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2014 Energy Efficiency Program Plan

Photo courtesy of Providence Journal

Presentation to Rhode Island Public Utilities Commission

December 11, 2013

Presentation Overview

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- Focus on our customers
- 2014 Plan Considerations
- Residential Energy Efficiency Offerings
- Commercial and Industrial (C&I) Energy Efficiency Offerings
- Sources of Quantitative Information
- 2014 By the Numbers
- Plan Summary

Focus on Customers

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- How do we go about satisfying the objectives of Least Cost Procurement?
- Our plan contains budgets, initiatives, policies
- But what underlies it all is: how do we reach and inspire our customers – all of them – to undertake energy efficiency projects?
- Energy efficiency makes a difference in Rhode Island and to Rhode Islanders
  - https://vimeo.com/80015239
  - 2012 Jobs study indicates that energy efficiency supported 529 FTE jobs across almost 600 businesses, most of which have a presence in Rhode Island
  - ENE indices indicate that 2014 energy efficiency investments will inject about $400 million into the Rhode Island economy

Creating the 2014 Plan

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- Our perspective is that Least Cost Procurement is a long term strategy for Rhode Island
- We maintain the themes we set out in the 2012-2014 Least Cost Procurement Plan
  - Energy efficiency is for everyone – Providing services to all customers and facilitate greater participation
  - Reaching customers where they live and work – Segmentation of the market
  - Innovation – Introducing new technologies and delivery strategies
  - Economic growth - Maximizing benefits to broad segments of customers
- This helps meet annual targets and build capacity for continued delivery of the energy efficiency resource for the long run

Impact of Least Cost Procurement

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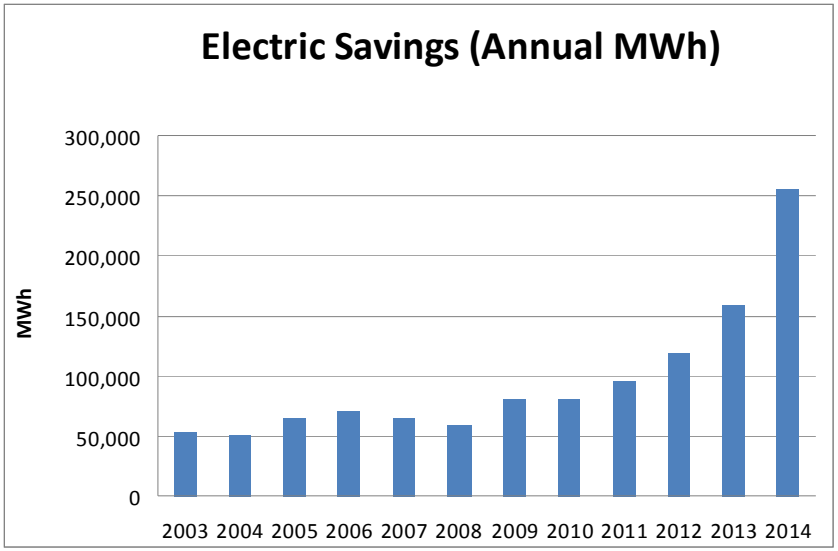

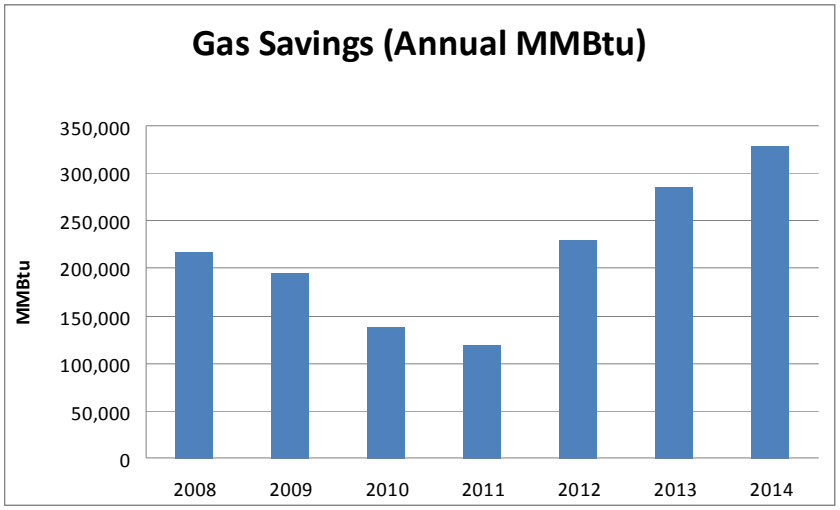

Valued Inputs into the Planning Process

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- Customer feedback
- DSM Collaborative Subcommittee met throughout the year
  - National Grid
  - Division of Public Utilities (with Attorney General legal support) Rate payer focus
  - TEC-RI Representing issues for large business
  - People's Power & Light Representing issues for residential and small business
  - OER Focus on energy policy & strategy
  - EERMC & Council Consultants Focus on meeting all objectives of Least Cost Procurement law, and met with implementation staff frequently
- CHP Public Meeting

2014 Plan Considerations

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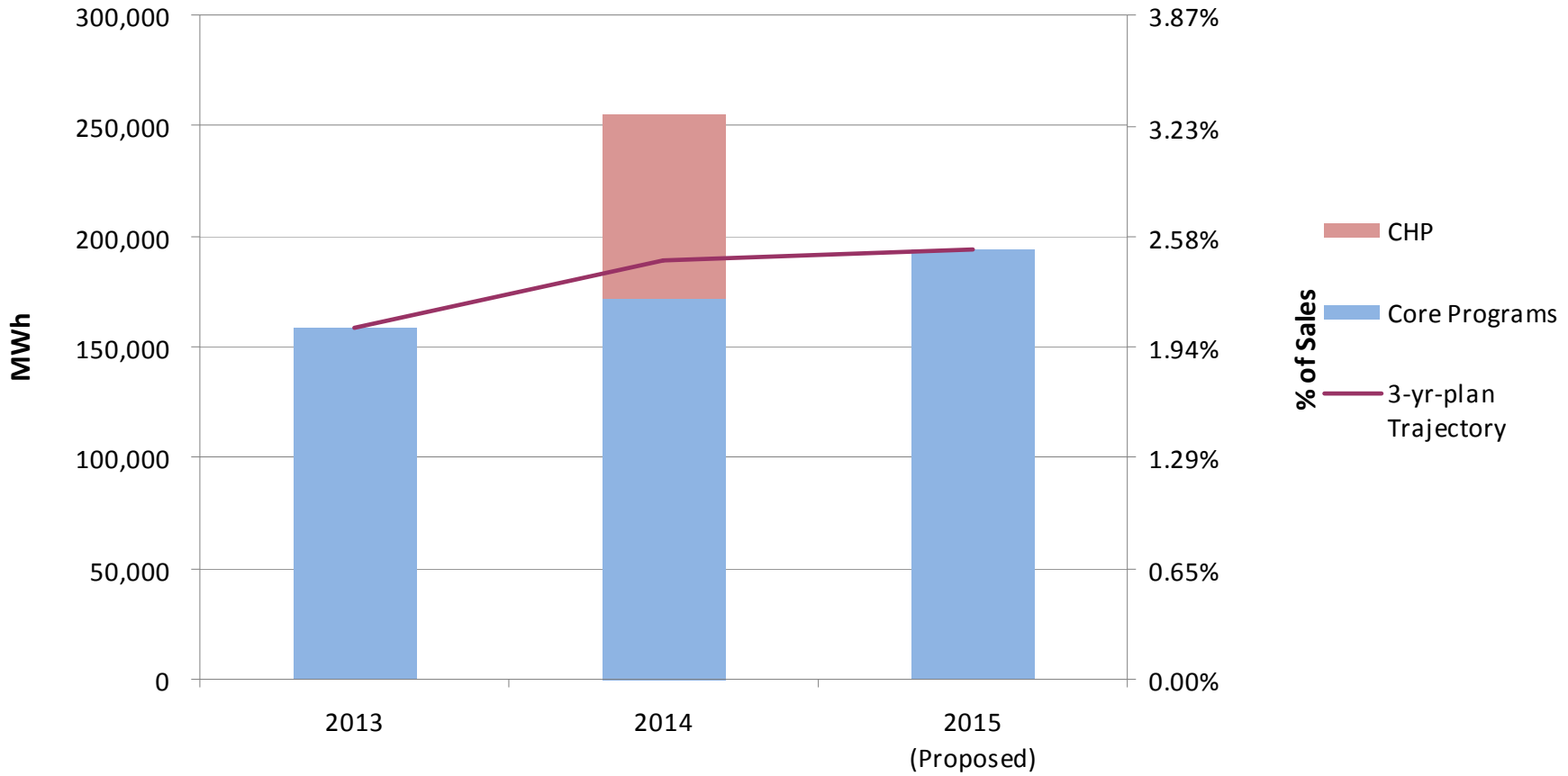
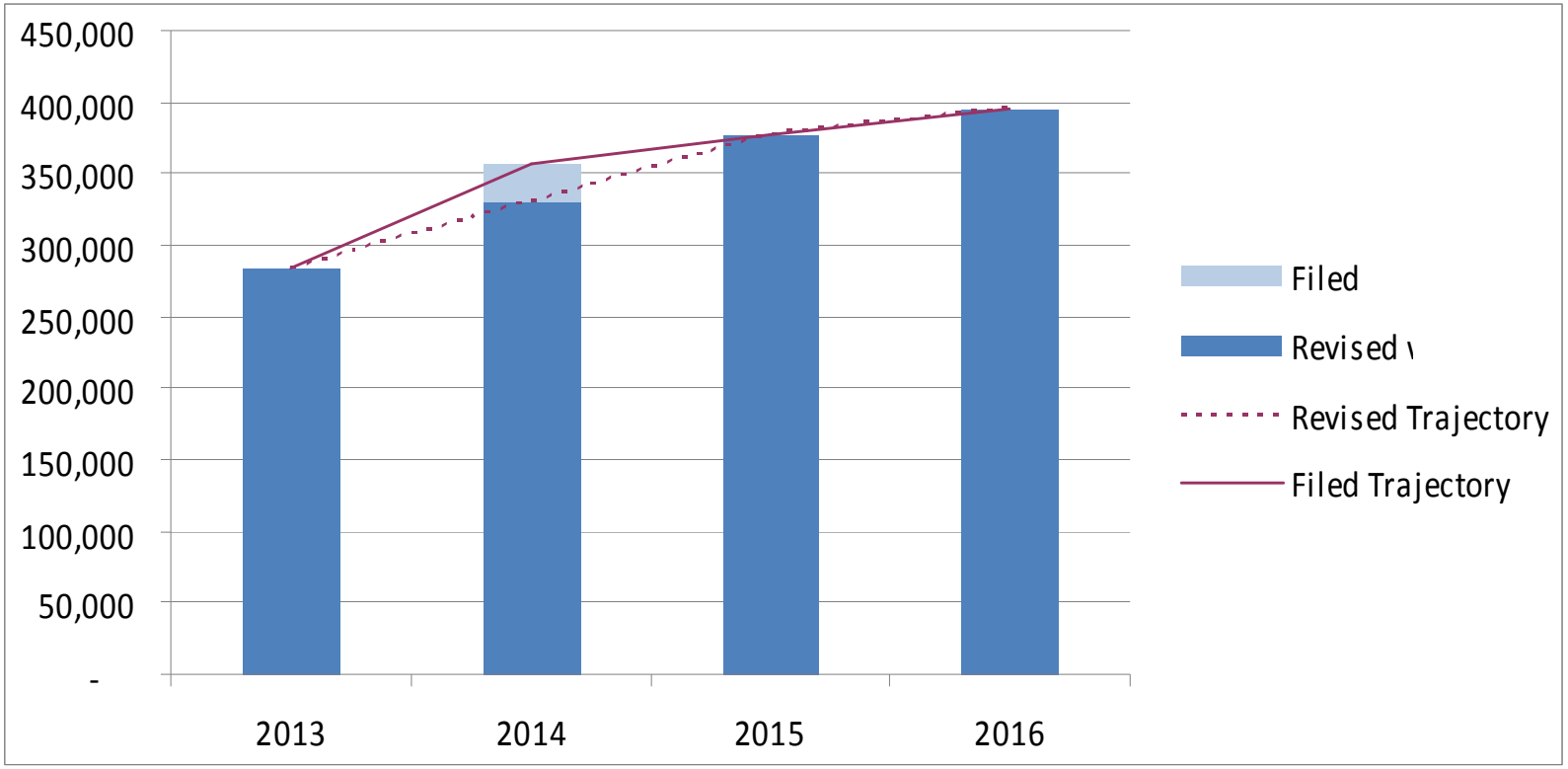
- Build on past track record of success
  - Rhode Island is ranked 6th in the American Council for an Energy Efficient Economy's rankings of energy efficient states and in the top 10 for the 6th time in seven years.
- Meet expected high customer demand
- Keep us on track for meeting future goals for 2015-17
- Balance all the above with keeping the cost in 2014 to customers manageable
- "Unprecedented, but not precedent setting"

2014 In LCP Context: Electricity



2014 In LCP Context: Natural Gas



Residential Portfolio

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- **Broad based offerings to serve all Rhode Islanders**
- No cost energy audits
- Incentives to improve heating systems and building enbelopes
- Incentives for retail consumer products
- Innovative ways to control energy use such as wifi thermostats
- Industry leading home energy reports with rewards for top performers
- Discounts for energy saving products at local retailers
- No cost income eligible services

Residential Portfolio Enhancements

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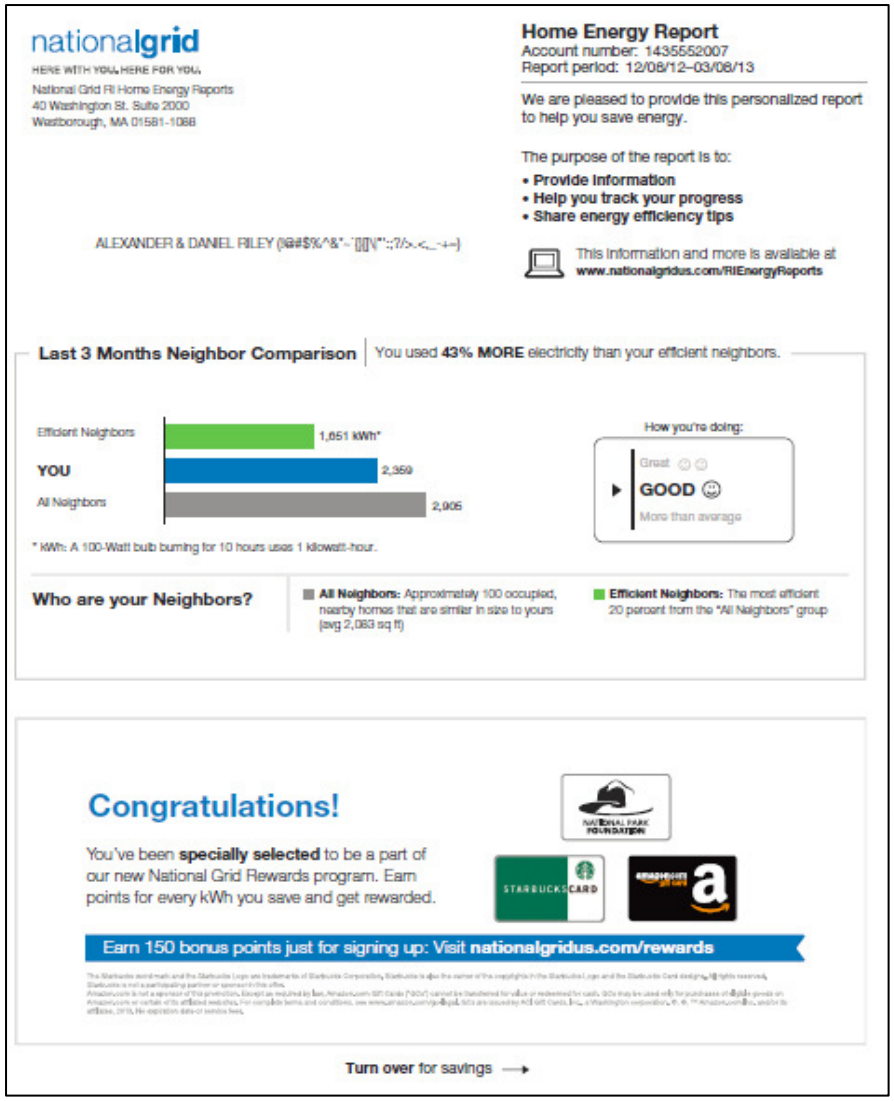
- One call for Energy Efficiency
- 0% financing including lower income offering
- Award winning programs
  - American Council for an Energy-Efficient Economy (ACEEE) Exemplary Program for EnergyWise
  - Numerous ACEEE awards for products
  - Department of Energy Home Builder Award to RI Builder Caldwell & Johnson
- Collaborative marketing between offerings and fuels
- Coordination with gas conversion
- Online rebate processing
- Strong Community Outreach – RI Energy Challenge – Find your Four!

Residential Portfolio – Home Energy Reports



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HERE WITH YOU. HERE FOR YOU.
National Grid RI Home Energy Reports
40 Washington St. Suite 2000
Westborough, MA 01581-1088

Home Energy Report
Account number: 1435552007
Report period: 12/08/12–03/08/13

We are pleased to provide this personalized report to help you save energy.

The purpose of the report is to:
- **Provide information**
- **Help you track your progress**
- **Share energy efficiency tips**

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This information and more is available at **www.nationalgridus.com/RIEnergyReports**

Last 3 Months Neighbor Comparison | You used **43% MORE** electricity than your efficient neighbors.

Efficient Neighbors 1,651 kWh*
YOU 2,359
All Neighbors 2,905

How you're doing:
Great
GOOD
More than average

* kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

Who are your Neighbors?

All Neighbors: Approximately 100 occupied, nearby homes that are similar in size to yours (avg 2,083 sq ft)

Efficient Neighbors: The most efficient 20 percent from the "All Neighbors" group

Congratulations!

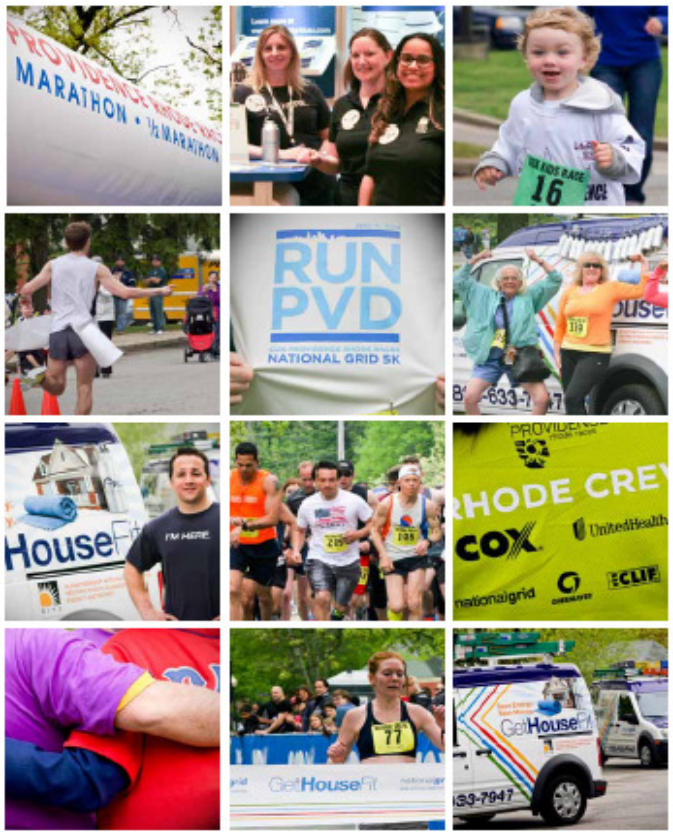
You've been **specially selected** to be a part of our new National Grid Rewards program. Earn points for every kWh you save and get rewarded.

Earn 150 bonus points just for signing up: Visit **nationalgridus.com/rewards**

Turn over for savings

- RI leading with several firsts:
  1. Statewide
  2. New Movers
  3. Rewards
- ~$10 million in customer bill savings
- 54,000 MWH in savings
- Engaging social web portal
- Sparking the conversation about energy use in the home!

Residential Portfolio - Energy*Wise*



- Flagship in home energy assessment and weatherization services
- Independent Insulation Contractor network
- 0% financing
- Incorporation of new technologies
- Innovative marketing and education

Residential Portfolio – RI Energy Challenge

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Find Your Four!

The Rhode Island Energy Challenge

- Public – Private partnerships
- Series of Towns competing against each other to sign up 5% of residents
- Direct customer outreach
- Bi-monthly tips to save energy

2014 Residential Highlights

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- Commitment to Light Emitting Diode lighting
- Test Energy*Wise* customer segmentation
- Streamline HVAC opportunities at time of gas conversion
- Collaborate with state on Zero Net Energy ready homes
- Host community outreach events
- New RI Energy Challenge Communities
- Support Office of Energy Resources programs such as PACE

Commercial and Industrial Program Services

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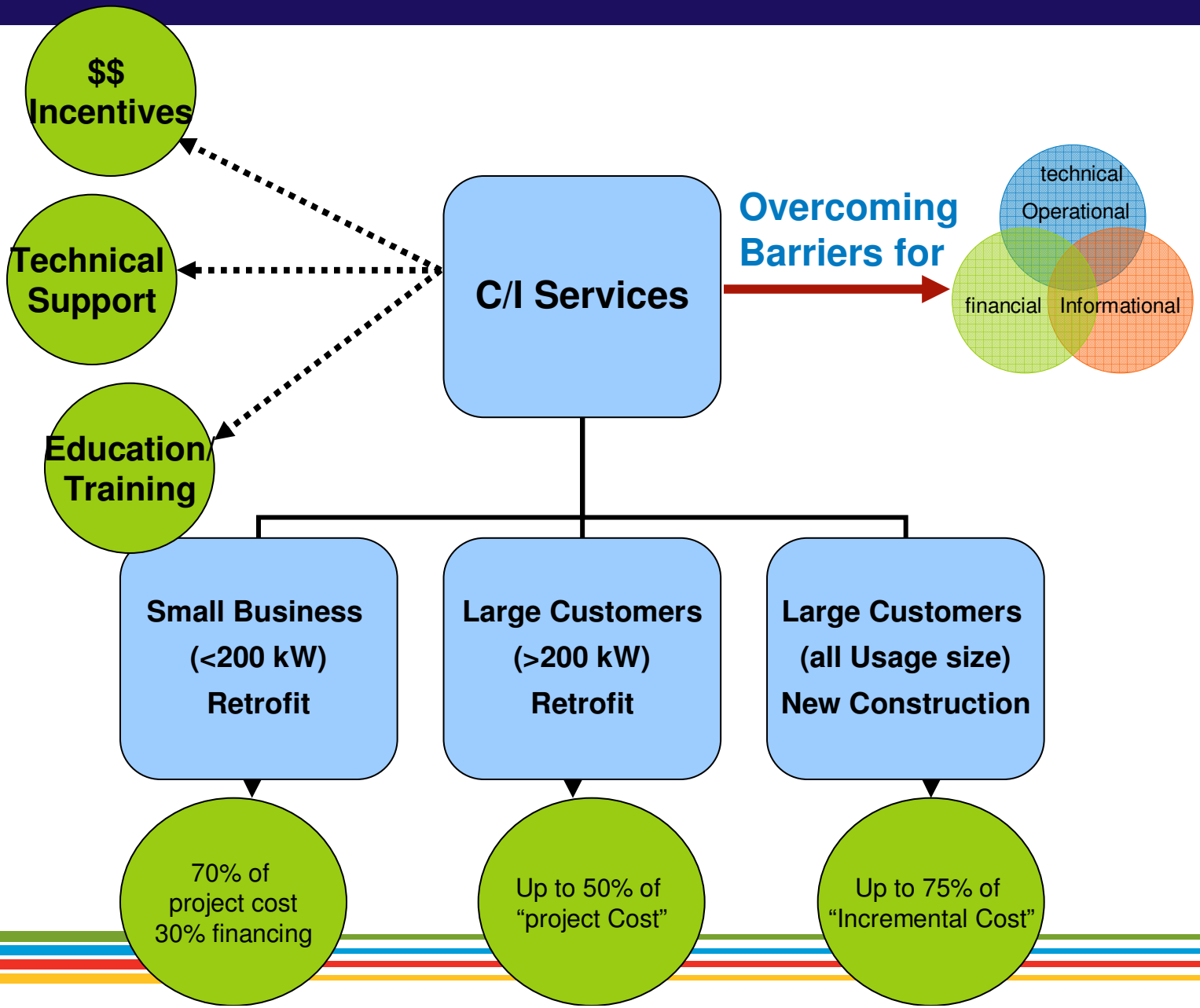

Strategies for Reaching Customers Where They Work

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- By market sectors
- By technologies
- Products through Upstream Delivery
  - Discounted price at point of sale, cuts admin time, less upfront cost for customers
  - Low-cost initiative with higher levels of savings across broad footprint
- Strategic Energy Management Plans (SEMP)
  - Multiyear MOU with top energy usage customers, “deeper” energy savings aligning with customer mission

Building on Successes in C&I

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- Market Segmentation
- New Construction Portfolio
  - Introduce design team incentives
  - Better structure of offerings
- Upstream Products
  - Addition of the first luminaires to its successful upstream lighting Program
  - Building momentum in HVAC products
  - Explore gas measures
- RI Public Energy Partnership
  - Scale up participation of municipal projects
  - Potential for Automated Benchmarking Services (ABS)
- Strategic Energy Planning (SEMP)
  - May identify one additional university and one industrial customer

Grocery Sector: Top Chain Stores

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- Energy efficiency & improved appearance and comfort of their stores
- Measures: LED Case & overhead lighting, strip curtains for refrigerated spaces, efficient motors, AntiSweat Heat controls, Floating head and suction pressure controls
- Total Savings for 3 stores:
  - 913,000 kWh electric savings
  - $100,000/yr savings on bills
  - One year payback

Store Appearance, Higher Sales, Comfort, Lower Utility Bills

Manufacturing/Industrial Sector

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- New Heat Recovery Steam Generator (HRSG) to existing incinerator
- Waste Heat Used to Generate High Pressure Steam for Condensing Steam Turbine
- Electric savings=6.7Million kWh
- Customer utility savings = $611,760/yr

Higher Production, Environmental Health & Safety, Lower Process Energy Costs

Small Business Participants

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Comprehensive Temple Upgrade

- interior & exterior LED lights, variable frequency drives on the hot and chilled water pumps, 'on-demand' circulation pumps for their domestic hot water
- Energy Savings: 3,900 therms and 87,780 kWh annually
- Incentive: $52,791 including on bill repayment option

Club House Upgrades

- Enhanced rooftop unit controls (Catalyst) to improve existing rooftop unit & improved indoor air quality
- Lighting upgrades include: exterior lighting,T8s & LEDs in interiors
- Energy savings 36,000 kWh annually

Lower Utility Bills, Lower Maintenance & Operating Costs

Energy Efficient Lighting Options

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Whether Upstream, prescriptive, or Custom pathway

- LED Lighting
- Low & High Bay lighting
- Simple lamp & ballast replacements
- Recessed Lighting
- Exit signs
- Lighting & Occupancy Controls

Municipal Schools

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- Comprehensive Public Schools upgrades: Elementary, middle and high schools
- Total 1.9 Million kWh savings through lighting, motors, energy management systems, variable speed drives
- 16,800 Therm savings through efficiency HVAC system
- Savings for the School Dept= $212,460 per year on utility bills
- Part of RI Public Energy Partnership with Office of Energy Resource

Indoor Air, Comfort, Daylighting/Lighting, Productivity, Low Operating Costs

Enhanced New Construction

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- University Campus Pharmacy Building Case Study
- Energy-efficient lighting systems, high-technology mechanical systems
- LEED Gold expected
- 20% less energy than what the ‘energy code’ requires
- Will save $160,000/yr in utility bills

C&I Highlights: Rate and Strategy Initiatives

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- Street Lighting
  - Tariffs to be settled in 2013/2014
  - May see participation from Munis (customer owned, company owned)
- Codes & Standards
  - Code Compliance ramp up in 2014—coincides with recent code change
  - Develop long-term strategy for appliance standards advocacy
- Financing

C&I Pilots Develop Future Year Savings

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- Zero Net Energy
  - 1 test space—school or university
- Operations and Maintenance
  - low-cost no cost measures (schools, offices)
  - Turn-key identification and implementation by vendor
- Behavior Pilot:
  - Small Business Energy Reports
  - One of the first in the country
  - Intends to broaden participation in Direct Install

Where the funds come from

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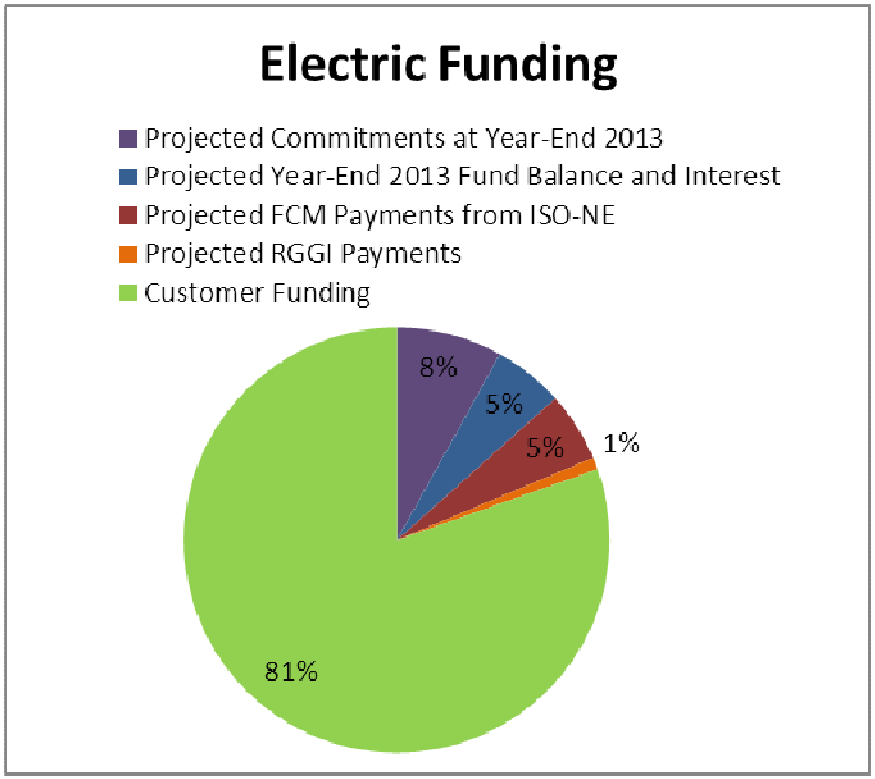

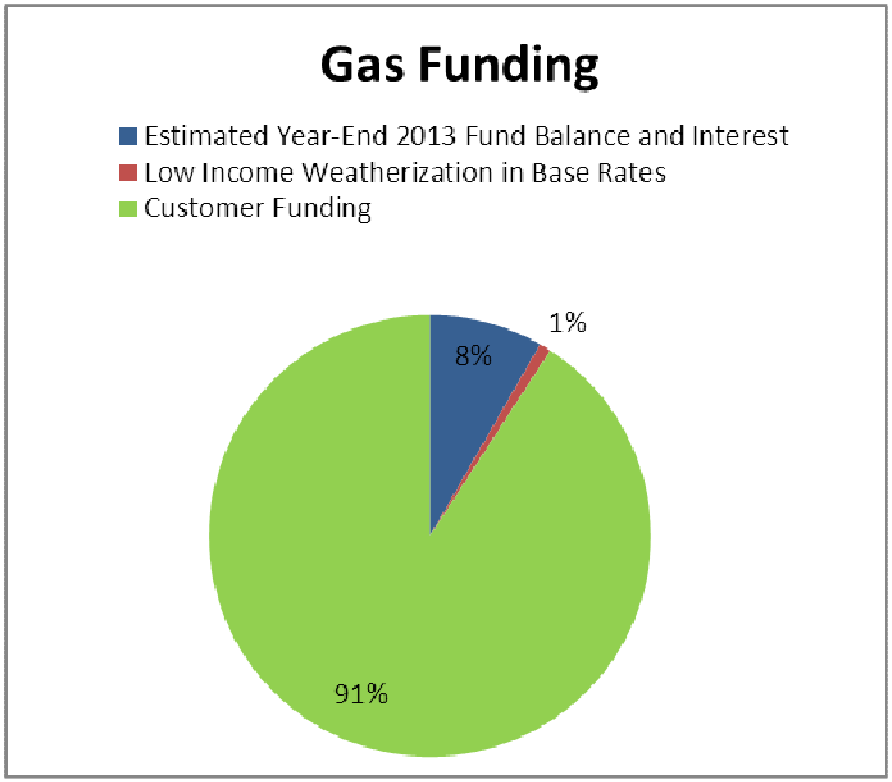

Cost management strategies

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- Collaborative refinements for 2014 that allow us to capture more energy efficiency for lower program charges
  - Level out increase in electric EE charge
  - Create two-tiered gas EE charge
  - Inject funds for finance
  - Commit to negotiating incentives
  - Remove gas EE charge exemption for CHP projects
  - Maintain commitment to partnerships with others, particularly OER; including OER funding of delivered fuel weatherization services
  - Position well for 2015-17 through innovation, stable delivery, and essentially level services

Budget management proposals

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- Eliminate requirement for commitments, except on projects with incentives greater than $3 million
- Require Company to propose use for unanticipated carryover within 30 days of filing of Year End Report, and secure Collaborative approval for that use
- Eliminate gas charge exemption for natural gas used for distributed generation

Where the electric budget goes

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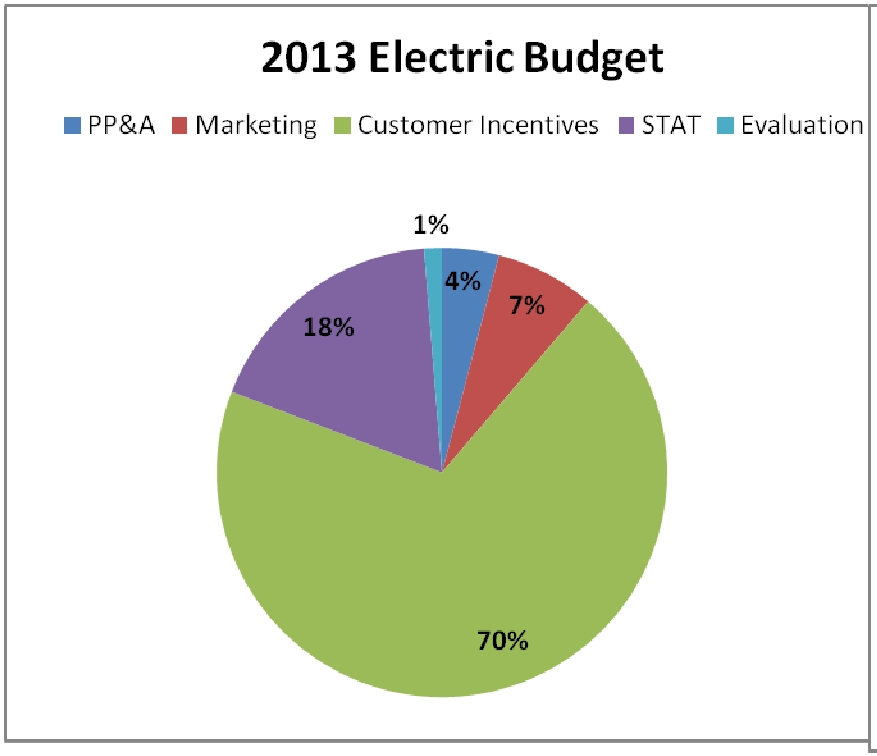

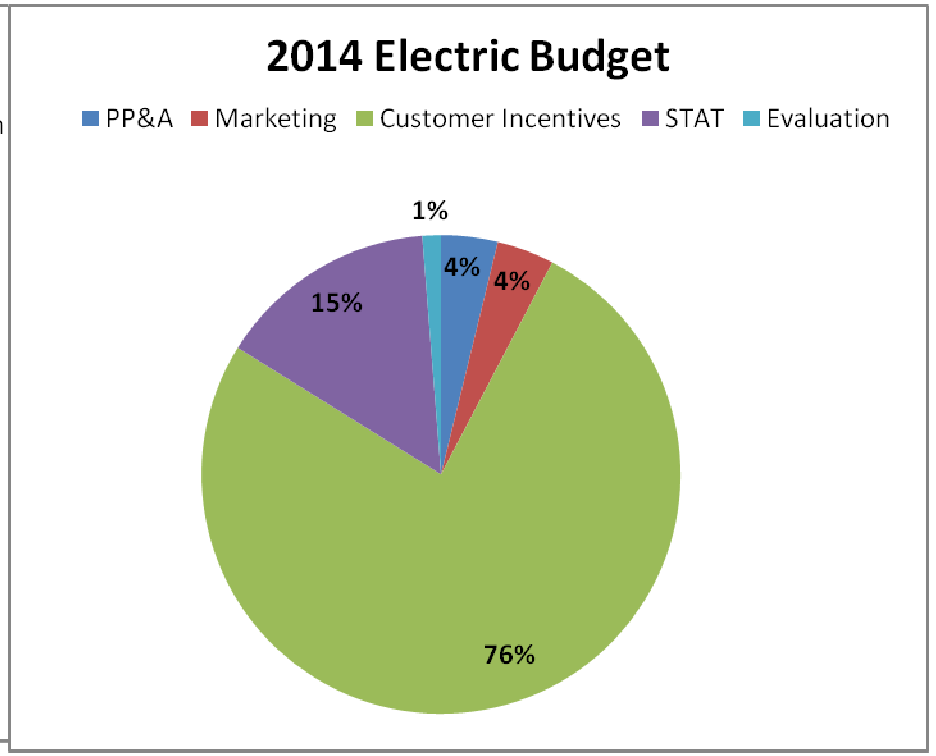

Where the gas budget goes

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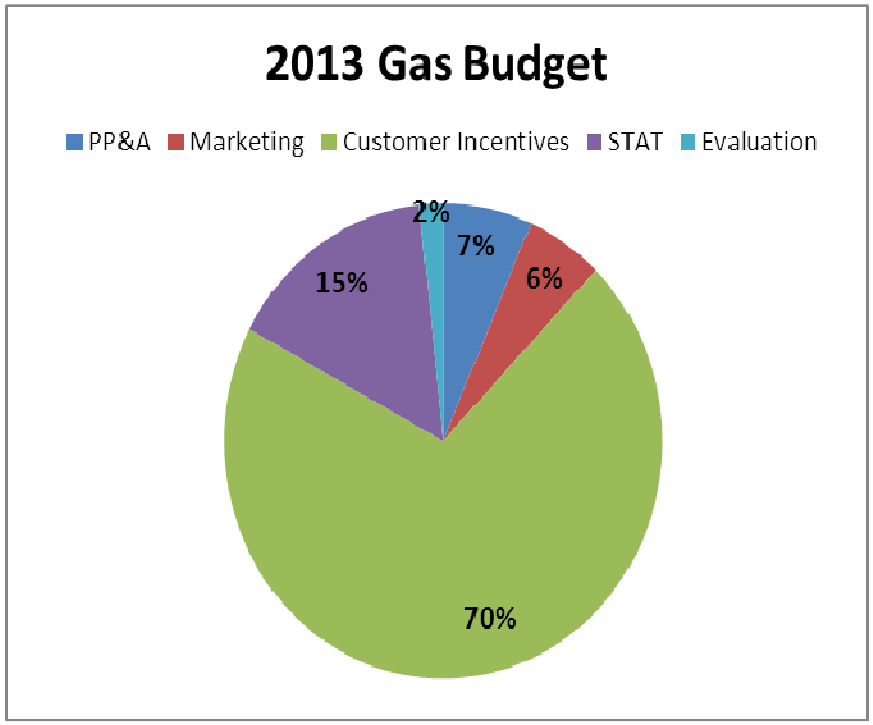

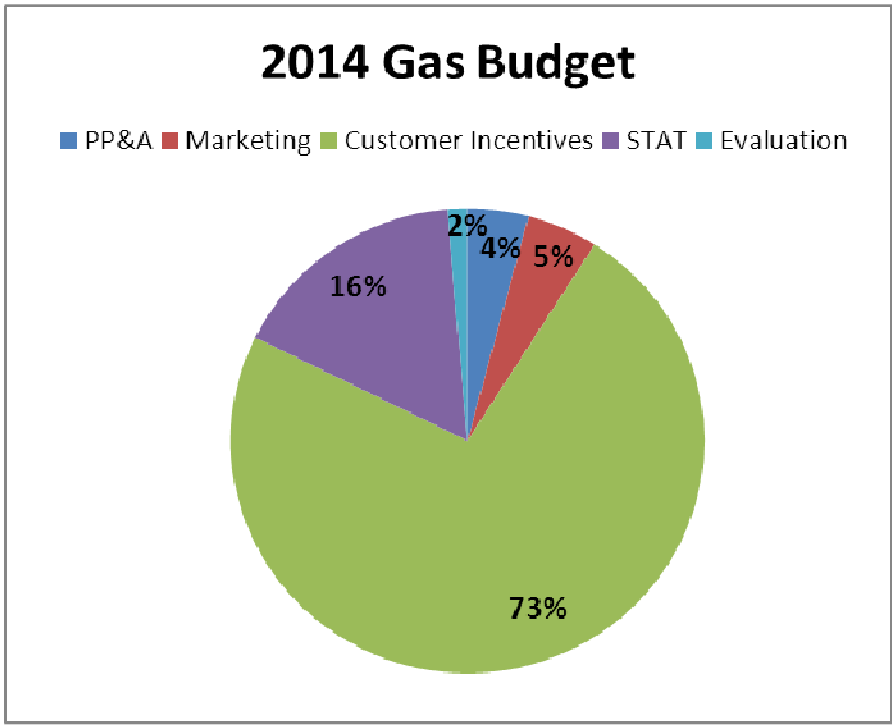

Where Savings Estimates Come From

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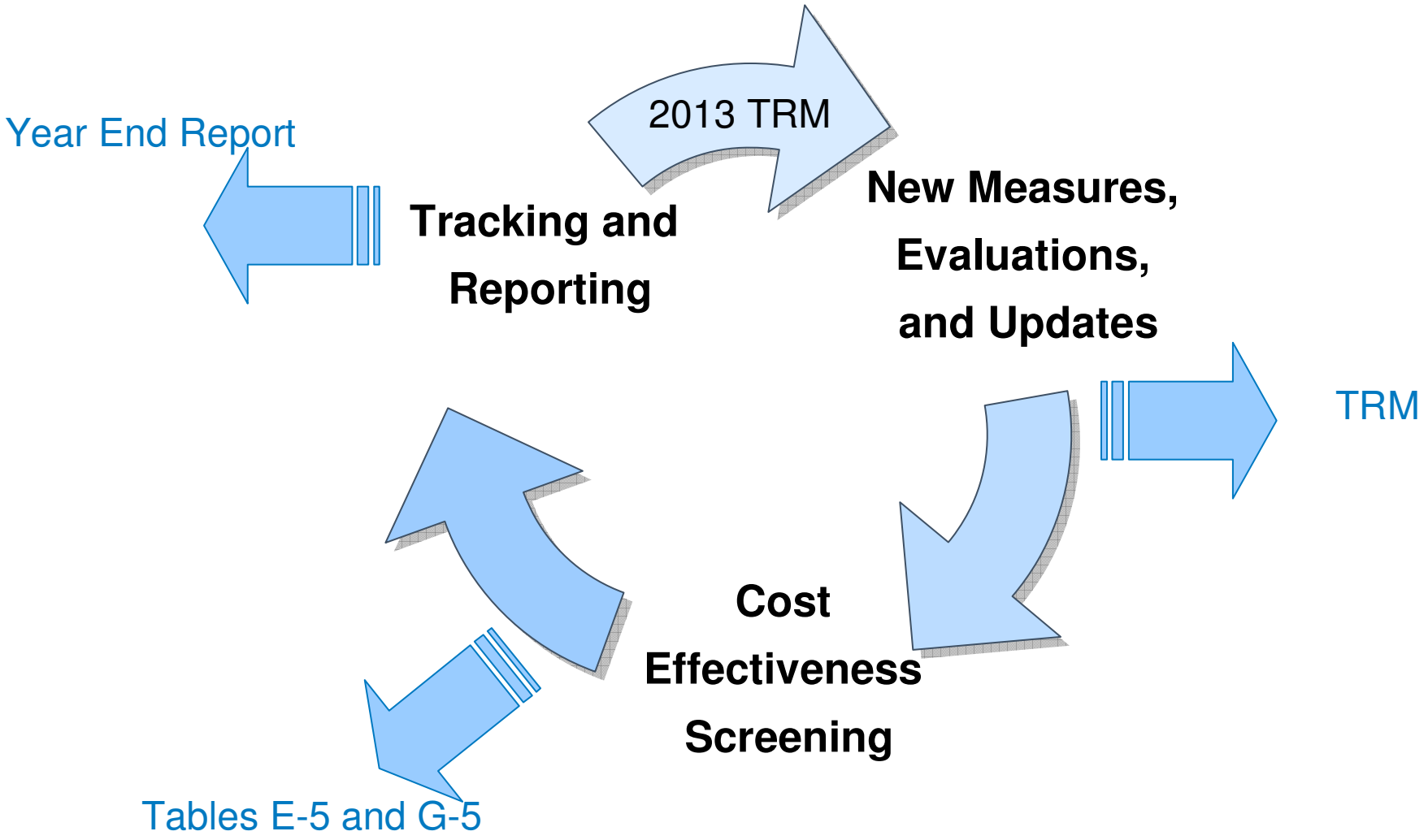

Evaluation Studies

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- Impact evaluation studies designed to verify or validate savings
- Evaluation plan reviewed by EERMC and its consultants
- Decision to update evaluation based on
  - Age of prior study
  - Stability of prior results
  - Amount of savings in subject area
  - Opportunity to leverage regional or Massachusetts study
    - Rhode Island program must be similar
    - Trade off potential cost savings with being subject to their schedule
- General observations about use or participation in other state studies
  - For prescriptive products, programs are similar
  - For home services, RI-specific study is warranted
  - For custom end uses, RI sites can be added to study population

Technical Reference Manual (TRM) nationalgrid

- Documents how we count energy savings and provides transparency for each measure or measure category
- Sources are evaluation studies, engineering calculations, or agreed to ("deemed") values
- Provides consistent format and transparency
- Edited annually
  - New evaluations, engineering analyses, baselines from codes and standards
    - Reviewed by EERMC consultant team
    - Process improves accuracy of savings
- TRM links to Company's tracking system and benefit/cost model assumptions; all contain same values for 2014

Cost effectiveness

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- Calculate value over life of project using avoided costs of resource and non-resource benefits
- Compare value to incremental cost (rebate and customer cost)
- Benefit/Cost ratio must be greater than 1 after inclusion of other costs
  - At program level include costs of administration, marketing, and evaluation and aggregate across all measures
  - At portfolio level include non-program costs, such as pilots, regulatory costs, and shareholder incentive

TRC Test: Benefits

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- **Benefits = Net Present Value (NPV) $ value of avoided supply costs and non-resource impacts resulting from a program over the lifetime of the measure**
- **The assumptions that contribute to the benefit calculation include savings components per measure, impact factors, loss factors, on- and off-peak and coincidence factors, and value components.**
- Benefits accrue from savings components:
  - Avoided on and off-peak electrical energy (kWh), cost of compliance with RGGI and other enacted emissions control are embedded
  - Avoided electric generation capacity (kW)
  - Avoided electric transmission and distribution costs (kW)
  - Avoided natural gas or delivered fuel consumption (mmbtu oil, kerosene, etc.)
  - Water and sewer benefits (gallons of water; etc.)
  - Non-energy impacts ($ of low income benefits, O&M savings, etc.)

Benefits: Net Savings

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- Gross savings = savings components
  - From engineering analysis, manufacturer's specs, etc.; linked to TRM, except site specific calculations
- Net savings = Gross savings modified by impact factors
- Impact factors = adjustments from
  - Spillover, free-ridership, in service rates, persistence and realization rates from evaluations to determine the savings attributable to program efforts
- Electric savings (kW and kWh) are increased by line loss factors
- On- and off-peak and coincidence factors apportion savings to be in alignment with avoided cost value factors

Benefits: Value calculation

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- Benefits = Net Savings x Value
  - Value of each component represented by avoided cost factors, or value per unit savings:
    - $ value per kW of electricity
    - $ value per kWh of electricity
    - $ value per mmbtu of natural gas
    - $ value of demand reduction induced price effects (per kW, kWh or mmbtu)
    - $ value per mmbtu of fuel resources or gallons of water
    - $ value per unit of non-energy impacts
      - Avoided costs of energy and capacity from regional Avoided Energy Supply Component study
      - Non-energy impacts identified through other M&V planning studies.
  - Each value component is calculated for each year of measure life and present valued, and summed with other components to determine total value of benefits

TRC test: Costs

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- **Costs** = $ value of all costs
  - Program implementation cost:
    - Program planning and administration
    - Marketing and advertising
    - Program participant incentives (rebates)
    - Sales, technical assistance and training
    - Evaluation, measurement, and verification
  - Program participant cost
    - Measure cost minus program participant incentive (i.e. total customer costs for the measures installed)
  - Shareholder incentive cost (sector and portfolio level)

Participant Costs

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- Participant cost = measure cost - participant incentive

- Measure cost is equal to:
  - Incremental cost of the energy efficient alternative over the standard efficiency product/service for new construction or time of replacement programs, because customer would have paid for the standard efficiency alternative anyway

  OR

  - Total cost of the efficiency product/service for retrofit programs

Standard widget = $500

Energy efficient widget = $625

Measure cost (incremental) = $125

No new widget = $0

Energy efficient widget = $625

Measure cost (total) = $625

Assume (incremental) cost of widget is $125 and participant incentive is $50:

Participant Cost = $125 - $50 = $75

2014 Natural Gas Plan Summary

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	2013 EE Plan	2014 in 3 Year Plan	2014 EE Plan
Gas			
BC Ratio	1.91	1.51	1.70
Annual MMBtu	287,775	355,917	329,963
Participants	145,150	21,671	191,435
Implementation + Evaluation Expenses	$ 18,641,700	$ 21,392,323	$ 22,402,700
Total Budget*	$ 19,540,000	$ 22,602,890	$ 23,492,500
EE Program Charge	$ 0.414	$ 0.732	$0.600 (Resi) $0.492 (C&I)

- 14% increase in savings compared to 2013; 7% less than 3YP target
- Implementation and total budgets are ~4% higher than 3 YP projections
- Energy efficiency program charges less than 3 YP for gas due to increased sales
- Gas charge: $0.60/Dth for residential customers and $0.492 for C&I customers; 18% and 33% lower than 3YP illustration, respectively

2014 Electric Plan Summary

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	2013 EE Plan	2014 in 3 Year Plan	2014 EE Plan
Electric			
BC Ratio	2.27	2.26	3.15
Annual MWh	158,820	189,068	255,314
Participants	476,435	560,730	513,134
Implementation + Evaluation Expens	$ 67,256,100	$ 81,691,294	$ 83,018,268
Total Budget*	$ 77,496,800	$ 88,236,598	$ 87,050,066
EE Program Charge	$ 0.00862	$ 0.00985	$ 0.00896

- Electric savings targets are 35% higher than three year plan; 61% higher than 2013 targets
- Implementation and total budgets are 2% higher than 3 YP Projection while total budget is 1% lower
- Electric charge: $0.00896/kWh, 10% lower than 3 YP projections
- Increased participation by 8% relative to 2013, indicates opportunity for more customers to benefit while honoring Toray commitment

2014 EE Plan Summary

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- 2014 Energy Efficiency (EE) Plan is generally consistent with 3 Year Least Cost Procurement Plan
- Plan satisfies legislative/regulatory requirements
  - Cost effective
  - Less expensive than supply
  - Supports Combined Heat and Power
  - Addresses order on Toray incentive
- Plan built with broad stakeholder contributions and support