

A calculation of the net annual energy savings for the Energy*Wise* Program follows.

Energy*Wise* Electric Program

	Projected Measures				Annual kWh		
Measure	**2009**	**2010**	**2011**	**Net Annual kwh per unit**	**2009**	**2010**	**2011**
CFL	1,050	8,400	8,400	50	53,015	424,116	424,116
Refrig	10	10	10	450	4,500	4,500	4,500
Showerhead	210	682	682	959	201,285	653,505	653,505
Aerator	350	1,400	1,400	149	52,290	209,160	209,160
R-30 Roof Insulation	10	20	20	585	5,850	11,700	11,700
Total for Energy*Wise* Electric Program	**1,630**	**10,512**	**10,512**		**316,940**	**1,302,981**	**1,302,981**

Energy*Wise* Gas Program

	Projected Measures				Annual therms		
Measure	**2009**	**2010**	**2011**	**Net Annual therms per unit**	**2009**	**2010**	**2011**
Showerhead	525	1,800	1,800	55	28,823	98,820	98,820
Aerator	525	1,800	1,800	8	4,460	15,293	15,293
Boiler Reset (1 Stage)	68	24	24	235	16,062	5,599	5,599
Steam Traps	68	24	24	228	15,579	5,430	5,430
R-19 Roof Insulation	53	144	144	11	591	1,620	1,620
R-30 Roof Insulation	53	144	144	25	1,323	3,629	3,629
Wall Insulation	53	144	144	11	591	1,620	1,620
Floor Insulation	53	144	144	30	1,578	4,329	4,329
Pipe Insulation	53	144	144	156	8,174	22,421	22,421
Total for EnergyWise Gas Program	**1,449**	**4,368**	**4,368**		**77,180**	**158,760**	**158,760**

Projected participation for each measure multiplied by net annual energy savings per measure equal annual energy savings for each measure.

The technical manual presents estimates for gross annual energy savings for the following measures in the Energy*Wise* Program:

- Compact Fluorescents
- Light Fixtures
- Refrigerator
- Air Sealing
- Low Flow Showerheads,
- Faucet Aerators,
- Boiler Reset Controls,
- Roof Insulation, and
- Wall Insulation.

Detailed savings calculations and Company-specific variables that are not discussed in the technical manual are provided below for these measures.

The technical manual does not present estimates for gross annual energy savings for several other measures that are included in the Energy*Wise* Program. Energy savings calculations that fully document and illustrate the derivation of proposed savings in National Grid's implementation plan that are not included in the technical manual are at the end of this section.

1. CFL

Measure Description

An ENERGY STAR® compliant screw-based CFL whose wattage is known.

Gross Energy and Demand Savings

The technical manual calculates gross annual energy savings for CFLs according to the following table:

CFL Wattage	Annual kWh Savings	CFL Wattage	Annual kWh Savings
7	19.6	19	53.3
8	22.4	20	56.1
9	25.2	21	58.9
10	28.0	22	61.7
11	30.8	23	64.5
12	33.6	24	67.3
13	36.4	25	70.1
14	39.2	26	72.9
15	42.0	27	75.7
16	44.9	28	78.5
17	47.7	29	81.3
18	50.5	30	84.1

National Grid Energy*Wise* planning estimates are based on 20 watt CFLs.

Impact Factors

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

Net kWh = Gross kWh * (1 – Freeridership + Spillover) * Energy Realization Rate

Measure Life

The technical manual presents an effective useful life of 7 years for direct install programs of CFLs. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	Gross kWh savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime kWh savings
CFL	56	90%	50	7	353

Cost

National Grid uses an incremental cost of $7. The incremental cost is based on costs incurred in National Grid affiliates' New England programs.

2. Refrigerator

Measure Description

According to the technical manual, high efficiency refrigerators and freezers save energy and demand through improved compressor design, better case insulation, improved door seals, and improvements to defrost and anti-sweat heater controls.

Gross Energy and Demand Savings

The technical manual calculates gross annual electric savings for multifamily refrigerators based on short term metering studies. For planning purposes, an average savings of 500 kWh per unit per year was used. This is based on the average refrigerator installation in National Grid's New England energy efficiency programs.

Impact Factors

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

Net kWh = Gross kWh * (1 – Freeridership + Spillover) * Energy Realization Rate

Measure Life

The technical manual presents an effective useful life of 12 years for residential refrigerators. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	Gross kWh savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime kWh savings
Refrig	500	90%	450	12	5,400

Cost

National Grid uses an incremental cost of $300 as reflected in the incentive in the program design.

3. Low Flow Showerhead

Measure Description

A water-saving showerhead rated at 2.5 gallons per minute or less.

Gross Energy and Demand Savings

The technical manual calculates gross annual gas savings for low flow showerheads according to the following tables:

Table 1. Water Savings (Gallons/year)

Water Savings = ((Actual GPM - 2.2 GPM) X (minutes/shower) X (#showers/day) X (days/year))

Actual shower flow in GPM as found	3	4	5	2.5	5
Replacement showerhead (GPM)	2.5	2.5	2.5	1.5	1.5
Savings in GPM	0.5	1.5	2.5	1	3.5
Duration of use (minutes)	8	8	8	8	8
No. of showers/day	2	2	2	2	2
Days/year	365	365	365	365	365
Gallons of water saved/year	2,920	8,760	14,600	5,840	20,440

Table 2. Energy Savings (MMbtu/year)

Energy Savings =((water savings x (temp to shower-temp to heater) x (8.3BTU per gallon) / (1,000,000))

Gallons of water saved/year	2,920	8,760	14,600	5,840	20,440
Temperature of water to the house (degrees F)	55	55	55	55	55
Temperature of water to the shower (degrees F)	105	105	105	105	105
Change in temperature	50	50	50	50	50
Weight of water (lbs/gallon)	8.3	8.3	8.3	8.3	8.3
BTUs to heat 1 lb of water one degree F	1	1	1	1	1
Energy saved at showerhead (MMBTu/year)	1.212	3.635	6.059	2.424	8.483

Table 3. Natural Gas Savings (Mbtu/year and Therms/year)

Natural Gas Savings = = ((Savings at shower in MMbtu/y) /(0. 6)))

Energy saved at showerhead (MMBTU/year)	1.212	3.635	6.059	2.424	8.483
Estimated efficiency of gas water heater	0.6	0.6	0.6	0.6	0.6
Natural gas saved at water heater in MMBTU/yr	2.020	6.059	10.098	4.039	14.138
Natural gas saved at water heater in Therms/yr	20.20	60.59	100.98	40.39	141.38

Table 4. Electricity Savings (Mbtu/year and kWh/year)
Electricity Savings = = ((Savings at shower in MMbtu/y) /(1.0)))

Energy saved at showerhead (MMBTU/year)	1.212	3.635	6.059	2.424	8.483
Estimated efficiency of electric water heater	1.0	1.0	1.0	1.0	1.0
Electricity saved at water heater in MMBTU/yr	1.212	3.635	6.059	2.424	8.483
Electricity saved at water heater in kWh/yr	355	1,065	1,775	710	2,485

National Grid used the following values to calculate the gross annual gas savings in therms:

Assumption	Value	Source
Actual shower flow in GPM as found	4	Approximate average GPM currently in the New England program.
Replacement showerhead (GPM)	2.5	Approximate average GPM currently in the New England program.

National Grid used the following values to calculate the gross annual savings in kWh:

Assumption	Value	Source
Actual shower flow in GPM as found	4	Approximate average GPM currently in the New England program.
Replacement showerhead (GPM)	2.5	Approximate average GPM currently in the New England program.

Impact Factors

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithms are used to calculate net energy savings:

Net therms = Gross therms * (1 – Freeridership + Spillover) * Energy Realization Rate

Net kWh = Gross kWh * (1 – Freeridership + Spillover) * Energy Realization Rate

Measure Life

The technical manual presents an effective useful life of 10 years for low flow showerheads. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	Gross therms savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime therms savings
Showerhead	61	90%	55	10	549

	Gross kWh savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime kWh savings
Showerhead	1,065	90%	959	10	9,585

Cost

National Grid uses an incremental cost of $11. The incremental cost is based on costs incurred in National Grid affiliates' New England programs.

4. Faucet Aerator

Measure Description

A water-saving device that enables no more than 2.2 gallons per minute to pass through the faucet.

Gross Energy and Demand Savings

The technical manual calculates gross annual gas savings for faucet aerators according to the following tables:

Table 1. Water Savings (Gallons/year)

Water Savings = ((Standard – low flow aerator GPM) X (duration/use) X (#uses/day) X (days/year))

Standard aerator (GPM)	2.2
Replacement low flow aerator (GPM)	1.5
Savings in GPM	0.7
Duration of use (minutes)	0.5
No. of uses/day	30
Days/year	260
Gallons of water saved/year	2,730

Table 2. Energy Savings (MMbtu/year)

Energy Savings =((water savings x (temp faucet-temp to heater) x (8.3BTU per gallon) / (1,000,000))

Gallons of water saved/year	2,730
Temperature of water to the house (degrees F)	55
Temperature of water at faucet (degrees F)	80
Change in temperature (degrees F)	25
Weight of water (lbs/gallon)	8.3
BTUs to heat 1 lb of water one degree F	1
Energy saved at faucet (MMBTU/year)	0.566

Table 3. Natural Gas Savings (Mbtu/year and Therms/year)

Natural Gas Savings = = ((Savings at faucet in MMbtu/y) /(0. 6)))

Gas saved at faucet (MMBTU/year)	0.566
Estimated efficiency of gas water heater	0.6
Natural gas saved at water heater in MMBTU/yr	0.944
Natural gas saved at water heater in Therms/yr	9.44

Table 4. Electricity Savings (Mbtu/year and kWh/year)

Electricity Savings = = ((Savings at faucet in MMbtu/y) /(1.0)))

Electricity saved at faucet (MMBTU/year)	0.566
Estimated efficiency of electric water heater	1.0
Electricity saved at water heater in MMBTU/yr	0.566
Electricity saved at water heater in kWh/yr	166

Impact Factors

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm at an estimated net energy savings for each measure. In general, the following algorithms are used to calculate net energy savings:

Net therms = Gross therms * (1 – Freeridership + Spillover) * Energy Realization Rate

Net kWh = Gross kWh * (1 – Freeridership + Spillover) * Energy Realization Rate

Measure Life

The technical manual presents an effective useful life of 10 years for faucet aerators. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	Gross therms savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime therms savings
Aerator	9	90%	8	10	85

	Gross kWh savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime kWh savings
Aerator	166	90%	149	10	1,494

Cost

National Grid uses an incremental cost of $2. The incremental cost is based on costs incurred in National Grid affiliates' New England programs.

5. Boiler reset controls

Measure Description

Reset of hot water setpoint in multifamily residential buildings with zone thermostat control. The measure is assumed to be applied to existing non-condensing boiler systems.

Gross Energy and Demand Savings

The technical manual calculates gross annual gas savings for boiler reset controls using the following formula:

$$\Delta\text{therm} = \text{units} \times \text{kBtuh/unit} \times \text{RLF} \times (1 / \bar{\eta}) \times \text{HLH}/100 \times \text{ESF}$$

where:

Δtherm	= gross annual gas savings
units	= number of boiler reset controls installed
kBtuh/unit	= size of boiler served by each reset controller
100	= conversion factor (therm/kBtuh)
$\bar{\eta}$	= average seasonal efficiency of the boiler system without reset controls
RLF	= rated load factor
HLH	= Heating load hours
ESF model	= energy savings factor computed with a building energy simulation

National Grid used the following values to calculate the gross annual gas savings in therms:

Assumption	Value	Source
kBtuh/unit	300	Estimated single stage average unit size
kBtuh/unit	600	Estimated multi stage average unit size
η-bar	0.8	Technical manual
RLF_{heat}	0.8	Technical manual
HLH	1739	Technical manual - average building in Syracuse
ESF	0.05	Technical manual

Cost

National Grid uses an incremental cost of $250. The incremental cost is based on costs incurred in National Grid affiliates' New England programs.

Impact Factors

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

Net therms = Gross therms * (1 – Freeridership + Spillover) * Energy Realization Rate

Measure Life

The technical manual presents an effective useful life of 20 years for boiler reset controls. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	Gross therms savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime therms savings
Boiler Reset (1 Stage)	261	90%	235	15	3,521
	Gross therms savings	**Spillover net of free ridership**	**Net Annual Savings**	**Effective Useful Life**	**Lifetime therms savings**
Boiler Reset	522	90%	470	15	7,043

6. Steam Trap

Measure Description

An automatic valve that releases condensed steam (condensate) from a steam space while preventing the loss of live steam.

Gross Energy Savings

National Grid calculates gross annual gas savings for steam traps using the following:

- assumed traps are between 5-10 psi and when they fail the orifice opening is ¼ inch or less.
- the losses in lbs/hr of steam table is from the Boiler Efficiency Institute's Steam Efficiency Improvement Guide (page 34);
- lbs/hr of steam are converted to therms;
- therm savings are multiplied by 50% based on the assumption that 50% of traps fail in the open position;
- savings is grossed up by the efficiency of the boiler supplying the steam of 75%

National Grid used the following values to calculate the gross annual gas savings in therms:

Assumption	Value	Source
therm	253	Approximate average therm currently in the New England program.

Impact Factors

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

Net therms = Gross therms * (1 – Freeridership + Spillover) * Energy Realization Rate

Measure Life

National Grid uses an effective useful life of 1 year for steam traps. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	Gross therms savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime therms savings
Steam Traps	253	90%	228	15	3,416

Cost

National Grid uses an incremental cost of $250. The incremental cost is based on information provided by Paul Winn from American Plant Maintenance, a large steam trap installer and supplier in New England.

7. Roof Insulation

Measure Description

Upgrading existing insulation in roofs to reduce heating loads.

Gross Energy and Demand Savings

The technical manual calculates gross annual gas savings for roof insulation using the following formula:

$$\Delta\text{therm} = \text{SF} \times (\Delta\text{therm/SF})$$

SF = insulation square feet installed
Δtherm/SF = gas consumption savings per square foot of insulation installed

All Gas heating systems:

City	Vintage	Wall Δtherm/ 1000SF	Roof Δtherm/ 1000SF
Albany	Old	72	56
Albany	Average	50	25
Binghamton	Old	75	56
Binghamton	Average	53	25
Buffalo	Old	71	53
Buffalo	Average	50	23
Massena	Old	84	66
Massena	Average	58	29
NYC	Old	52	39
NYC	Average	37	18
Syracuse	Old	74	55
Syracuse	Average	51	25

HVAC System: Split AC / electric furnace

City	Vintage	Wall Insulation kWh/ 1000SF	Wall Insulation kW/ 1000SF	Roof Insulation kWh/ 1000SF	Roof Insulation kW/ 1000SF
Albany	Old	1,649	0.057	1,303	0.053
Albany	Average	1,140	0.023	573	0.026
Binghamton	Old	1,719	0.034	1,310	0.061
Binghamton	Average	1,196	0.011	583	0.009
Buffalo	Old	1,627	0.023	1,241	0.053
Buffalo	Average	1,129	0.011	535	0.018
Massena	Old	1,902	0.034	1,537	0.070
Massena	Average	1,297	0.011	661	0.018
NYC	Old	1,182	0.046	921	0.061
NYC	Average	827	0.023	405	0.018
Syracuse	Old	1,690	0.057	1,283	0.044
Syracuse	Average	1,153	0.023	572	0.009

Baseline Efficiencies from which savings are calculated

Baseline wall and roof insulation levels by vintage are as follows:

Vintage	Assumed R-value of insulated wall	Notes
Older, poorly insulated	7	No insulation; air gap resistance only
Existing, average insulation	11	

Vintage	Assumed R-value of insulated roof	Notes
Older, poorly insulated	11	Minimal ceiling insulation
Existing, average insulation	19	Insulation per MEC 1980

Compliance Efficiency from which incentives are calculated

Measure wall and ceiling insulation levels by vintage are as follows:

Vintage	Assumed R-value of insulated wall	Notes
Older, poorly insulated	13	
Existing, average insulation	18	

Vintage	Assumed R-value of insulated ceiling	Notes
Older, poorly insulated	30	Additional blown-in insulation
Existing, average insulation	30	Additional blown-in insulation

National Grid used the following values to calculate the gross annual energy savings:

Assumption	Value	Source
SF	500	Estimated average SF of insulation installed in 5 – 50 units
Δtherm/1,000 SF	25	Technical manual Average Syracuse and Albany
ΔkWh/1,000 SF	560	Technical manual Average Syracuse and Buffalo
Baseline R-value	Average	Building vintage

Impact Factors

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following at an estimated net energy savings for each measure. In general, the following algorithms are used to calculate net energy savings:

Net therms = Gross therms * (1 – Freeridership + Spillover) * Energy Realization Rate

Net kWh = Gross kWh * (1 – Freeridership + Spillover) * Energy Realization Rate

Measure Life

The technical manual presents an effective useful life of 20 years for roof insulation. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	Gross therms savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime therms savings
R-19 Roof Insulation	13	90%	11	20	225
	Gross therms savings	**Spillover net of free ridership**	**Net Annual Savings**	**Effective Useful Life**	**Lifetime therms savings**
R-30 Roof Insulation	28	90%	25	20	504

	Gross kWh savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime kWh savings
R-30 Roof Insulation	650	90%	585	20	11,700

Cost

National Grid uses an incremental cost of $1.08 per square foot for R-19 insulation and $1.19 per square foot for R-30 insulation. The incremental cost is based on costs incurred in National Grid affiliates' New England programs.

8. Wall Insulation

Measure Description

Upgrading existing insulation in walls to reduce heating loads.

Gross Energy and Demand Savings

The technical manual calculates gross annual gas savings for wall insulation using the following formula:

$$\Delta therm = SF \times (\Delta therm/SF)$$

SF = insulation square feet installed
Δtherm/SF = gas consumption savings per square foot of insulation installed

Baseline Efficiencies from which savings are calculated

Baseline wall and roof insulation levels by vintage are as follows:

Vintage	Assumed R-value of insulated wall	Notes
Older, poorly insulated	7	No insulation; air gap resistance only
Existing, average insulation	11	

Vintage	Assumed R-value of insulated roof	Notes
Older, poorly insulated	11	Minimal ceiling insulation
Existing, average insulation	19	Insulation per MEC 1980

Compliance Efficiency from which incentives are calculated

Measure wall and ceiling insulation levels by vintage are as follows:

Vintage	Assumed R-value of insulated wall	Notes
Older, poorly insulated	13	
Existing, average insulation	18	

Vintage	Assumed R-value of insulated ceiling	Notes
Older, poorly insulated	30	Additional blown-in insulation
Existing, average insulation	30	Additional blown-in insulation

National Grid used the following values to calculate the gross annual gas savings in therms:

Assumption	Value	Source
SF	500	Estimated average SF of insulation installed in 5 – 50 units
Δtherm/1,000 SF	25	Technical manual Average Syracuse and Albany
ΔkWh/1,000 SF	560	Technical manual Average Syracuse and Buffalo
Baseline R-value	Average	Building vintage

Impact Factors

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

Net therms = Gross therms * (1 – Freeridership + Spillover) * Energy Realization Rate

Measure Life

The technical manual presents an effective useful life of 20 years for wall insulation. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	Gross therms savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime therms savings
Wall Insulation	13	90%	11	20	225

Cost

National Grid uses an incremental cost of $1.47 per square foot. The incremental cost is based on costs incurred in National Grid affiliates' New England programs.

9. Floor Insulation

Measure Description

Installation of insulation in floors and basements.

Gross Energy and Demand Savings

The Order indicates that floor insulation fails the standard total resource cost test for cost-effectiveness and that it is therefore permitted only on a project-by-project basis if it can be demonstrated that the installation would be cost-effective in that instance. National Grid will adhere to this requirement in approving incentives for floor insulation.

National Grid used the following values to calculate the gross annual gas savings in therms:

Assumption	Value	Source
therm	33	Approximate average therm currently in the New York program.

Impact Factors

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

Net therms = Gross therms * (1 – Freeridership + Spillover) * Energy Realization Rate

Measure Life

The technical manual presents an effective useful life of 20 years for floor insulation. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	Gross therms savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime therms savings
Floor Insulation	33	90%	30	20	601

Cost

National Grid uses an incremental cost of $183. The incremental cost is based on costs incurred in its New York program.

10. Pipe Insulation

Measure Description

Insulation of hot water and steam piping to reduce heat loss.

National Grid used the following values to calculate the gross annual gas savings in therms:

Assumption	Value	Source
therm	173	Approximate average therm currently in the New England program based on 25 feet.

Impact Factors

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

Net therms = Gross therms * (1 – Freeridership + Spillover) * Energy Realization Rate

Measure Life

The technical manual presents an effective useful life of 20 years for pipe insulation. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	Gross therms savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime therms savings
Pipe Insulation	173	90%	156	20	3,114

Cost

National Grid uses an incremental cost of $2.39 per square foot. The incremental cost is based on costs incurred in National Grid affiliates' New England programs.

11. CFL Fixtures

Measure Description

An ENERGY STAR® hardwired fixture with a pin-based CFL whose wattage is known.

Gross Energy and Demand Savings

The technical manual calculates gross annual energy savings for CFL fixtures according to the following formula, with the assumption of an average of 20 CFL Watts based on past experience:

Annual Energy Savings = units x Δ Watts x Hours x Days-per-Year/1000 x $(1 + HVAC_c)$

Demand savings = units x Δ Watts x coincidence factor x $(1 + HVAC_d)$

Therm impacts = Annual Energy Savings x $(HVAC_g)$

Variable	Value	Notes
units		From application, invoices or other documentation. Equal to number of lamps installed and operating.
CFL watts		From application
Δ Watts	2.53 x CFL watts	
Hours per day	3.2 (CFL) 2.5 (CFL fixture)	
Days per year	365	
Coincidence factor	0.08	Use average summer value
$HVAC_c$		Vintage and HVAC type weighted average by city (see refrigerator section)
$HVAC_d$		Vintage and HVAC type weighted average by city (see refrigerator section)
$HVAC_g$		Vintage and HVAC type weighted average by city (see refrigerator section)

Impact Factors

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

Net kWh = Gross kWh * (1 – Freeridership + Spillover) * Energy Realization Rate

Measure Life

The technical manual presents an effective useful life of 7 years for direct install programs of CFL fixtures. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	Gross kWh savings	Spillover net of free ridership	Net Annual Savings	Effective Useful Life	Lifetime kWh savings
CFL Fixtures	131	90%	118	7	828

Cost

National Grid uses an incremental cost of $66. The incremental cost is based on costs incurred in National Grid affiliates' New England programs and the average prices provided by the Energy*Wise* Program implementation contractor, RISE Engineering, Inc., for CFL fixtures.

HVAC Interaction Factors

Multifamily Low-rise Building

HVAC Type: Split AC/gas furnace

City	Vintage	$HVAC_c$	$HVAC_d$	$HVAC_g$
Albany	Average	0.020	0.128	-0.017
Albany	Old	0.015	0.141	-0.015
Binghamton	Average	0.003	0.137	-0.018
Binghamton	Old	0.000	0.140	-0.016
Buffalo	Average	0.014	0.142	-0.017
Buffalo	Old	0.008	0.145	-0.015
Massena	Average	0.015	0.158	-0.018
Massena	Old	0.011	0.162	-0.016
NYC	Average	0.055	0.136	-0.016
NYC	Old	0.052	0.138	-0.014
Syracuse	Average	0.017	0.140	-0.018
Syracuse	Old	0.016	0.142	-0.014

HVAC Type: Split heat pump

City	Vintage	$HVAC_c$	$HVAC_d$	$HVAC_g$
Albany	Average	-0.140	0.150	0.000
Albany	Old	-0.134	0.156	0.000
Binghamton	Average	-0.178	0.151	0.000
Binghamton	Old	-0.155	0.144	0.000
Buffalo	Average	-0.143	0.157	0.000
Buffalo	Old	-0.139	0.150	0.000
Massena	Average	-0.161	0.181	0.000
Massena	Old	-0.157	0.170	0.000
NYC	Average	-0.064	0.163	0.000
NYC	Old	-0.054	0.177	0.000
Syracuse	Average	-0.160	0.150	0.000
Syracuse	Old	-0.108	0.185	0.000

HVAC Type: Split AC / electric furnace

City	Vintage	$HVAC_c$	$HVAC_d$	$HVAC_g$
Albany	Average	-0.329	0.128	0.000
Albany	Old	-0.307	0.141	0.000
Binghamton	Average	-0.384	0.137	0.000
Binghamton	Old	-0.338	0.140	0.000
Buffalo	Average	-0.332	0.142	0.000
Buffalo	Old	-0.313	0.145	0.000
Massena	Average	-0.349	0.158	0.000
Massena	Old	-0.321	0.162	0.000
NYC	Average	-0.260	0.136	0.000
NYC	Old	-0.232	0.138	0.000
Syracuse	Average	-0.361	0.140	0.000
Syracuse	Old	-0.272	0.142	0.000

HVAC Type: Electric heat no AC

City	Vintage	$HVAC_c$	$HVAC_d$	$HVAC_g$
Albany	Average	-0.363	0.000	0.000
Albany	Old	-0.341	0.000	0.000
Binghamton	Average	-0.407	0.000	0.000
Binghamton	Old	-0.361	0.000	0.000
Buffalo	Average	-0.359	0.000	0.000
Buffalo	Old	-0.341	0.000	0.000
Massena	Average	-0.377	0.000	0.000
Massena	Old	-0.348	0.000	0.000
NYC	Average	-0.320	0.000	0.000
NYC	Old	-0.291	0.000	0.000
Syracuse	Average	-0.391	0.000	0.000
Syracuse	Old	-0.307	0.000	0.000

HVAC Type: Gas Heat, no AC

City	Vintage	$HVAC_c$	$HVAC_d$	$HVAC_g$
Albany	Average	-0.014	0.000	-0.017
Albany	Old	-0.019	0.000	-0.015
Binghamton	Average	-0.020	0.000	-0.018
Binghamton	Old	-0.024	0.000	-0.016
Buffalo	Average	-0.014	0.000	-0.017
Buffalo	Old	-0.019	0.000	-0.015
Massena	Average	-0.013	0.000	-0.018
Massena	Old	-0.017	0.000	-0.016
NYC	Average	-0.005	0.000	-0.016
NYC	Old	-0.007	0.000	-0.014
Syracuse	Average	-0.013	0.000	-0.018
Syracuse	Old	-0.020	0.000	-0.014

HVAC Type: PTAC

City	Vintage	$HVAC_c$	$HVAC_d$	$HVAC_g$
Albany	Average	-0.299	0.198	0.000
Albany	Old	-0.313	0.172	0.000
Binghamton	Average	-0.348	0.182	0.000
Binghamton	Old	-0.361	0.198	0.000
Buffalo	Average	-0.333	0.211	0.000
Buffalo	Old	-0.352	0.240	0.000
Massena	Average	-0.348	0.184	0.000
Massena	Old	-0.365	0.201	0.000
NYC	Average	-0.226	0.220	0.000
NYC	Old	-0.247	0.173	0.000
Syracuse	Average	-0.294	0.224	0.000
Syracuse	Old	-0.308	0.218	0.000

HVAC Type: PTHP

City	Vintage	$HVAC_c$	$HVAC_d$	$HVAC_g$
Albany	Average	-0.228	0.198	0.000
Albany	Old	-0.227	0.172	0.000
Binghamton	Average	-0.264	0.182	0.000
Binghamton	Old	-0.261	0.198	0.000
Buffalo	Average	-0.237	0.211	0.000
Buffalo	Old	-0.246	0.240	0.000
Massena	Average	-0.279	0.184	0.000
Massena	Old	-0.282	0.201	0.000
NYC	Average	-0.128	0.220	0.000
NYC	Old	-0.125	0.173	0.000
Syracuse	Average	-0.223	0.224	0.000
Syracuse	Old	-0.227	0.218	0.000

Multifamily High-rise Building

HVAC Type: Fan coil system with central electric chiller and gas hot water boiler

City	Vintage	$HVAC_c$	$HVAC_d$	$HVAC_g$
Albany	Average	0.086	0.121	-0.114
Albany	Old	0.076	0.112	-0.118
Binghamton	Average	0.073	0.121	-0.137
Binghamton	Old	0.062	0.112	-0.112
Buffalo	Average	0.078	0.121	-0.091
Buffalo	Old	0.062	0.112	-0.127
Massena	Average	0.079	0.121	-0.176
Massena	Old	0.071	0.112	-0.106
NYC	Average	0.102	0.121	-0.143
NYC	Old	0.090	0.112	-0.139
Syracuse	Average	0.013	0.121	-0.153
Syracuse	Old	0.078	0.112	-0.105

Appendix A: Explanation of Budget Categories

General Administration

Costs to administer energy efficiency programs that include but are not limited to:

- staff salaries (e.g., management personnel, program managers, accounting personnel, regulatory staff, and administrative support staff);
- Company overhead (e.g., office space, supplies, computer and communication equipment, staff training, industry-related sponsorships and memberships); and
- other costs that do not include program planning, marketing, trade ally training, direct program implementation, incentives and services, and program evaluation.

Program Planning

Costs for energy efficiency programs that include but are not limited to: general market research (not related to evaluation), energy efficiency potential studies, benefit/cost analysis, program design and screening.

Program Marketing

Costs for promotion of energy efficiency programs that include but are not limited to: production of all energy efficiency program literature, advertising, displays, events, promotional items, bill inserts, and internal and external communications. Advertising encompasses all forms of media such as direct mail, print, radio, television, and internet.

Trade Ally Training

Costs for all activities associated with energy efficiency training/education of the trade ally community regarding the Company's current energy efficiency programs. These include but are not limited to: equipment vendors, heating contractors, weatherization contractors, equipment installers, residential auditors, residential builders and developers.

Incentives and Services

These include costs for incentives paid to customers. These also include costs associated with payments to contractors for services provided to customers (such as energy audits,

technical assessments, engineering studies, plan reviews, blower door tests, infrared scans and free measures) and costs for incentives paid to contractors for providing energy efficiency services to customers (for example, incentives paid to BPI-certified contractors for proper equipment sizing using Manual J calculations).

Direct Program Implementation

Costs associated with utility personnel or contractors implementing programs on the Company's behalf. Tasks associated with this budget category include but are not limited to: lead intake, customer service, rebate application processing and payment, rebate application problem resolution, quality assurance, and program reporting to the utility.

Program Evaluation

All activities associated with the evaluation of the energy efficiency program. These are costs for activities that include but are not limited to:

- evaluation planning,
- program logic models,
- process evaluation,
- impact evaluation,
- evaluation-related market research,
- measurement and verification activities, and
- evaluation reporting.

Within these broad categories, key tasks associated with the implementation of the major evaluation activities may include but are not limited to: survey design, sample design, survey implementation, modeling, data collection, data analysis (general), billing analysis, site visits, end-use metering, report writing, travel, and software. Expenses associated with evaluation should include a breakout of internal and external costs (e.g., consultant contracts).