



STATE OF RHODE ISLAND

ENERGY EFFICIENCY & RESOURCE MANAGEMENT COUNCIL

CONSULTANT TEAM

Consultant Team Continued Review First Draft of the 2023 Annual Plan

Presented By: EERMC Consultant Team

Date: August 18, 2022



Outline

Overview

Commercial & Industrial Review

Residential & Income Eligible Review

Portfolio Review

Council Discussion



OVERVIEW





Updates since July EERMC Meeting

Continued collaborative meetings with Rhode Island Energy

Acknowledgement of concerns with large TRC increases, intent to revise

- C-Team awaiting updated numbers to undertake second-pass review

Confirmation of C-Team-developed mapping of new measure list to support more detailed measure-level trend analysis & QA review

- C-Team submitted 70+ quantitative review questions leveraging mapping



Equity Framework For Assessing Impact Recommendations, Commitments, Metrics

Recommendations have historically been developed by the Equity Working Group and used by the Company as one input for the equity elements of their Annual Plan

Equity Working Group not responsible for Plan content, just EWG outcomes

Commitments are specific, incremental actions committed to by RI Energy

They should support overarching equity goals, such as EWG recommendations adopted by RI Energy in annual plans

Metrics are ways of measuring outcomes. Should be established for each recommendation and commitment

Metrics should be quantifiable, time-bound, and supported by reporting data and other relevant information

C-Team strongly encourages quarterly equity updates for 2023 to enable consideration of progress in 1st draft EE Plan

Determinations of Success (e.g., targets) should be established for each recommendation and commitment

They can be defined as specific levels of attainment for relevant metrics that, if achieved, constitute success



Q2 Update and 2023 Annual Plan Processes and Improvements

C-Team Review Framework: Three Separate Equity Processes

- **Equity Working Group Recommendations** are an important source of stakeholder input from communities not historically engaged in EE forums
- **2022 Equity Progress Update** is a Company responsibility related to Company commitments made in 2022 Annual Plan, falls squarely within Council implementation oversight responsibilities
- **2023 Annual Plan equity content** is also a Company responsibility. Can be in support of EWG recommendations or other equity goals, and can build on 2022 Plan, but represents separate deliverable and responsibility from either of the other processes

C-Team Expected Improvements for 2023 Annual Plan

- Company commitments need to clearly support all EWG recommendations that are adopted
- Recommendations & commitments should have quantifiable metrics for determining success, with stated targets using those metrics for what constitutes success
- Opportunity to review 2023 Company equity content prior to finalization



2022 Year-End Fund Balance Update

Key Takeaway

- Large forecasted 2022 year-end fund balance still under active discussion
- Primary question regarding manner to account for 2021 year-end fund balance

Possible implications for 2022 program activity levels largely resolved due to separate estimate for year-end spending shared by Rhode Island Energy team

Continue to seek clarity regarding 2021 year-end fund balance in 2022 fund balance forecast in part due to implications for rate and bill impact models



COMMERCIAL AND INDUSTRIAL SECTOR REVIEW





C&I – Plan Updates

Data-related questions have been communicated to The Company for further investigation

High measure cost assumptions for 2023 relative to 2022 levels

- Ongoing analysis, cross-jurisdictional comparisons, and discussions with Company staff

Evaluation, Measurement, and Verification (EM&V) updates to be incorporated into next Plan Draft

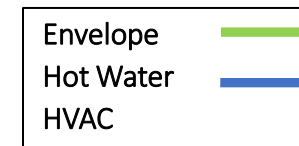
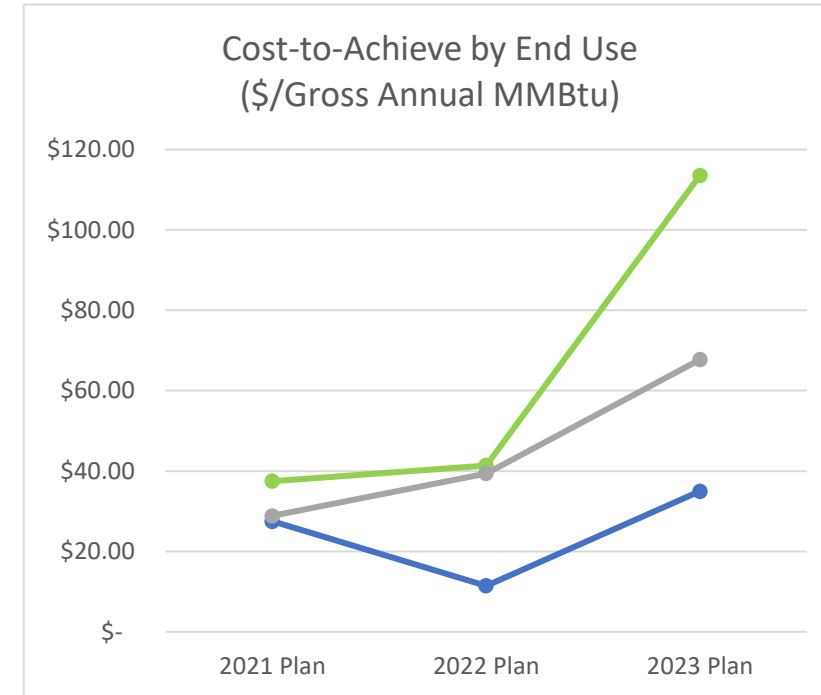
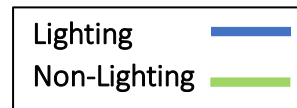
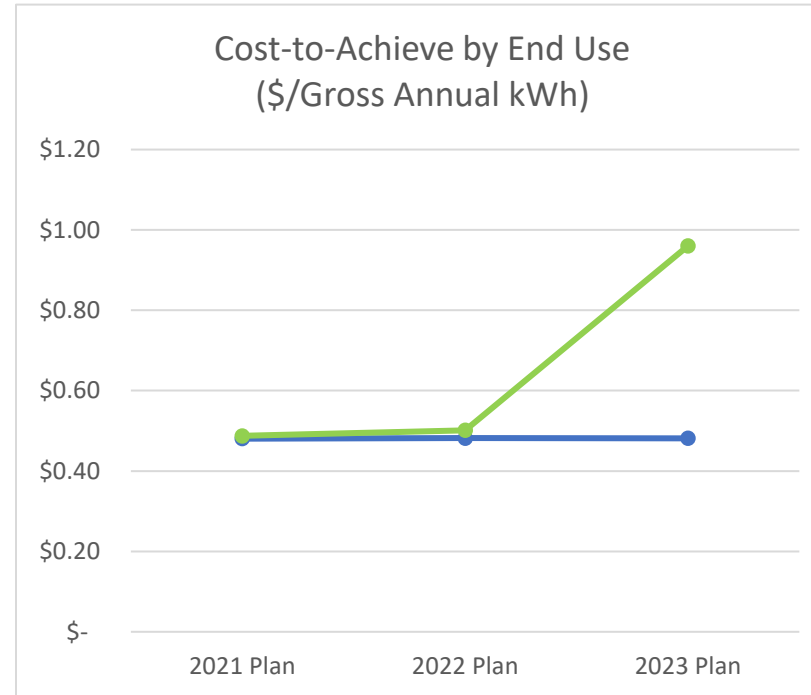


C&I – Cost Trend Analysis

Key Takeaway Questions submitted and ongoing analysis regarding 2023 cost assumptions. The Company has indicated intent to revise cost assumptions in subsequent Plan draft.

End Use	2023 \$/Gross Annual kWh	% Change from 2022
Lighting	\$0.48	-0.1%
Non-Lighting	\$0.96	92%

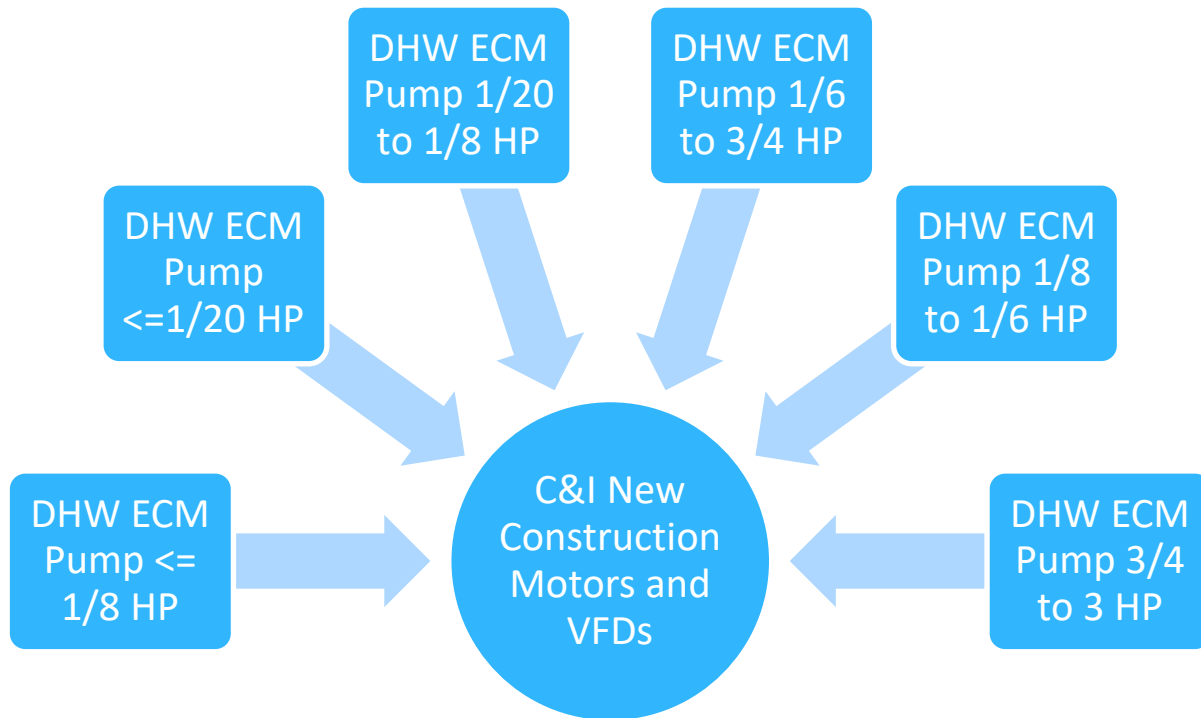
End Use	2023 \$/Gross Annual MMBtu	% Change from 2022
Envelope	\$113.53	206%
Hot Water	\$34.99	174%
HVAC	\$67.72	72%





C&I – Cost Trend Analysis Example

Mapping between 2022 and 2023 BCR Models to support continued analysis and year-over-year comparisons



2023 Measure	% Change from 2022 Total Resource Cost
DHW ECM Pump $\leq 1/8$ HP	78%
DHW ECM Pump $\leq 1/20$ HP	93%
DHW ECM Pump 1/20 to 1/8 HP	93%
DHW ECM Pump 1/6 to 3/4 HP	93%
DHW ECM Pump 1/8 to 1/6 HP	93%
DHW ECM Pump 3/4 to 3 HP	93%



C&I – Cross-Jurisdictional Cost Comparison

Mapping to National Grid MA 2022-2024 Plan BCR Models to benchmark RI cost assumptions. Gas measure costs significantly higher in RI – top ~50% savings Retrofit measures shown

RI Measure	MA Measure	Percent of Total RI C&I Lifetime Gas Savings	RI TRC Cost per Gross Annual MMBtu	MA TRC Cost per Gross Annual MMBtu	Percent Difference (RI Compared to MA)	Multiple (RI Compared to MA)
Wi-Fi Thermostats	Wi-Fi Thermostat, Gas	9.8%	\$102.53	\$28.67	258%	3.6x
Heat Recovery - All, Year Round, and Seasonal	Heat Recovery, Gas - Custom	9.4%	\$100.16	\$40.00	150%	2.5x
HVAC Equipment	Heating, Gas - Custom	7.5%	\$100.16	\$41.00	144%	2.4x
CUSTOM - OTHER	Other, Gas - Custom	7.3%	\$97.43	\$39.60	146%	2.5x
Thermostats	Programmable Thermostat, Gas	5.7%	\$97.92	\$38.65	153%	2.5x
Custom Steam Traps	Steam Trap, Gas - Custom	3.0%	\$32.79	\$20.40	61%	1.6x
Ventilation Reduction	Controls, Gas - Custom	2.0%	\$75.12	\$48.00	57%	1.6x
HVAC Controls and EMS	Controls, Gas - Custom	1.9%	\$62.60	\$48.00	30%	1.3x
Prescriptive Steam Traps	Steam Trap, Gas	0.5%	\$47.87	\$88.89	-46%	0.5x

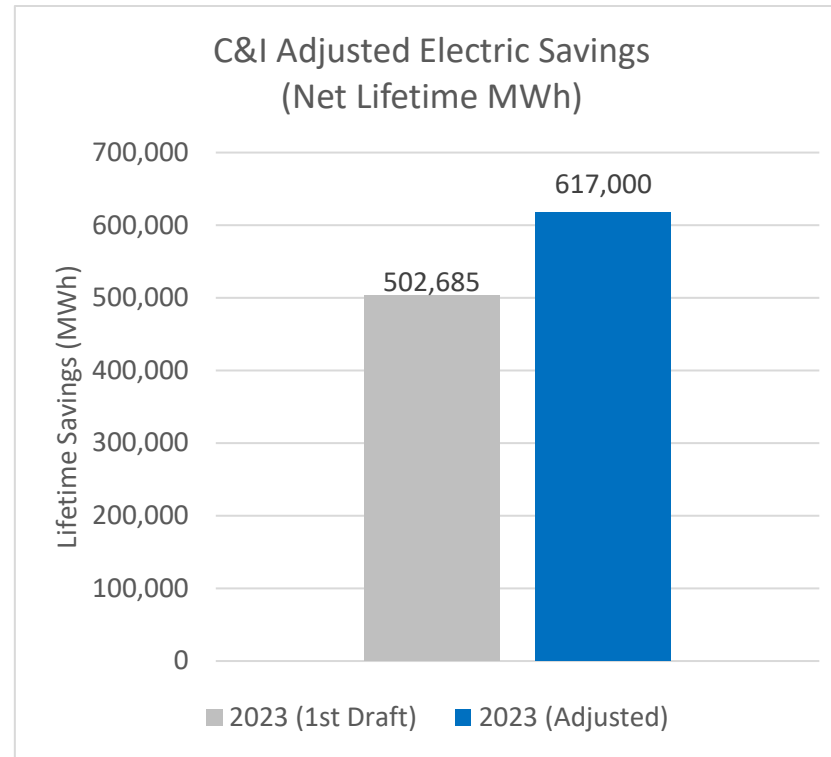


C&I – Cost Adjustments

Key Takeaway *Adjusted Electric Savings 23% higher based on 2022 cost assumptions and 2023 spending. Adjusted Gas Savings 49% higher under the same conditions.

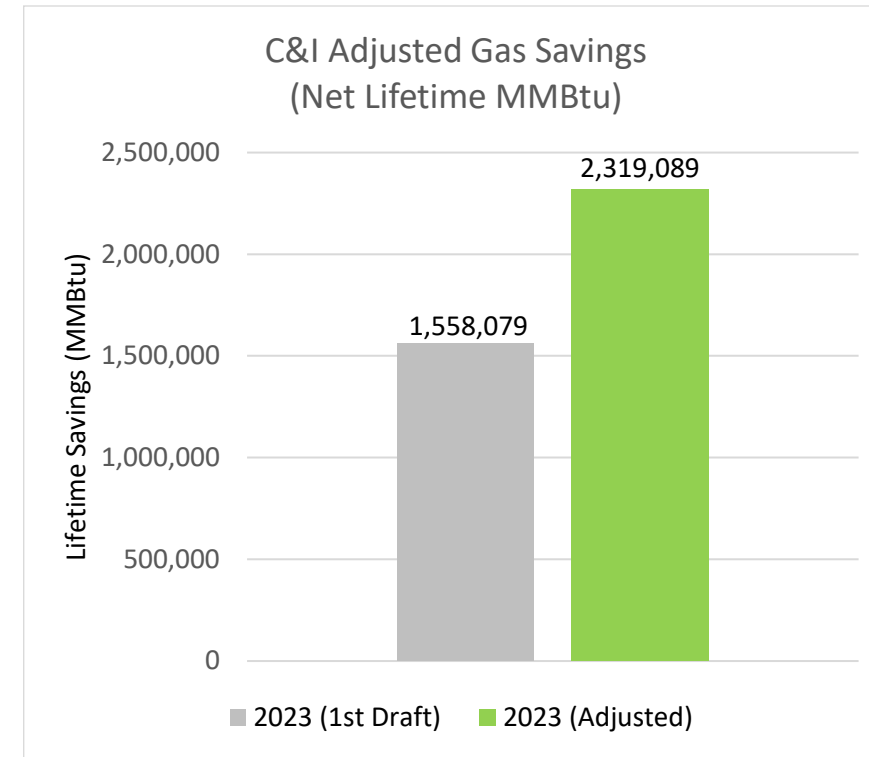
Lifetime Electric Savings (MWh)

Program	2023 (1st Draft)	2023 (Adjusted)	2023 (Adjusted) Compared to 2023 (1st Draft)
Small Business	63,612	52,186	-18%
New Construction	147,186	218,320	48%
Retrofit	291,888	346,494	19%
C&I Total	502,685	617,000	23%



Lifetime Gas Savings (MMBtu)

Program	2023 (1st Draft)	2023 (Adjusted)	2023 (Adjusted) Compared to 2023 (1st Draft)
Small Business	64,521	92,982	44%
New Construction	507,961	619,418	22%
Retrofit	925,439	1,502,601	62%
C&I Multifamily	60,158	104,088	73%
C&I Total	1,558,079	2,226,107	43%



*2023 savings were adjusted by applying 2022 program cost-to-achieve to 2023 program implementation budgets.



RESIDENTIAL SECTOR REVIEW

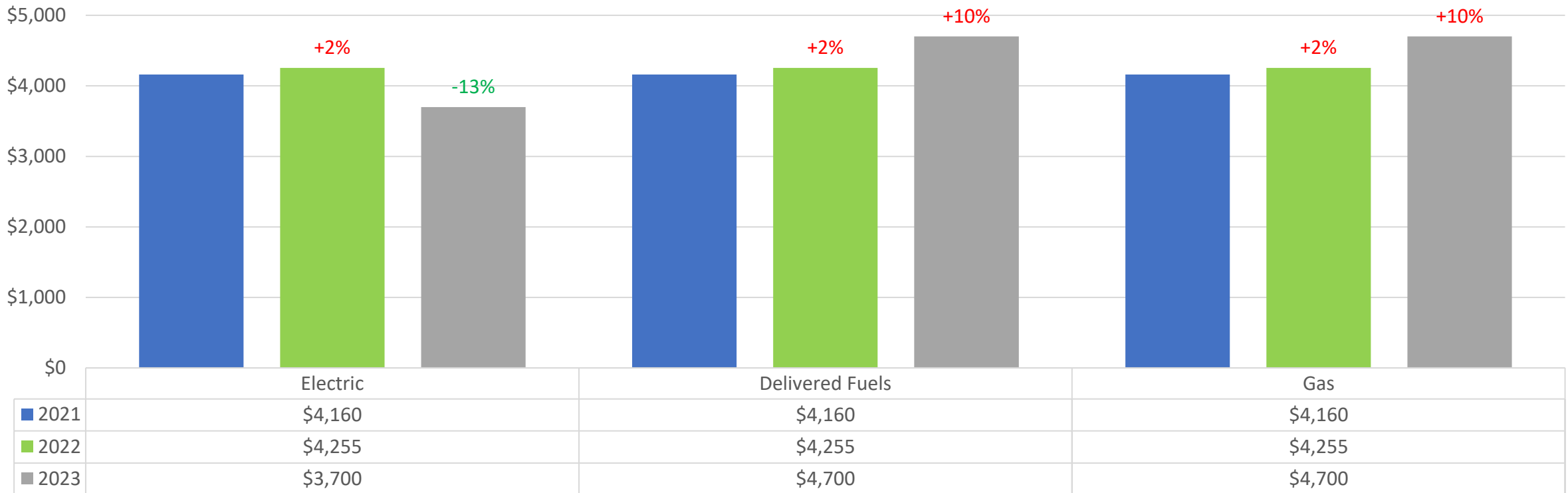




EnergyWise Weatherization Costs

Key Takeaways Increase in weatherization total resource cost (TRC) expected, but magnitude of increase is not well justified in Plan. Planned TRC is not uniform across all fuels.

Planned Weatherization TRC



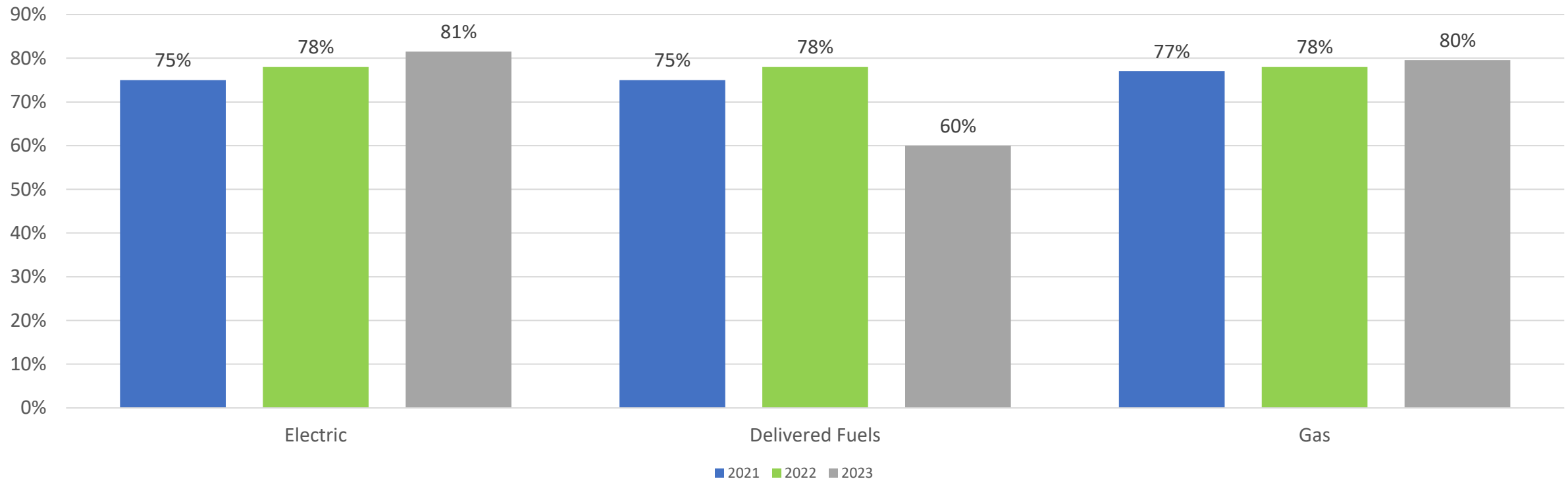


EnergyWise Weatherization Incentives

Key Takeaway

Percent of TRC covered by incentive remains at ~80% for electric and gas customers, but drops to 60% for delivered fuels customers.

Planned Incentive Coverage





Income Eligible SF Cost Assumptions

Key Takeaways

Several measures in the Income Eligible Single Family program received 10% increases in cost assumptions compared to the 2022 Plan. While some increase in these costs were expected, the magnitude has not been well justified.

Measure	2022 Plan TRC	2023 Plan TRC	Delta	% Change
Clothes Washers	\$700	\$770	\$70	+10%
AC Replacement	\$350	\$385	\$35	+10%
Dehumidifier	\$250	\$275	\$25	+10%
Heating System Replacement	\$5,000	\$5,500	\$500	+10%
Weatherization	\$5,000	\$5,500	\$500	+10%
Heat Pump Water Heaters	\$1,800	\$2,750	\$950	+53%



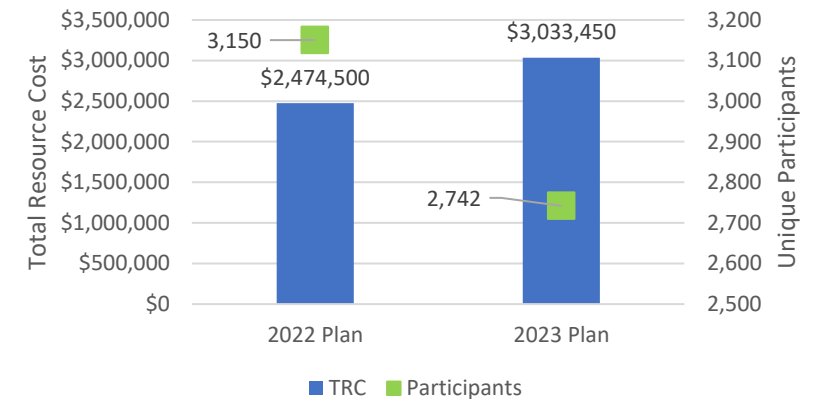
Income Eligible Multifamily

In gas program, 23% increase in TRC, combined with 13% reduction in participants, results in 41% increase in TRC per participant

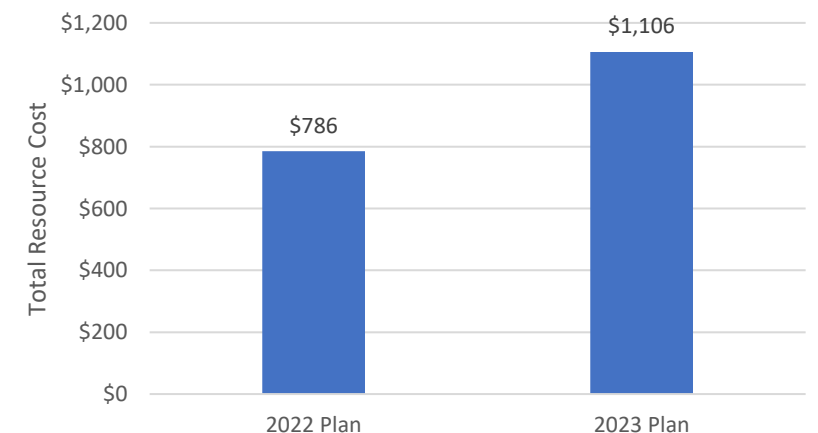
- Similar story in electric program, though to a lesser effect (11% increase in TRC per participant)

Combined Heat and Power (CHP) project in electric program is expected to account for ~11% of incentives and ~14% of the lifetime savings

IE MF Gas TRC and Participants



IE MF Gas TRC per Participant



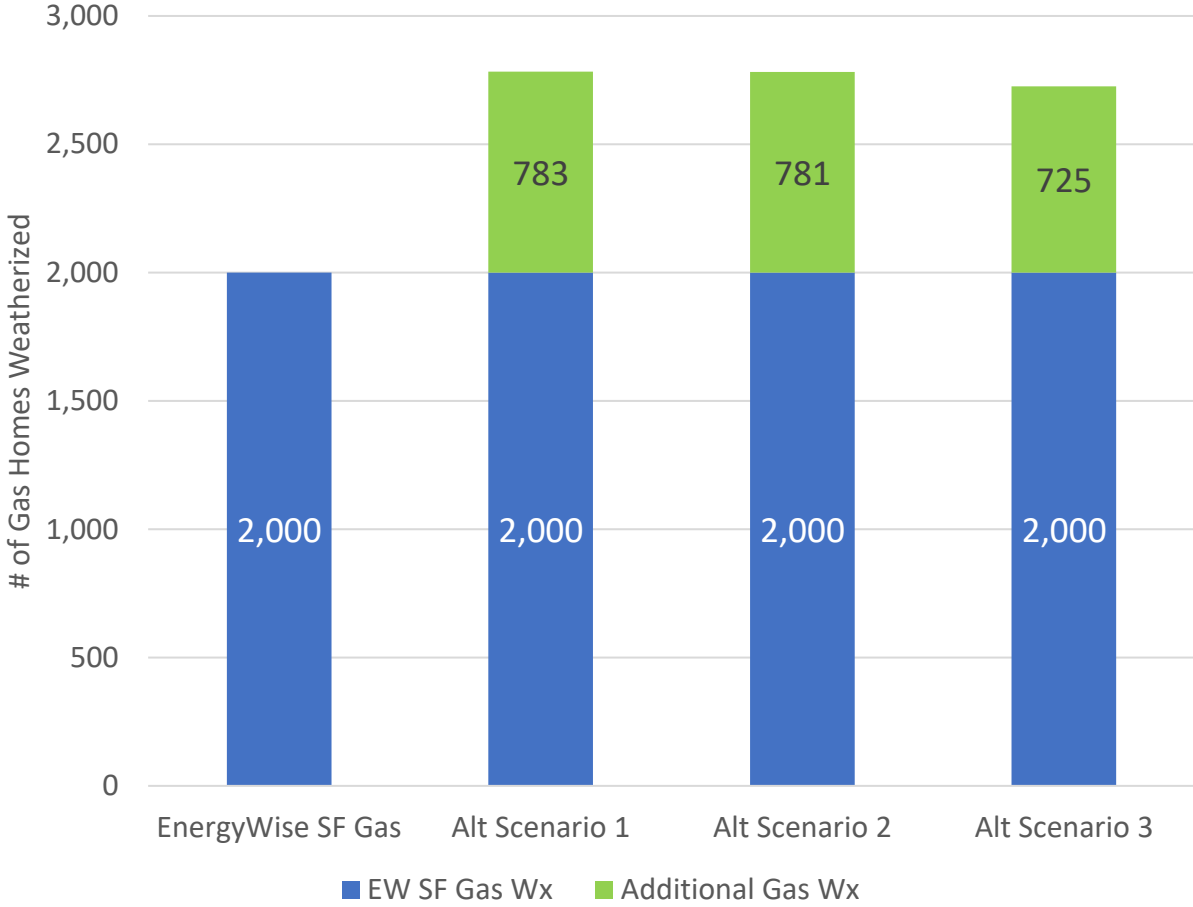


Gas HVAC Counterfactual

Example of how incentives for gas equipment could be reallocated to target prioritized efficiency activities

Scenario	Description
Alt Scenario 1	Reallocate incentives for all gas heating and hot water equipment to gas weatherization
Alt Scenario 2	Reallocate incentives for all gas heating and hot water equipment with average benefits that are lower than gas weatherization to gas weatherization
Alt Scenario 3	Reallocate incentives for all gas heating and hot water equipment with BCRs that are lower than gas weatherization to gas weatherization

Important to note that these scenarios would result in overall net reductions in lifetime savings and benefits





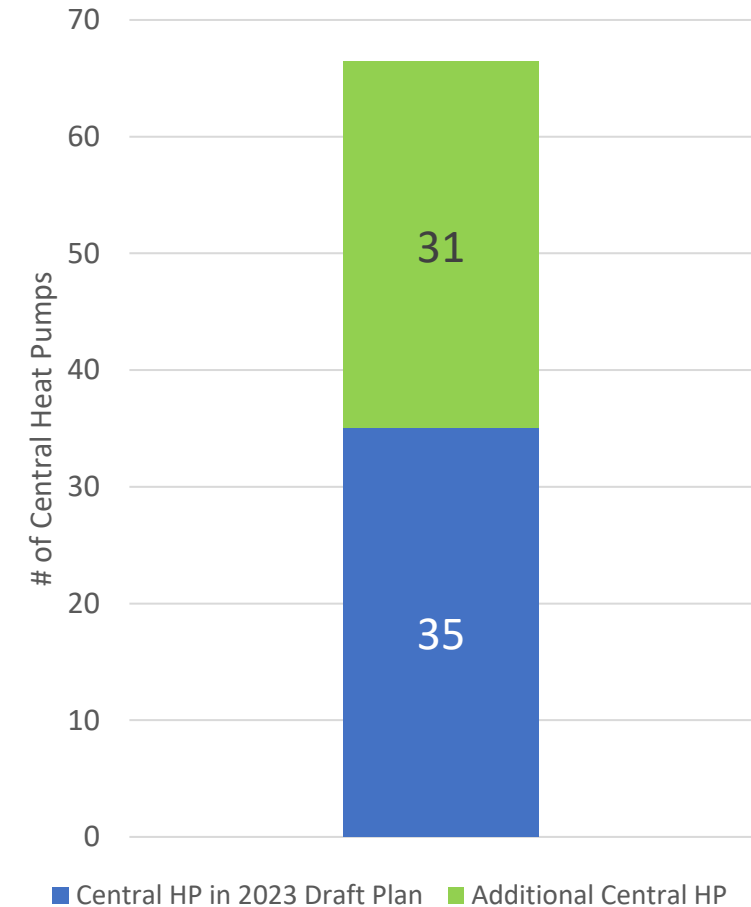
Electric Central AC vs Central Heat Pump

Compared to Central ACs, Central Heat Pumps:

- Result in ~5.5x the net lifetime electric savings
- Generate ~3x the total benefits
- Have a BCR of 6.5 compared to 1.16

At current planned incentive levels, reallocating Central AC incentives to Central HPs would nearly double the amount of planned Central HPs in the HVAC program

While this scenario would result in overall net reductions in lifetime savings and benefits, these reductions could be offset by allocating ~\$13k more in incentives to Central HPs





PORTFOLIO REVIEW





Non-Incentive Program Costs

Large increases in program non-incentive costs

- Program Planning & Administration, Marketing, Sales, Technical Assistance & Training, Evaluation & Market Research

Examples

- For PP&A, increases in all electric programs, and all but one gas program (+\$1Million, 14% over 2022 Plan)
- PP&A increased by 50% or more for 13 out of 24 electric and gas programs
- Non-incentive costs across the electric and gas portfolios increase by 12% (~\$4.2 Million), while rebates and customer incentives increase by only 4% (~\$3.9 Million)



Technical Reference Manual Database

Measure-level inputs in BC Models do not always align with corresponding measures in Technical Reference Manual Database

- Likely a result of updates to TRM coming after BC Model updates
- Alignment expected for final draft

Several examples where measure lives or other inputs in TRM database reference a table from a study or a calculation, but tables or calculations are not clear enough



Council Member Discussion

