2024 Bill and Rate Impacts

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1   Summary

Rhode Island Energy has performed analyses of the electric and gas bill impacts resulting from the proposed 2024 Energy Efficiency Program Plan pursuant to the updated Least Cost Procurement Standards approved by the RI PUC in Docket 5015. Bill impacts are distinct from rate impacts because they model the effects of efficiency programs on annual customer bills by aggregating rate and consumption changes. In the electric and gas bill impact analysis, rate changes are modeled by mapping energy efficiency (EE) programs to groupings of customers approximating rate classes and estimating changes in both delivery service rates and supply costs due to the proposed EE program charge. Consumption impacts are predicted from proposed participation and energy efficiency savings. In both models, other effects of energy efficiency beyond direct energy savings such as price suppression (both) and avoided infrastructure investments (electric) are also included.

2   Key Findings

In this 2024 analysis, Rhode Island Energy used the same methods as those employed in 2023 for the natural gas and electric analysis. The key takeaways of the bill impact analyses are:

- Most customers are participating in at least one EE program. This is partially attributable to the residential Home Energy Reports program reaching nearly all gas and electric residential customers.
- In the electric portfolio, high participation means that over the lifetimes of the programs proposed for 2024, the average Rhode Island customer's (participants and non-participants combined) bill will be slightly lower than or equal to a scenario with no programs, ranging from a decrease of 0.21% to a decrease of 1.30%, depending on the sector and scenario. Overall, rates may increase, but energy savings from participation in electric EE programs results in bill savings that offset the costs of the EE program charge and revenue recovery.
- In the gas portfolio, participants in all programs and customer segment groupings see reductions in their long-term bills due to their 2024 participation, ranging from 0.01% to 21.41%. Across average customers, including participants and non-participants, the bill impacts are very close to zero depending on the sector and scenario. The analysis shows slight long-term average rate increases of between 0.01% and 0.49% depending on sector due to the 2024 annual plan.

3   Electric Bill Impacts

3.1   Methodology

The electric bill impact analysis used to generate the electric results was adapted from models originally built by Synapse Energy Economics on behalf of the Division of Public Utilities and Carriers in 2013. This analysis is distinct from the traditional electric bill impacts models the Company presented in Rates

proceedings before the PUC. The analysis examines two cases: the fulfillment of the 2024 Plan and the absence of an efficiency plan in 2024. This comparison isolates the effects of the proposed 2024 EE program charge and Fully Reconciling Funding Mechanism. It assumes energy efficiency plans have been implemented before 2024 but will not be offered starting in 2024. As a result of this approach, the calculated impacts on long-term rates are not designed to reflect the net increase or decrease to the EE charge from the prior/current EE plan. The analysis also incorporates how system-wide reduction in energy consumption affects the different elements of rates such as transmission, distribution, and commodity charges.

New for the 2024 planning cycle, one consolidated workbook models bill and rate impacts for small C&I, medium C&I, large C&I, standard income residential with home energy reports only, standard income residential with all programs except home energy reports, standard income residential with all programs, income eligible residential with home energy reports only, income eligible residential with all programs except home energy reports, and income eligible residential with all programs. The key model inputs are the net planned participation and savings numbers from Table E-7 in Attachment 5.[1] The model combines these data with rate class information to determine the benefits to customer bills from program participation. Table 1 below shows the mapping of efficiency programs to rate classes.[2] The diversity seen within the commercial customer profile indicates that customers from multiple rate classes can participate in any commercial program. Assumptions for these rate classes were made based on historical program participation data.[3]

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[1] The 2024 Annual Plan analysis maintains the approach of modeling five rate class groupings as used in the last year's annual plan to allow for a more realistic depiction of bill impacts because there is a wide array of usage among commercial customers and having more groupings helps illustrate typical impacts.

[2] Delivery service rate tariffs is R.I.P.U.C. Tariff No. 2095 for rates A-16 (basic residential rate), A-60 (low-income residential rate), C-06 (small C&I rate), G-02 (medium C&I rate), G-32 (large C&I rate). Standard Offer Service rates used in the analysis are R.I.P.U.C. No. 2096 and R.I.P.U.C. No. 4809 A-16 & A-60 total commodity charge for standard income and income eligible residential rate group, C-06 total commodity charge for small C&I rate group, G-02 total commodity charge for medium C&I rate group and G-32 total commodity charge for large C&I rate group.

[3] Savings and participation modeled by C&I rate classes is partitioned and estimated based on historical data.

Table 1. Electric Rate and Program Mapping

Electric Bill Impact Model	Rate Class(es)	Efficiency Programs
Residential Electric	A-16	Home Energy Reports
		EnergyStar HVAC
		EnergyWise Multifamily
		Residential Consumer Products
Income Eligible Electric	A-60	Income Eligible Single Family
		Income Eligible Multifamily
		Home Energy Reports
Small Commercial	C-06	Small Business Direct Install
		Large Commercial New Construction
		Large Commercial Retrofit
Medium Commercial	G-02	Small Business Direct Install
		Large Commercial New Construction
		Large Commercial Retrofit
Large Commercial	G-32, G-62	Small Business Direct Install
		Large Commercial New Construction
		Large Commercial Retrofit

Annual savings and participants reflect the phasing-out of individual programs. For example, HERs is a one-year program that only covers 2024. The savings and participants attributed to HERs are removed from annual savings and participants calculations starting in 2024. Long-term average changes in rates and bills include zero and non-zero values in the 20-year study period (2024-2043). Bills are calculated based on average annual consumption of a typical customer in Rhode Island in each class, using the values in Table 2.

Table 2. Average Annual Consumption per Customer in Modeled Customer Classes[4]

Modeled Customer Class	Average Annual Per-Customer Consumption (kWh/year)
Residential (A-16) All Programs	6,872
Income Eligible (A-60) All Programs	5,776
Small C&I (C-06)	37,402
Medium C&I (G-02)	177,350
Large C&I (G-32 and G-62)	5,062,434

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[4] Average per-customer annual consumption is calculated based on the forecast electric consumption for each rate class for 2024 and the latest customer counts, for all classes except small business C-06. The small business (C-06 rate) average customer consumption has been refined to better estimate customers based on best data currently available to the Company for both count of customers and their annual consumption. The number of accounts on the C-06 rate is greater than the number of customers, for example there are many accounts for cell towers, pumps, etc. that belong to one customer.

3.2 Discussion and Interpretation of Electric Results

The results of the models are shown in Tables 3 through 11, and general highlights are presented after. The columns in the tables are as follows:

- Long-term rate impacts, defined as the percentage change in average rates over the study period (2024 to 2043)
- Typical energy savings, which refer to the average percentage of energy savings to total annual consumption over the study period (negative numbers indicate electricity consumption reduction)
- Typical bill savings, defined as the percentage change in average customer bills over the study period (negative numbers indicate electricity bill reduction)

Long-term rate impacts, typical energy savings, and typical bill savings are shown for average participants in energy efficiency programs, non-participants, and average customers within each of the five main customer segments.[5] Average customers combine the bill impacts of EE participants and non-EE customers to show the impacts of all customers combined. For the 2024 Bill Impact analysis, the key finding is that over the proposed lifetimes of 2024 programs, the average participant's bill and the average customer's bill will not be higher than a scenario with no programs.

Table 3. Residential All Programs – Rate and Bill Impact Analysis – A-16 (2024 EE Plan vs. No EE)

Residential (All Programs)	Long-Term Rate Impacts[6] (% of Total Rate)	Typical Energy Savings (% per Participant)	Typical Bill Savings (% of Total Bill)
Average Participant	0.06%	-4.89%	-4.79%
Non-Participant	0.06%	0.00%	0.03%
Average Customer	0.06%	-0.23%	-0.21%

Table 4. Residential All Programs w/o HERs – Rate and Bill Impact Analysis – A-16 (2024 EE Plan vs. No EE)

Residential (All Programs w/o HERs)	Long-Term Rate Impacts[6] (% of Total Rate)	Typical Energy Savings (% per Participant)	Typical Bill Savings (% of Total Bill)
Average Participant	0.05%	-4.98%	-4.89%
Non-Participant	0.05%	0.00%	0.02%
Average Customer	0.05%	-0.20%	-0.18%

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[5] As alluded to in section 3.1, residential and income eligible results are split into all programs, all programs without HERs, and HERs only.
[6] Note that long term rates decrease despite the presence of an EE charge. These decreases are caused by avoided transmission and distribution charges. In other words, the cumulative avoided transmission and distribution charges are larger than the EE charge.

Table 5. Residential All Programs HERs Only – Rate and Bill Impact Analysis – A-16 (2024 EE Plan vs. No EE)

Residential (HERs Only)	Long-Term Rate Impacts (% of Total Rate)	Typical Energy Savings (% per Participant)	Typical Bill Savings (% of Total Bill)
Average Participant	-0.07%	-0.05%	-0.11%
Non-Participant	-0.07%	0.00%	-0.06%
Average Customer	-0.07%	-0.03%	-0.09%

Table 6. Income-Eligible All Programs – Rate and Bill Impact Analysis – A-60 (2024 EE Plan vs. No EE) [7]

Income-Eligible (All Programs)	Long-Term Rate Impacts (% of Total Rate)	Typical Energy Savings (% per Participant)	Typical Bill Savings (% of Total Bill)
Average Participant	-0.26%	-6.76%	-6.96%
Non-Participant	-0.26%	0.00%	-0.27%
Average Customer	-0.26%	-1.04%	-1.30%

Table 7. Income-Eligible All Programs w/o HERs – Rate and Bill Impact Analysis – A-60 (2024 EE Plan vs. No EE)

Income-Eligible (All Programs w/o HERs)	Long-Term Rate Impacts (% of Total Rate)	Typical Energy Savings (% per Participant)	Typical Bill Savings (% of Total Bill)
Average Participant	-0.25%	-7.05%	-7.26%
Non-Participant	-0.25%	0.00%	-0.26%
Average Customer	-0.25%	-1.00%	-1.25%

Table 8. Income-Eligible HERs Only – Rate and Bill Impact Analysis – A-60 (2024 EE Plan vs. No EE)

Income-Eligible (HERs Only)	Long-Term Rate Impacts (% of Total Rate)	Typical Energy Savings (% per Participant)	Typical Bill Savings (% of Total Bill)
Average Participant	-0.10%	-0.06%	-0.15%
Non-Participant	-0.10%	0.00%	-0.09%
Average Customer	-0.10%	-0.04%	-0.13%

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[7] HERs participation and savings are split between standard residential and income-eligible customers because this measure reaches all residential customers. For analysis purposes, HERs participation and savings are allocated based on the percent of residential customers in standard income and income-eligible rates.

Table 9. Small Commercial – Rate and Bill Impact Analysis – C-06 (2024 EE Plan vs. No EE)[8]

Small Commercial	Long-Term Rate Impacts (% of Total Rate)	Typical Energy Savings (% per Participant)	Typical Bill Savings (% of Total Bill)
Average Participant	-0.04%	-20.70%	-21.25%
Non-Participant	-0.04%	0.00%	-0.05%
Average Customer	-0.04%	-0.48%	-0.54%

Table 10. Medium Commercial – Rate and Bill Impact Analysis – G-02 (2024 EE Plan vs. No EE)

Medium Commercial	Long-Term Rate Impacts (% of Total Rate)	Typical Energy Savings (% per Participant)	Typical Bill Savings (% of Total Bill)
Average Participant	-0.12%	-8.43%	-9.31%
Non-Participant	-0.12%	0.00%	-0.14%
Average Customer	-0.12%	-0.46%	-0.64%

Table 11. Large C&I – Rate and Bill Impact Analysis – G-32, G-62 (2024 EE Plan vs. No EE)

Large Commercial	Long-Term Rate Impacts (% of Total Rate)	Typical Energy Savings (% per Participant)	Typical Bill Savings (% of Total Bill)
Average Participant	-0.35%	-0.17%	-0.53%
Non-Participant	-0.35%	0.00%	-0.35%
Average Customer	-0.35%	-0.78%	-1.20%

For all residential and income eligible customers – whether considering all programs, HERs participants only, or all programs without HERs – the average participant is projected to receive bill savings. Long-term rates are projected to increase when considering HERs only residential customer. When considering all residential programs or all residential programs without HERs, long term rates are projected to decrease. For income eligible customers, long-term rates are projected to increase or remain level – whether considering all programs, HERs only, or all programs without HERs.

For all commercial customers, long-term rates and non-participant bills are projected to increase while average participant and average customer bills are projected to decrease. The consistent reduction in average customer bills demonstrates that the energy savings associated with participation in EE programs outweighs the incremental costs required for implementation.

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[8] For 2024, as in the 2023 Plan analysis, the small business (C-06 rate) customer count has been refined to better estimate customers. The number of accounts on the C-06 rate is greater than the number of customers, for example there are many accounts for cell towers, pumps, etc. that belong to one customer. This is an estimate based on the best data currently available to the Company.

- *Residential long-term rate impact*: EE programs bring system benefits by way of avoided infrastructure investment in generation, transmission, and distribution. These avoided investments will ultimately flow through rates and offset the short-term contribution of the 2024 EE program charge. Long-term rates will drop over time to the values shown in Tables 2-7.
- *Small, medium, and large commercial long-term rate impact*: Avoided infrastructure costs flow through rates and offset the 2024 EE program charge, leading to long-term rate decreases of 0.04%, 0.12%, and 0.35% for small, medium, and large commercial customers respectively.
- *Average participant bill savings*: The proposed EE programs will provide bill savings to participants in all rate groups.
- For the 2024 Bill Impact Analysis, commercial participation by rate class is assumed to be similar to historical participation from calendar year 2019.
- *Average customer typical bill savings*: The proposed EE programs will provide bill savings to participants in all rate groups.

For both residential and income eligible electric customers participating in EE programs, a separate analysis is used to calculate delivered fuel bill impacts associated with those EE projects. The primary inputs for this calculation are annual MMBTUs of delivered fuels per home, annual fuel savings from EE, and the number of EE participants and non-participants with delivered fuels. While the number of customers with delivered fuels is likely to decrease over time due to the expansion of electrification initiatives, this has not been factored into the analysis. For C&I customers, delivered fuel bill impacts are not calculated. Water bill impacts are not calculated for either residential, income eligible, or C&I customers. See Table 12 below for average fuel savings and average bill savings per customer (in dollars and as a percentage) over the 20-year study period.

Table 12. Residential and Income Eligible EE Participants Delivered Fuel Bill Impacts

	Annual Fuel Savings (Gallons)	Annual Bill Savings	
		(Dollars)	(% of Total Bill)
Residential	47.0	$228.11	-7.95%
Income Eligible	23.6	$114.72	-4.00%

For electric residential and income eligible customers, the 2024 rate and bill impact analysis provides insights on bill savings attributable to electric and delivered fuels energy efficiency programs. Table 13 below illustrates the average total energy bill savings over the study period for these customers in dollars and as a percentage.

Electric Bill Impacts

Table 13. Residential and Income Eligible EE Participants Total Bill Savings

| | Annual Bill Savings | |
	(Dollars)	(% of Total Energy Bill)
Residential	$316.75	-6.71%
Income Eligible	$218.85	-5.01%

4   Gas Bill and Rate Impacts

4.1   Model Background

The modeling tool developed by Synapse is designed to analyze long-term rate and bill impacts from energy efficiency programs implemented over a course of three years, or one year.[9] The model used in this plan provides a long-term perspective on the impact of one year of gas energy efficiency programs compared to a counterfactual where there is no energy efficiency program in that year. The model considers the upward pressure on rates and bills due to the energy efficiency surcharge in the first year, the upward pressure of lost revenue collection in the first year and future years in which energy efficiency measures create savings, and the downward pressure on rates and bills due to the avoided costs generated by those savings as they persist into the future. As a result of this approach, the calculated impacts on long-term rates are not designed to reflect the net increase or decrease to the EE charge from the prior/current EE plan.

For the analysis presented in this plan and section, the 2024 proposed programs are analyzed. The model assesses four categories of customers. These categories include all the programs offered in the gas portfolio:

- Residential
  - EnergyWise
  - EnergyStar HVAC
  - EnergyWise Multi-family
  - Home Energy Reports
  - Residential New Construction
- Income Eligible
  - Single Family
  - Multi-family

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[9] The Synapse study introducing this modeling tool is filed in Docket 5076:
http://www.ripuc.ri.gov/eventsactions/docket/5076%20National%20Grid%20EEP%20&%203-Yr%20EEP/1%20Synapse%20RI%20Gas%20RBI%20Report%2010_2_20.pdf

- Small Commercial and Industrial
  - Small Business Direct Install
- Large Commercial and Industrial
  - Commercial New Construction
  - Commercial Retrofit
  - Commercial Multi-family

The model outputs of interest are the forecast changes in rates and the forecast changes in bills due to the proposed energy efficiency investments. The model compares two scenarios: (1) a scenario in which no efficiency resources are implemented over the next three years, and (2) a scenario that reflects the proposed investments in efficiency over the same period.

- *Rate impacts* indicate the extent to which rates change for all customers due to utility energy efficiency programs. This includes upward pressure on rates from program cost and lost revenue recovery, as well as downward pressure on rates from avoided utility system costs.

  - *Long-term rate impacts.* The model includes all avoided costs that might exert downward pressure on rates, as well as any factors that might exert upward pressure on rates. It estimates rate impacts over the long-term to capture the full period over which the efficiency savings occur. The resulting impacts are provided in terms of annual net change in rates in dollars per therm, annual percent change in rates, and long-term net change in levelized rates over a 25-year period.

- *Bill impacts* indicate the extent to which customer bills might be reduced for those customers that participate in efficiency programs and how bills will be impacted for non-participating customers.

  - *Typical bill impacts.* The model calculates average annual bill impacts for program participants, all customers, and non-participants. It considers the long-term rate impacts and energy savings for each program and the four customer types. The resulting bill impacts are shown in terms of levelized long-term average dollar change in bills, net-present value of long-term dollar change in bills, and long-term average percent change in bills.

4.2   Model Inputs

For all models, the key inputs are the net planned participation and savings numbers from Table G-7 in Attachment 6.[10] The model takes as input the following categories of information:

- Energy Efficiency Program Savings (MMBTU). The model takes as input the planned savings for each program in both annual and lifetime savings.
- Participation (#). Rhode Island Energy projects participation for each program across each year of the plan.
- Avoided Costs ($). The model takes as input the avoided cost of natural gas and natural gas demand reduction induced price effect (DRIPE) due to gas energy efficiency.
    - The portion of the natural gas avoided cost that impacts rates is limited to the avoided retail margin costs, and price suppression benefits (DRIPE).
    - The model has the capability to be further refined in the future if other components of avoided costs are quantified and monetized, such as gas transmission and distribution values. Those types of costs are included in the electric bill and rate impact but are not included in the gas analysis.
- Programmatic Costs ($). The costs planned for each program are input to the model on an annual basis based on Rhode Island Energy's budget and benefit cost analysis models. Sector or portfolio levels costs are also included and allocated to customer groupings proportionally to program specific costs.
- Rates ($/Therm): Natural Gas rates for customer classes modeled: residential, income eligible, small C&I and large C&I. The proposed rates starting in November 2023 are used.
- Customer Count (#). The latest gas customer counts as of May 2022 by sector are included in the model. These customer counts are escalated out into the future based on projected growth rates.
- Sales Forecast ($, %). A sales forecast that omits future natural gas energy efficiency savings is utilized in the model to properly characterize the counterfactual state of the world with no energy efficiency programs.

4.3   Summary of Results

The following subsections summarize the results of the rate and bill impact modeling for each of the four modeled customer segments. The overall results for the 2024 plan at the sector level are presented in the table below with additional detail provided in subsections and figures below. This analysis projects that each modeled customer sector will see a levelized net change in long term rates of between 0.01% and 0.49% due to the 2024 energy efficiency programs. The first-year cost of the programs combined

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[10] The 2024 Annual Plan analysis maintains the approach of modeling five rate class groupings as used in the last year's annual plan to allow for a more realistic depiction of bill impacts because there is a wide array of usage among commercial customers and having more groupings helps illustrate typical impacts.

with the recovery of lost revenue put upward pressure on rates, while avoided costs as detailed earlier generate downward pressure on rates.

The 2024 gas portfolio will result in long term average bill decreases for program participants in the income eligible, small C&I, and large C&I sectors of between 3.3% and 21.4%.

The residential sector is unique in that it includes the Home Energy Report (HER) program. This behavioral program provides recommendations for residential customers to save energy by taking actions in their home, rather than by installing more-efficient equipment. This results in the program having a measure life of only one year, as the evaluated results show that behavioral efficiency of this type has relatively short persistence compared to other residential programs that install longer-lived measures. The HER program also reaches nearly all residential customers through either mail or email, meaning that nearly all residential customers are participants.[11]

It is therefore instructive to view the rate and bill impacts for the residential sector in three separate modeling analyses:

1) Results of the HER program in isolation
2) Results of all other residential programs together (EnergyWise, EnergyStar HVAC, EnergyWise Multi-family, Residential New Construction)
3) Results with HER and all other residential programs

It is important to note that each of these three parts of the residential sector analysis have been developed using a separate instance of the gas rate and bill impacts model. In the model, the period covered by the analysis is determined by the average measure life of the longest program included. For the 2024 plan, this period was determined to be 25 years due to EnergyWise having an average measure life of 24-years plus the inclusion of an additional buffer year. The same value of 25 years is applied to each sector and each program within a sector. This is not to suggest that all measures have a measure life of 24 years. Each measure has its own measure life assumption. However, as the study period assumption is applied to all programs, a period is selected that is long enough to capture all the savings from all measures in all sectors. Consequently, the model instance analyzing the Home Energy Report program in isolation models savings only over one year (a much shorter period compared to the other two model instances as mentioned earlier). Therefore, the three instances are not directly comparable, and the first two model instances do not additively result in the third instance.

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[11] Customers who are not served by the HER program are only excluded due to reasons of evaluability, that is, to assess the savings in a statistically valid way, a control group of sufficient size is required.

Additionally, in the model instance that assesses all programs together, HER participants incur costs associated with the non-HER programs, such as lost revenue recovery. These costs are not captured in the model instance analyzing the Home Energy Report program in isolation.

The HER program in isolation shows essentially no reduction in bills for participants (0.01%) and average customers (0.002%), and a small increase for non-participants (0.01%). This is to be expected because the number of participants is high enough that the per-participant savings is less than 1 net MMBtu per participant, resulting in minimal change to bills. Taken at the individual level, the savings results are modest, however in aggregate the HER program generates significant net annual savings by reaching most residential customers and doing so at relatively low cost.

When the remaining four residential programs are assessed together (excluding HERs), the results show that participants see an average reduction of 4.62% on their bills over the long term, while average customers see a 0.15% increase, and non-participants see an increase of 0.33%. The EnergyWise, EnergyStar HVAC, EnergyWise Multifamily, and Residential New Construction programs have fewer participants than the HERs program, have longer-lived average measure lives (between 18 and 24 years), and generate deeper savings per participant than the HER program, all resulting in deeper bill savings for participants.

Lastly, when all residential programs are modeled together (HER, EnergyWise, EnergyStar HVAC, EnergyWise Multifamily, Residential New Construction), the modeling shows participants realizing a slight decrease of 0.01% in their long-term bills. This result is a byproduct of the way that the model considers participants for the residential sector when all residential programs are considered together. To calculate impacts for total participants, the model considers the count of participants in the first year, which involves including the large pool of HER participants, through the duration of the modeling period (25 years). The savings for all the residential programs are therefore spread across a large group of participants, minimizing their impact, and resulting in a conservative assessment of participants' bill impacts.

Because of the truly unique nature of the HER program in terms of its measure life, distribution to most customers, and relatively small per-customer savings relative to other residential programs, the Company believes that in the context of this analysis it is also appropriate to consider the results of the HER program in isolation from the remaining four residential programs. Therefore, the residential programs are modeled with three separate modeling instances as shown below.

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Table 14. Summary of Rate and Bill Changes due to the 2024 Proposed Natural Gas Energy Efficiency Portfolio[12]

Sector	Levelized net change in rates due to 2024 Programs	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential (Model 1: HERs only)	0.01%	0.01%	0.00%	-0.01%
Residential (Model 2: All Programs Except HERs)	0.33%	0.33%	0.15%	-4.62%
Residential (Model 3: All Programs)	0.34%	0.34%	0.14%	0.01%
Income Eligible	0.49%	0.49%	-0.04%	-3.33%
Small C&I	0.25%	0.25%	0.09%	-21.41%
Large C&I	0.33%	0.32%	-0.13%	-3.98%

Further detail is provided for each sector in the subsections below.

4.3.1   Residential

The Residential sector is modeled using rates from Rate Class 12, Residential Heating. The rate and bill impacts for this sector are modeled for five programs, EnergyWise, EnergyStar HVAC, EnergyWise Multi-family, Home Energy Reports, and Residential New Construction. The residential sector is modeled using an annual consumption figure of 874 therms per year, of which 730 therms are winter usage and 143 therms are summer usage. These values were determined by dividing sales for the sector by meter counts in 2024. The customer population is modeled using latest customer counts as of May 2022, 223,220 accounts, and projected forward based on observed compound annual growth rate of customers in this rate class between 2017 and 2022.

4.3.1.1   Residential Rates

For the residential sector the 2024 Plan creates a levelized net change in rates of 0.34% compared to the counterfactual with no energy efficiency.

4.3.1.2   Residential Bills

As discussed in the Summary of Results (Section 4.3), the residential programs should be considered in three distinct modeling iterations. First the HER program is assessed in isolation, then the four remaining programs are considered together, and finally all programs are combined in a single analysis. For

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[12] Rate impact is the same as the non-participant bill impact, since non-participants have no savings to offset the change in rates. Some values for these two categories differ slightly due to rounding in the model.

purposes of characterizing the bill impacts from the residential programs, the results of the first model illustrate that for the HER program in isolation, there is minimal change in long-term average bills, with only a 0.01% reduction for participants. This result is reasonable given the short duration of savings for the HERs program and the small per-participant savings generated by this program.

4.3.2   Income Eligible

The Income Eligible sector is modeled using rates from Rate Class 13, low-income residential heating. The rate and bill impacts for this sector are modeled for two primary programs, the Single Family Income Eligible and Income Eligible Multifamily programs. Income eligible customers also participate in the HERs that is modeled as part of the residential sector in this analysis. The income eligible sector is modeled using an annual consumption figure of 772 therms per year, of which 632 therms are winter usage and 141 therms are summer usage determined by dividing sales for the sector by meter counts in 2024. The customer population is modeled using latest customer counts as of May 2022, 24,278 accounts, and projected forward based on observed compound annual growth rate of customers in this rate class between 2017 and 2022.

4.3.2.1   Income Eligible Rates

The 2024 programs l impact to rates is larger for this customer group partially because the energy efficiency charge represents a larger portion of the overall per-therm cost because distribution adjustment charges (DAC) are lower for income eligible customers than residential customers.

4.3.2.2   Income Eligible Bills

The income eligible programs planned in the 2024 plan will result in a long-term average reduction in bills for participating customers of 3.33% on average. Average customers will see a 0.04% decrease in annual bills and non-participants will see a 0.49% increase in bills.

Analyzing each program individually, participants in the Income Eligible Single-Family program will see an average of 6.05% reduction in annual bills due to their 2024 participation. Participants in the Income Eligible Multifamily program will see an average of 1.55% reduction in annual bills due to their 2024 participation.

4.3.3   Small Commercial and Industrial

The Small Commercial and Industrial sector is modeled using rates from Rate Class 21, Small (< 5,000/yr). The rate and bill impacts for this sector are modeled for the Small Business Direct Install program. The Small Commercial and Industrial sector is modeled using an annual consumption figure of 1,369 therms per year, of which 1,164 therms are winter usage and 205 therms are summer usage determined by dividing sales for the sector by meter counts in 2024. The customer population is modeled using latest customer counts as of May 2022, 19,070 accounts, and projected forward based on observed compound annual growth rate of customers in this rate class between 2017 and 2022.

4.3.3.1   Small Commercial and Industrial Rates

The 2024 program addressing the small C&I market is projected to result in a 0.25% levelized increase in rates for the commercial and industrial sectors.

4.3.3.2   Small Commercial and Industrial Bills

The Small Commercial and Industrial program will result in an average annual bill reduction of 21.4% for participants in the Small Business Direct Install program.

4.3.4   Large Commercial and Industrial

The Large Commercial and Industrial sector is modeled using rates from Rate Classes 22, 33, 23, 34, and 24. The rate and bill impacts for this sector are modeled for the Commercial New Construction, Commercial Retrofit, and Commercial Multi-family programs. The Large Commercial and Industrial sector is modeled using an annual consumption figure of 544,429 therms per year, of which 300,304 therms are winter usage and 244,125 therms are summer usage determined by dividing sales for the sector by meter counts. The customer population is modeled using latest customer counts as of May 2022, 5,854 accounts, and projected forward based on observed compound annual growth rate of customers in this rate class between 2017 and 2022. Consumption among participants is modeled using usage observed among the large C&I program participants and for the medium C&I class for C&I multifamily participants using the FY2021 Gas ISR Plan.

4.3.4.1   Large Commercial and Industrial Rates

The 2024 programs addressing the large C&I market are projected to result in a 0.32% levelized increase in rates for the commercial and industrial sector.

4.3.4.2   Large Commercial and Industrial Bills

The large commercial and industrial programs will result in an average annual bill reduction of 3.98% for participants

Analyzing each program individually, Large Commercial Retrofit participants will see a reduction of 0.56%, while participants in the Large Commercial New Construction program will see a reduction of 0.29%, and a 0.15% reduction for the Commercial Multifamily program.

4.3.4.3   Discussion and Interpretation of Natural Gas Results

For each customer segment the modeling shows reductions in long-term bills due to customer participation in the programs. In addition to the rate and bill impacts, the Company considers both the benefit cost results and the cost of supply in developing its proposal. The portfolio of programs is highly cost effective per the RI Test analysis and less than the cost of supply.

Note that the RBI model excludes several key benefits of energy efficiency. For example, the price of carbon is not fully accounted for in Rhode Island Energy's natural gas rates. Efficiency programs reduce

carbon and other greenhouse gas emissions, which is not accounted for in this model but is accounted for in the BCA as a non-embedded benefit. Likewise, the gas efficiency programs create non-energy benefits that are not accounted for in this model but are included in the BCA.

As noted earlier, a key distinction between the gas model and the related electric model is the limited set of gas avoided costs. The portion of the natural gas avoided cost that impacts rates is limited to the avoided retail margin costs, and price suppression benefits (Demand Reduction Induced Price Effects or "DRIPE"). In contrast, in the electric model there are embedded RGGI costs in rates and the electric model also accounts for T&D avoided costs. The gas model has the capability to incorporate a T&D avoided cost in the future should one be developed in the future, but it is not currently accounted for in the calculation of long-term rates in the present analysis.

The Company will reassess the inputs and assumptions in this analysis for each subsequent annual efficiency plan filing and make updates to the analysis and model as appropriate to continue to incorporate latest information and understanding of the impacts of the gas programs on long-term energy costs and customer bills.