



NW Natural[®]

Biennial Energy Efficiency Plan

2024-2025

Contents

- Table of Figures 4
- Executive Summary 5
 - 2024-2025 Goal Development 5
 - 2024-2025 Cost Effectiveness 6
- Background 7
 - History 7
 - Program Implementation..... 7
 - Oversight..... 7
 - Program Delivery 7
- Energy Efficiency Programs Offered 8
 - Incentive Programs 8
 - Low Income 11
 - Market Transformation..... 11
 - Pilot and Trial Programs..... 11
- Cost Effectiveness Standards 12
 - Utility Cost Test (UCT) 12
 - Total Resource Cost Test (TRC) 13
 - Levelized Cost..... 13
 - Avoided Costs..... 14
- Program Evaluation, Monitoring and Verification 14
 - Impact Evaluations..... 14
 - Process Evaluations..... 15
- Process for Program Changes 15
- Schedule for Program Planning 15
 - Reporting Requirements..... 16
- Program Budget Guidelines 17
- Cost Recovery..... 17
- Biennial Energy Efficiency Plan 18
 - Current Program Drivers 18
 - Residential..... 18
 - Commercial 18
 - Incentive Programs 19

Therm Savings by Program	20
Expenses by Program	20
Incentives by Program	20
Low-Income Program	21
Low Income Performance Targets	21
Low Income Budget	21
Low Income Cost Effectiveness.....	22
Gas Market Transformation.....	22
Pilots & Trial Programs.....	22
Behavioral Energy Efficiency	22
Industrial Program Pilot	23
Northwest Power and Conservation Council.....	23
On-the-Bill Repayment Services	23
Evaluations	24
Development Considerations	24
2023 Conservation Potential Assessment.....	24
Appendices.....	28
APPENDIX 1: List of Abbreviations	28
APPENDIX 2: On-The-Bill Repayment.....	29
APPENDIX 3: UES Measure List	32
APPENDIX 4: Measure Approval Documents	52

Table of Figures

Figure 1 - Biennial Plan Summary	5
Figure 2 - CPA Summary.....	6
Figure 3 - Program Benefit Cost Ratios	6
Figure 4 - Portfolio Levelized Costs.....	6
Figure 5 - Avoided Cost Summary by End Use (2021\$/Dt)	14
Figure 6 - Reporting Schedule.....	16
Figure 7 - Incentive Program Summary	19
Figure 8 - Incentive Program Therm Savings	20
Figure 9 - Incentive Program Expenses.....	20
Figure 10 - Incentive Budgets by Program.....	20
Figure 11 - WA-LIEE Program Goals	21
Figure 12 - WA-LIEE Program Budget	21
Figure 13 - NEEA Summary	22
Figure 14 - BEE Pilot Summary.....	23
Figure 15 - Industrial Pilot.....	23
Figure 16 - RTF Funding.....	23
Figure 17 - Evaluation Budget.....	24
Figure 18 - Residential Top Measures.....	25
Figure 19 - Commercial Top Measures	26
Figure 20 - Industrial Top Measures	27

Executive Summary

In accordance with Washington Utilities and Transportation Commission’s requirements, Northwest Natural, dba NW Natural (“NW Natural” or the “Company”) presents this 2024-2025 Biennial Energy Efficiency Plan. This Plan outlines the Company’s energy efficiency efforts and goals for its Washington service territory for the 2024-2025 program years.

Notable changes for the biennium include the addition of two trial programs: Residential Behavioral Energy Efficiency and Industrial Energy Efficiency. The Residential Behavioral Energy Efficiency Program (“BEE Program”) is a Home Energy Report (“HER”) style program that will launch Q4 of 2023. The Industrial Program will be developed in 2024 using findings from the Industrial Audit Pilot that will run through the end of 2023. The Industrial Program will be made available to customers on eligible rates in 2025.

The residential and commercial incentive programs continue to play a large role in the Company’s savings acquisition. Due to code related changes, new construction savings forecasts have decreased from the previous biennium. NW Natural also plans to continue to support regional efforts through the Northwest Energy Efficiency Alliance (“NEEA”) and through the Northwest Power Council’s Regional Technical Forum (“RTF”).

2024-2025 EE Plan Summary		Biennial Therms Goal	Biennial Cost
Incentive Programs	Commercial	257,066	\$3,039,663
	Residential	232,468	\$4,425,790
Low-Income	WA-LIEE	8,680	\$283,885
Market Transformation	NEEA	60,000	\$329,353
Pilots & Trial Programs	Behavioral	205,708	\$753,756
	Industrial	TBD	\$150,000
Regional Planning	RTF	N/A	\$26,100
Conservation Potential Assessment	CPA	N/A	\$150,000
Program Validation	Evaluation	N/A	\$160,000
Biennial Savings Goal		763,922	
EE Plan Total		\$9,318,547	
CPA 2-year Target		720,000	

Figure 1 - Biennial Plan Summary

2024-2025 Goal Development

In accordance with RCW 80.28.380, NW Natural has established a two-year savings acquisition target that is based on a conservation potential assessment (“CPA”) conducted by an independent third party. Applied Energy Group (“AEG”) was the selected vendor who completed the CPA which was filed with the Washington Utility and Transportation Commission (“WUTC”) on June 1, 2023. The CPA developed 30-year projections for technical, achievable, and economic savings potential.

Summary of Energy Savings, Selected Years	2024	2025	2026	2030	2035	2040	2050
Reference Baseline	86,056	85,329	84,624	82,162	79,092	76,123	70,733
Cumulative Savings (thousand therms)							
Achievable Economic TRC Potential	355	720	1,115	3,099	6,224	9,223	11,129
Achievable Economic UCT Potential	518	1,043	1,597	4,137	7,583	10,736	12,658
Achievable Technical Potential	585	1,180	1,807	4,686	8,526	11,940	13,950
Technical Potential	1,168	2,335	3,532	8,442	13,883	17,305	18,809
Cumulative Savings (% of Baseline)							
Achievable Economic TRC Potential	0.4%	0.8%	1.3%	3.8%	7.9%	12.1%	15.7%
Achievable Economic UCT Potential	0.6%	1.2%	1.9%	5.0%	9.6%	14.1%	17.9%
Achievable Technical Potential	0.7%	1.4%	2.1%	5.7%	10.8%	15.7%	19.7%
Technical Potential	1.4%	2.7%	4.2%	10.3%	17.6%	22.7%	26.6%

Figure 2 - CPA Summary

2024-2025 Cost Effectiveness

The Company continues to monitor its energy efficiency programs through cost-effectiveness tests and levelized costs. Benefit-cost ratios for incentive programs are screened by both the Utility Cost Test (“UCT”) and Total Resource Cost (“TRC”) tests. In recent years the levelized cost per therm saved has increased in response to the market and new program development.

Anticipated Program Performance	2024	2025	2024-25 (2-Year)
Incentive Program UCT	1.56	1.62	1.59
Incentive Program TRC	1.12	1.13	1.13

Figure 3 - Program Benefit Cost Ratios

Program Year	Levelized Cost
2022 – Approved Budget	\$0.890
2022 – Actual	\$0.636
2023 – Approved Budget	\$0.873
2024 – Budgeted	\$1.08
2025 – Budgeted	\$1.06

Figure 4 - Portfolio Levelized Costs

Background

NW Natural began offering its current energy efficiency incentive programs to Washington customers on October 1, 2009. The Washington Utilities and Transportation Commission's ("WUTC's") Order No. 04 in the Company's 2008 rate case, docketed as UG-080546, directed the Company to create and begin offering energy efficiency programs.

Since the inception of the Company's energy efficiency programs, the programs have continued to develop and evolve under the direction and oversight of the Energy Efficiency Advisory Group ("EEAG") which is comprised of interested parties to the Company's 2008 rate case.

History

Program Implementation

The Company began using Energy Trust of Oregon ("Energy Trust") as the delivery arm for its Oregon energy efficiency incentive programs in 2003. Since the Company's Washington service territory is contiguous with its Oregon territory, it made sense in 2009 to have Energy Trust extend the boundaries of the Oregon incentive program into Washington.

As agreed to in UG-080546, Energy Trust implemented the Company's incentive program for one pilot year. During this time, the EEAG monitored the program's performance and assessed whether Energy Trust should be the ongoing incentive program implementer. On May 25, 2011, NW Natural made a compliance filing in UG-080546 wherein it stated the EEAG's opinion to allow Energy Trust to continue delivering the Company's energy efficiency incentive programs in Washington. On June 8, 2011, Public Counsel separately filed a letter supporting this decision.

Oversight

The EEAG includes representatives from NW Natural, WUTC Staff, Public Counsel, the Alliance of Western Energy Consumers ("AWEC") (formerly Northwest Industrial Gas Users), The Energy Project, and the NW Energy Coalition ("NVEC"). The Company hosts quarterly calls to report on program activity and collect feedback. Additional meetings are held on an ad hoc basis to consult the group on time sensitive issues. The Company provides drafts of all reports, conservation plans, and tariff adjustments to the EEAG for review prior to public filing.

Program Delivery

NW Natural's programs are currently delivered to customers through partnerships and contracts with third parties.

The Residential and Commercial incentive program is offered through Energy Trust. Energy Trust is an independent, nonprofit organization dedicated to helping utility customers save energy. The organization was formed in 2002 in response to Oregon legislation that restructured electric utilities¹ for multiple reasons. Energy Trust's mission is to provide clean affordable energy for all and actively works to expand their reach to engage with communities that have historically been underserved.

¹ Oregon's SB 1149, codified as ORS 757.612, mandated the creation of an independent entity capable of providing demand side management services to utility customers.

The Washington Low Income program (“WA-LIEE”) is delivered through local community action agencies. The agencies in NW Natural’s Washington service territory include Clark County Community Action Agency and Washington Gorge Action Council of Lewis, Mason and Thurston Counties.

NW Natural also supports collaborative regional efforts for system planning and market transformation by funding and working with the RTF and NEEA. The RTF is a technical advisory committee that works to develop standards to verify and evaluate energy efficiency savings for the Northwest. NEEA is a regional organization funded by both investor-owned and publicly owned utilities committed to encouraging local markets to favor energy-efficient products and services.

Pilot offerings such as the BEE Program and the Industrial Audit Pilot, are delivered through third-party implementers selected by NW Natural through a competitive bid process. Bidgely is the chosen vendor for the BEE program; they specialize in artificial intelligence powered energy analytics and used by multiple utilities in the northwest. Energy 350 is the selected implementor for the Industrial Audit Pilot. Energy 350 is a local energy efficiency consulting firm with expertise in industrial energy performance.

Energy Efficiency Programs Offered

NW Natural supports energy efficiency through several different channels to promote widespread uptake and encourage market transformation in the region. The following subsections outline the various programs and efforts that are included in NW Natural’s 2024-2025 energy efficiency portfolio.

Incentive Programs

Residential Program Description

Residential programs in Southwest Washington acquire cost-effective gas savings by engaging with both builders and homeowners. There are four tracks within the Residential Incentive Program: Standard Home Retrofit, Standard Multifamily, Mid-stream (distributor), and new homes (EPS). The program coordinates with builders to increase energy efficiency of newly constructed, single-family homes through incentives, education, trade ally support and quality assurance. For existing single-family homes, small multifamily renters and landlords, incentives and services are available for the following energy saving efforts:

- Efficient space heating and controls
- Water heating
- Insulation
- Window upgrades
- Water conservation
- Education
- Trade ally support
- Financing with repayment through utility bills
- Market interventions

Specific measure offerings and details are listed in Appendix 3 and Appendix 4.

Residential Standard Track (Existing Home Retrofit)

Residential customers with gas heated homes are offered incentives for cost-effective weatherization measures and select efficient gas appliances. Customers are encouraged to work with trade allies to ensure they are being provided accurate energy efficiency information and access to the most efficient

equipment and services. Online home energy reviews are also available wherein an energy use estimation tool identifies opportunities in the customers' home that could be installed to improve efficiency.

[Residential Multifamily Track](#)

Residential customers in multifamily buildings are offered a specialized subset of the Residential Standard Track incentives. Due to the usage profile of Multifamily buildings, there are unique measures within this sub sector. Condos, townhomes, duplexes, triplexes and fourplexes and stacked (2-4) units qualify for incentives for the approved measures. Multifamily properties that are served with commercial rate schedule gas service are served through the Commercial Program.

[Residential Mid-stream \(Supply Chain\) and Products Track](#)

Mid-stream focuses efforts and incentives toward distributors to encourage them to stock and promote the sale of efficient equipment to contractors and residential customers. The Retail Products strategy focuses on retail engagement to promote efficient natural gas appliances and fixtures. Technologies that are included in the midstream efforts include smart thermostats, gas fireplaces, and gas tank water heaters. However, gas fireplaces are being transitioned from mid-stream to being retail and downstream.

[Residential New Homes Track](#)

The New Homes track consists of three different offerings: EPS New Homes, Code Credits, and stand-alone measures (smart thermostats and gas fireplaces). EPS New Homes is a whole-home, performance-based offering which encourages builders to construct homes to an energy efficiency standard that is at least 5% better than Washington building code. EPS is a trademarked name of an energy performance scoring tool that aims to highlight the benefits of energy-efficient newly built homes. The Company offers an energy performance score that rates the efficiency of a home and measures it against similar sized homes built to 2018 Washington State Residential Energy Code (2018 WSEC-R). Qualifying new homes must also meet new construction Best Practice criteria established by the EPS New Construction (homes) Program. The compliance of all new homes is verified through an inspection process and homes are issued a score, called an EPS, upon completion.

The new homes track also offers a Code Credits pathway. The Code Credits offering uses the 2018 WSEC-R energy credits structure (which went into effect February 2021) to award incentives to builders who earn more credits beyond what is required by code. This prescriptive offering provides incentives to builders based on implementation of practices as described in section R406 of the 2018 WSEC-R code. Compliance with this path is audited by independent, third-party verifiers, who provide a report of a home's code credit total to the efficiency program. To qualify for program incentives, all builders must comply with the 95 AFUE furnace credit, and the 0.91 UEF water heater credit if using gas water heat. The Code Points engagement strategy will award standard incentives for every half point a home achieves greater than code. Since builders can meet credit requirements through a mix of measures, including solar, we will monitor and report on this occurrence.

With the launch of the newest WA energy code (2021 WSEC-R (WAC 51-11R)) the company has determined that there will no longer be a path for gas heated homes to receive incentives through the efficiency programs as the stringency of the code is now too great to offer cost effective measures. With this, the new homes program will be offered through 2024 to serve homes that were permitted

under the previous 2018 WSEC-R code. However, in 2025 the company will likely no longer be providing services to new homes or rather will do so only through single stand-alone measures such as smart thermostats and gas fireplaces.

[Community Partner Funding](#)

Community Partner Funding (“CPF”) is a pathway that provides increased incentive offers exclusively for community-based organizations to reach underserved populations living in single-family homes. This offering was introduced in 2021 and will be expanded over the biennium as more partnerships are developed in SW Washington.

[Commercial Program Description](#)

The Commercial Program provides natural gas energy-efficiency solutions for new and existing commercial buildings. Commercial customers of NW Natural in Washington can receive incentives for qualifying energy-efficient upgrades and retrofits. The program incentivizes select measures in existing and new commercial buildings, including office buildings, restaurants and other foodservice buildings, dormitory and assisted living facilities, greenhouses, and multifamily structures. Specific measure offerings and details are as listed in Appendix 3 and Appendix 4. The Washington Existing Buildings program has historically consisted of two tracks - custom and standard. The program recently launched a new offering of Strategic Energy Management in 2022.

[Commercial Custom Track](#)

The Commercial Custom Track acquires gas savings through incentivizing energy efficient capital projects and operations and maintenance upgrades that are complex or nonstandard upgrades. The Program Management Contractor (“PMC”) account managers work with customers and engineering firms to identify and analyze customer opportunities. Once projects are completed the PMC ensures efficiency upgrades were installed and operating as anticipated. The custom track also pursues opportunities in retro-commissioning, which evaluates and incentivizes improvements related to controls or HVAC adjustments.

[Commercial Standard Track](#)

The Commercial Standard Track provides incentives for standard prescriptive measures with predetermined (deemed) savings for buildings of all sizes and across commercial market sectors of participating rate schedules. The program promotes measures through marketing, customer outreach, and cultivation of trade ally contractors.

[Commercial New Construction Track](#)

The Commercial Program provides standard, prescriptive measure offerings for new commercial buildings. New construction has continued to be an important market segment for savings acquisition. Through this work the program has expanded its effort to work directly with development design teams to ensure efficiency is being considered with equipment selection and design elements. A custom approach will allow for smaller building features and elements to be considered in the overall efficiency plan for a newly built structure. The program team will work with new construction design teams to determine the best efficiency options as well as the best program approach to influence and capture all efficiency opportunities.

Commercial Strategic Energy Management (“SEM”)

The Commercial Program launched an SEM offering in 2022 in collaboration with Clark Public Utility District (Clark PUD). SEM is an offering that provides tools and education to businesses and building managers to save energy through operation management that can be implemented into the future as well. SEM participants will learn how their business uses energy and identify where waste is happening. They will have the opportunity to share best practices with a cohort of peers, learn to increase employee engagement and monitor the progress of their energy savings work. In this collaboration, Energy Trust will be providing SEM gas services to a cohort of Clark PUD participants. The first year of the offering in 2022 was largely focused on initial outreach to participants as well as providing analysis of gas savings opportunities. Savings acquisition began in late 2022 and began being fully realized in 2023. In 2024 and 2025 the SEM offering is expected to see moderate participation and savings growth in part due to the Washington 2019 Clean Buildings Act and the Clean Buildings Performance Standard.

Low Income

Under NW Natural’s Washington Low Income Energy Efficiency Program (WA-LIEE), agencies administering the program provide free weatherization services, equipment repairs, equipment upgrades, and funding for health and safety measures to income qualified households. Agencies fund their projects by leveraging both WA-LIEE dollars and other funding sources. Program details are available in the Company’s Schedule I.

Market Transformation

The Company views the regional gas market transformation initiative led by NEEA a necessary investment in the future of gas demand side management (“DSM”) and of regional power planning. NEEA helps accelerate the innovation and adoption of energy-efficient products into the market, then actively monitors previous initiatives to quantify energy savings and market impact. These market transformation efforts continue to deliver value to the region long after the initial investment.

NEEA’s market transformation approach focuses on identifying energy efficiency opportunities along with associated barriers, then developing and implementing market intervention strategies to accelerate adoption and create lasting market change. Each technology falls into a stage within NEEA’s sequencing:

- 1) Scanning & Concept Identification
- 2) Concept Opportunity Assessment
- 3) Market & Product Assessment
- 4) Strategy Testing & Finalization
- 5) Market Development
- 6) Long-Term Monitoring

The purpose of these phases is to develop additional efficiency measures and strategies over the long-term that will further the cost-effectiveness and reliability of savings and programs by acquiring savings at market scale. At each stage, the assessment of the potential for long-term cost-effective savings is refined. NEEA does not typically forecast savings associated with technology in the first four phases. Significant savings begin in the market development stage.

Pilot and Trial Programs

NW Natural investigates and initiates opportunities to further strengthen the suite of offerings through pilot projects and temporary programs. These programs and offerings are often referred to as “pilots”

but some may be temporary program structures or supporting efforts to enhance and drive existing offerings. The Company's EEAG is briefed on all new initiatives and has the opportunity to provide feedback throughout the development process.

Behavioral Energy Efficiency

The Behavioral Energy Efficiency or BEE Pilot is a home energy report style program that provides energy breakdowns and tips for residential customers. Customers in the treatment group receive monthly digital reports that show their disaggregated natural gas usage for the previous month and show a weather normalized comparison to their own historical usage as well as similar homes. In addition to the digital reports, four paper reports are also sent throughout the year to drive behavioral changes.

Savings for this program are calculated by comparing the treatment group to a control group of customers that did not receive the home energy reports. This pilot is set to launch late in 2023 and run for three years. The program will be monitored closely in the first two pilot years to determine if the offering should become a permanent.

Industrial Audits to Incentive Program

In 2022, NW Natural started offering high-level energy audits to all industrial customers. The purpose of the Industrial Audit Pilot was to visit as many sites as possible and identify what savings opportunities are available at these sites. The information collected will be used to develop an incentive program for industrial customers. The offering will be available to customers through the end of 2023.

In 2024, NW Natural will use the audit information to develop an incentive program pilot offering to be available to customers in 2025.

Cost Effectiveness Standards

Cost effectiveness is measured by quantifying the benefits of an investment and comparing it to the costs associated with it. It is an important metric used to show that energy efficiency is a fiscally responsible use of rate-payer funding. NW Natural monitors and reports on energy efficiency programs using the Utility Cost Test ("UCT"), the Total Resource Cost Test ("TRC"), and levelized costs. The Company may investigate the options provided by the Nation Standard Practice Manual ("NSPM") for cost-effectiveness methodology. Any changes to cost-effectiveness reporting standards will be vetted through the EEAG process.

Utility Cost Test (UCT)

The UCT measures the present value of the energy savings over the lifetime of the measure in relation to the net costs incurred by the incentive program. This test excludes any net costs incurred by the participant and is used to set incentive level caps. The utility benefits and costs are defined as follows:

Utility Benefits:

The total system value of gas energy saved based on the Company's avoided costs. The Company's avoided costs include the following values:

- Gas Purchase and Transport Costs
- Supply and Distribution Capacity Infrastructure Costs
- Washington State Carbon Policy Adder (Social Cost of Carbon as direction by House Bill 1257)
- Risk Reduction Value

- 10% Northwest Power Act Credit

Utility Costs:

- Incentives paid to, or for the benefit of, the participant
- Administrative and implementation costs
- Evaluation, verification, and monitoring

Total Resource Cost Test (TRC)

The TRC Test includes all quantifiable costs and benefits regardless of who accrues them. It is used within NW Natural's programs to evaluate if a measure should be offered. NW Natural's energy efficiency portfolio (excluding low-income programming) must maintain a TRC value equal or greater than 1.0. The total benefits and costs included are defined as follows:

Total Resource Benefits:

The total system value of gas energy saved based on the Company's avoided costs. The Company's avoided costs include the following values:

- Gas Purchase and Transport Costs
- Supply and Distribution Capacity Infrastructure Costs
- Washington State Carbon Policy Adder (Social Cost of Carbon as direction by House Bill 1257)
- Risk Reduction Value
- 10% Northwest Power Act Credit

Non-energy benefits as quantified by a reasonable and practical method. Examples non-energy benefits that may be included are:

- Electric Savings
- Water Savings
- Reduced maintenance costs

Total Resource Costs:

- Administrative and implementation costs
- Evaluation, verification, and monitoring
- The participant's remaining out-of-pocket costs for the installation of the measures after incentives and federal tax credits.

Levelized Cost

The levelized cost metric is the present value of the total net cost of a measure over its economic life, converted to equal annual payments. The levelized cost calculation starts with the incremental capital cost of a given measure or package of measures. The total cost is amortized over an estimated measure lifetime using the after tax real discount rate established from the Company's most recent rate case. The annual net measure cost is then divided by the annual net energy savings (therms) from the measure application (again relative to a standard technology) to produce the levelized cost estimate in dollars per therm saved, as illustrated in the following formula:

$$\text{Levelized Cost} = \frac{\text{Net Annual Cost (\$)}}{\text{Net Annual Savings (therms)}}$$

The levelized cost of an energy efficiency measure is cost-effective if it is less than the average levelized costs of other supply-side options represented by the avoided costs. Avoided costs are presented and established in the Company’s most current IRP or IRP update.

Avoided Costs

Total avoided cost is an estimate of the cost to serve the marginal unit of demand with conventional supply-side resources. This incremental cost represents the cost that could be avoided if that unit of gas were not demanded due to energy efficiency or other supply side resources. Avoided costs are based on assumptions including the natural gas price and risk reduction value associated with offsetting gas purchases on the spot market. Supply capacity costs based on peak-day coincident factors, and distribution capacity costs based on peak-hour coincident factors are also included.

Avoided costs were updated in 2022 for use in the 2023 program year (see figure below). The most recent avoided costs will be used to retroactively review the cost-effectiveness of the previous program year because these values will best represent the current value of the savings to the Company.

The Company will adaptively manage and make improvements to the avoided cost calculation methodology as necessary. Continuing work on the avoided cost calculation further refines the true avoided cost for Washington customers by identifying how energy savings on peak help avoid or delay investment in capacity resources.

30 Year Levelized Avoided Costs								
		Commodity Costs			Capacity Costs		10% Conservation Credit	Total Avoided Costs
		Natural Gas Commodity	Greenhouse Gas	Risk Reduction	Supply Capacity	Distribution System		
Washington	Residential Space Heating	\$3.83	\$6.26	\$0.86	\$0.64	\$7.81	\$1.23	\$20.64
	Residential Hearths and Fireplaces	\$3.83			\$0.64	\$3.93	\$0.84	\$16.37
	Commercial Space Heating	\$3.83			\$0.57	\$9.42	\$1.38	\$22.33
	Water Heating	\$3.50			\$0.11	\$1.77	\$0.55	\$13.04
	Cooking	\$3.47			\$0.12	\$4.84	\$0.85	\$16.40
	Process Load	\$3.47			\$0.09	\$0.78	\$0.44	\$11.90
	Interruptible Loads	\$3.47			X	X	\$0.36	\$10.95

Figure 5 - Avoided Cost Summary by End Use (2021\$/Dt)

Program Evaluation, Monitoring and Verification

Impact Evaluations

Annual savings reported by the Company are based on the assumed gross savings for each measure. The assumed savings are consistent with the most current impact studies performed. The Company or third parties perform impact studies to validate the engineering assumptions used for savings calculations. Impact evaluations of residential measures typically include analysis of a group of customers’ energy usage data before and after a measure is installed (i.e., billing analysis). Non-residential measures receive a combination of engineering review of key algorithms and parameters, a document review of project files and specific building-level model inputs, and site visits to verify operational patterns and installation practices that affect savings estimates.

Savings from all measures are evaluated on a regular basis by the program implementer or independent third parties based on accepted practice, program activity, staff resources and evaluation priorities (unless sample sizes based on participation rates are not statistically significant). From the impact evaluation, a determination is made if evaluated savings are consistent with assumed savings. If they are not, the deemed savings values are “adjusted” by the program implementer to reflect the relevant evaluation findings. The adjustment of savings is accomplished through a combination of savings realization adjustment factors (“SRAF”) and through updating the deemed savings values expressed in the measure approval documents (“MADs”). Links to impact evaluations as well as a short summary of the results will be provided in the Annual Energy Efficiency Report (“AEER”).

Process Evaluations

The Company or program delivery contractor may, as appropriate, contract with a third-party evaluation contractor to perform process evaluation on a subset or on all energy efficiency programs, pilots, and other efforts offered. The evaluation contractor studies the programs and reports on the processes employed for each program with recommendations for improved. A link or copy of the process evaluations completed in the year will be provided in the AEER.

Process for Program Changes

The Company reviews incentive levels and savings prior to filing its Biennial Energy Efficiency Plan. All standard offerings are listed in the Unit Energy Savings (“UES”) Measure List (Appendix 3). If the UES Measure List needs an offering added, changed, or removed during the biennium, the Company will revise this Plan to make requested program modifications. This does not preclude the Company from filing to revise Schedule G, or the Plan and any of the appendices at any time during the year.

Tariff advice filings revising or adding offerings will include:

- 1) A measure-level BCR calculation as outlined in in the “Cost Effectiveness” section.
- 2) For new measures, a summary of the vetting of a measure before it is introduced as a program offering.
- 3) New program proposed mid-cycle will include a program-specific plan addressing the possible need for program-specific metrics.
- 4) For pilots previously budgeted or with no additional budget impact, no filing will be required. The EEAG will be given the opportunity to review the offering before implementation if not previously outlined in the “Pilot Program” section. The Company will include summary notes in the appropriate report following the completion of any pilots.

Not all advice filings must include the BEEP. The Plane will only be included when it is being revised.

The Company will work to resolve issues with EEAG members before filing. If the EEAG cannot agree and recommend approval of a filing, the Company may still choose to make the filing with the WUTC with the understanding the EEAG members may intervene in that public proceeding.

The Company will give the EEAG thirty (30) days to review a draft filing.

Schedule for Program Planning

In accordance with RCW 80.28, NW Natural establishes an acquisition target every two years based on a conservation potential assessment that is prepared by an independent third party. In every odd year,

NW Natural files a Biennial Energy Efficiency Plan that outlines planned program activities and budgets to achieve the two-year conservation target.

NW Natural hosts quarterly calls with the EEAG to discuss progress toward its goals, pilot/program development, tariff adjustments, or other topics related to the programs. Ad hoc meetings may be scheduled to address time sensitive matters.

An annual report will be due by the following June 15th after the end of the program year. Every even year, the annual report will be filed in conjunction with the Biennial Energy Efficiency Report (“BEER”).

<i>2024-2025 Reporting Schedule</i>	
January 1 st , 2024	Start of the 2024 program year
March 2024	First quarter check-in with EEAG
May 2024	Second quarter check-in with EEAG
June 15 th , 2024	2022-2023 Biennial Report Filed with WUTC
August 2024	Third quarter check-in with EEAG
October	Fourth quarter check-in with EEAG
November 15 th , 2024	File plan updates if required
January 1 st , 2025	Start of the 2025 program year
March 2025	First quarter check-in with EEAG
May 2025	Second quarter check-in with EEAG
June 1 st , 2025	CPA filed with WUTC
June 15 th , 2025	2024 Annual Report Filed with WUTC
August	Third quarter check-in with EEAG
October	Fourth quarter check-in with EEAG
November 15 th , 2025	File 2026-2027 Biennial EE Plan with WUTC
December 31 st , 2025	End of the 2024-2025 program years.

Figure 6 - Reporting Schedule

Reporting Requirements

Reporting requirements are established in coordination with WUTC staff. All plans and reports must be posted on NW Natural’s website. The following sections summarize reporting expectations outlined in UG-210831 Order 1.

Biennial Energy Efficiency Plan:

- On or before November 15th of every odd-numbered year, NW Natural must file with the Commission a biennial conservation plan.
- The plan must include a summary of public participation in the development.
- The ten-year conservation potential, biennial conservation target, and a description of how figures were developed must be included.
- Program descriptions and budgets must be outlined.
- Evaluation and verification plan that outlines the framework and budget is also required.

Annual Energy Efficiency Report:

- On or before June 15th of each year, NW Natural must file with the Commission, in the same docket as its current biennial energy efficiency plan, and annual conservation report regarding its progress in meeting its conservation target during the preceding year.
- The annual plan must include the biennial conservation target, budgeted and actual savings, budgeted and actual expenditures, and portfolio and program level cost-effectiveness.
- Descriptions are required for documenting key sources of variance between budgeted and actuals as well as key steps taken to adaptively manage the programs.

Biennial Energy Efficiency Report:

- Beginning in 2024, on or before June 15th of each even-numbered year, NW Natural must file with the Commission, in the same docket as its current biennial energy efficiency plan, a report regarding its progress in meeting its conservation target during the preceding two years.
- The report must include planned and claimed gas savings from conservation, budgeted and actual expenditures, and portfolio-level cost-effectiveness.
- A third-party evaluation of the portfolio-level savings achievement, and a summary of steps taken to adaptively manage programs is also required.
- The annual report may be filed together with the biennial report as a single report.

Program Budget Guidelines

The Company provides in this plan a total estimated budget for the 2024-2025 program years. The budget includes a breakdown of anticipated expenditures by program track. Program costs for the upcoming year are reviewed annually with the EEAG. Projections included in this Plan for 2025 are based on current expectations but may be subject to change. If major variances from the proposed 2025 budget are identified in 2024, the Company will file an update for the 2025 program year.

Program budgets are developed congruently with the Biennial Energy Efficiency Plan and materials are shared with the EEAG as available. The budget component comprised of incentives and direct customer benefit shall be considered a soft cap and may be exceeded in order to acquire all available cost-effective savings or facilitate low-income projects.

The budget forecast is based on the best information available at the time of filing. As the year progresses, budgeted dollars may be reallocated among the various programs and/or measures and/or new offerings that are submitted to the WUTC.

The Company may provide the necessary funding for program administration and delivery as appropriate, including reserves. The amounts dispersed in one year are the sum of all funds forecasted to be needed for the program year, adjusting for any unspent or uncommitted funds previously dispersed.

Cost Recovery

The incentive program, market transformation, evaluations, pilots, and all other energy efficiency expenses related to Schedule 215 are forecasted for the twelve-month period beginning each November 1st. Any differences between the forecast and actual dollars spent during the twelve months will be

deferred and either credited or surcharged to customers based on over or under collection through rates. Schedule 230, which relates to low-income weatherization programming will be deferred and later amortized for recovery from applicable customers on an equal percent of margin basis as established annually in the temporary rate adjustments. The Company will annually submit a stand alone filing concurrent with its PGA filing, for cost recovery of its energy efficiency program forecast under Schedule 215 and historical expenses for the prior calendar year on Schedule 230.

Biennial Energy Efficiency Plan

Current Program Drivers

NW Natural's programs continue to see lasting impact of the 2020 pandemic as the market continues to recover from shutdowns. Materials and equipment are now more readily available than in the previous biennium, but consumers are more cautious with investments due to high inflation and economic uncertainties. Changes in building codes also creates a barrier to achieving savings in new construction markets.

Residential

Participation among the single-family rental and small multifamily markets in Southwest Washington remain strong with steady year-over-year participation which is expected to continue into 2024. The EPS™ new construction program will be phased out by the end of 2024 due to the Washington Residential Energy Building code which is set to take effect in the next year.

Planned activities for the residential sector include:

- Increased engagement with single-family and rural customers through expanded trade ally recruitment, target marketing initiatives, and community events.
- Evaluate reintroducing bonus incentives for gas furnaces or other high-cost measures. Previous COVID-19 related bonuses in 2020 and 2021 generated high participation rates. Participation has dropped since the standard incentives were reinstated.
- Expand marketing investments and campaigns to both reengage past participants and acquire new customers.
- Expand engagement and recruitment of insulation installers into the trade ally network to increase insulation project and savings volumes.
- Explore collaborating with Calrk County's Planet Clark and Clark Public Utilities on trade ally education, recruitment, and community events.

Commercial

The commercial programs continue to navigate socioeconomic trends such as high labor turnover and shortages, equipment price increases, and long delivery timeframes. There are currently large bond capital new construction projects for a couple school districts which are nearing completion in the next twelve months. These projects are expected to drive program savings in the first year of the biennium. Due to building code restrictions the program does not expect many custom new construction projects to be introduced in 2024. Budget constraints continue to impact retrofit projects in certain sectors such as K-12 and large retail.

Planned activities for the commercial sector include:

- Increased outreach to local chambers, Vancouver Business Journal, Hispanic/Latino-owned businesses, the Downtown Business Association, and others to increase program awareness.
- Quarterly targeted outreach campaigns to active and new trade allies to review program updates and educate allies on the project submission process.
- Promote Building Operator Certification (“BOC”) program participation to non-strategic energy management participants through specific customer contact.
- Deliver targeted marketing campaigns to small business customers in rural areas that promote insulation and HVAC measures.
- Create and leverage a simple step-by-step help guide for participants to navigate the custom project submission process.
- Increase SEM program participation through the existing partnership with Clark Public Utilities and Energy Trust Southwest Washington customer sites.
- Expand lead generation and communications to support NW Natural’s Major Account Services Managers.
- Meet with Clark Public Utilities Commercial Account Manager(s) quarterly to discuss customer trends, needs and leads for potential project acquisition and partnership.
- Conduct focused research on the impacts of expiring measures, small businesses support efforts, and market adaptation to code changes.
- Develop new ways of identifying savings opportunities with customers and explore the ability to develop packages of measures tailored to specific market segments.
- Apply findings from community engagement and past research efforts to adapt program approaches to better serve small businesses, rural areas, and businesses owned by people of the global majority, as well as to support workforce development.

Incentive Programs

The following tables summarize the forecasted budgets and savings for the 2024-2025 program years. Budgets are built from year-end forecasts, market intelligence gathering, and stakeholder feedback.

Energy Trust’s Conservation Advisory Council (“CAC”) and Diversity Advisory Council (“DAC”) provided feedback for Energy Trust to take intentional steps to serve priority customers. This is reflected in the planned program activities that focus on culturally sensitive outreach and marketing to support workforce development within the energy industry.

Incentive Program Summary		2024	2025	Biennium Total
Residential Incentive Program	Budget	\$ 2,117,068	\$ 2,176,277	\$ 4,293,345
	Savings (therms)	111,060	118,002	229,062
Commercial Incentive Program	Budget	\$ 1,346,925	\$ 1,515,212	\$ 2,862,137
	Savings (therms)	133,179	153,413	286,592

Figure 7 - Incentive Program Summary

Therm Savings by Program

Incentive Program	Annual Therms Goal	2024	2025	2024-25
Commercial Programs	Existing Buildings - Standard	37,260	37,260	74,520
	Existing Buildings - Custom	46,500	46,500	93,000
	New Buildings - Standard	5,640	11,280	16,920
	New Buildings - Custom	-		-
	Strategic Energy Management	43,779	58,373	102,152
	Commercial Total	133,179	153,413	286,592
Residential Programs	Existing Homes Retrofit	107,584	117,561	225,145
	Mid-stream - Distributor	151	166	317
	New Home Construction	3,325	275	3,600
	Residential total	111,060	118,002	229,062
	Total savings	244,239	271,415	515,654
*Commercial Training added to EB-Standard				
** Residential Multifamily added to Existing Home Retrofit				

Figure 8 - Incentive Program Therm Savings

Expenses by Program

2024-25 Efficiency Program	Budgeted Expenditures	2024	2025	2024-25 Total
Commercial	Programs	\$ 982,672	\$ 1,074,930	\$ 2,057,602
	Commercial administration	\$ 451,227	\$ 530,834	\$ 982,061
	Commercial Total	\$ 1,433,899	\$ 1,605,764	\$ 3,039,663
Residential	Programs	\$ 1,564,297	\$ 1,530,912	\$ 3,095,209
	Residential Administration	\$ 622,862	\$ 707,719	\$ 1,330,581
	Residential total	\$ 2,187,159	\$ 2,238,631	\$ 4,425,790
	Total Expenditures	\$ 3,621,058	\$ 3,844,394	\$ 7,465,452
Expenditures Include Incentives and Delivery				

Figure 9 - Incentive Program Expenses

Incentives by Program

2024-2025 Approved Budgets	Incentives Budget	2024	2025	2024/25 Total
Commercial Programs	Existing Buildings - Standard	\$ 112,525	\$ 112,525	\$ 225,050
	Existing Buildings - Custom	\$ 168,500	\$ 168,500	\$ 337,000
	New Buildings - Standard	\$ 18,840	\$ 37,680	\$ 56,520
	New Buildings - Custom			\$ -
	Strategic Energy Management	\$ 109,078	\$ 171,221	\$ 280,299
	Commercial Total	\$ 408,943	\$ 489,926	\$ 898,869
Residential Programs	Existing Homes Retrofit	\$ 1,070,452	\$ 1,195,353	\$ 2,265,805
	Mid-stream: Distributor	\$ 1,000	\$ 1,100	\$ 2,100
	New Home Construction	\$ 99,805	\$ 3,100	\$ 102,905
	Residential total	\$ 1,171,257	\$ 1,199,553	\$ 2,370,810
	Total Incentives	\$ 1,580,200	\$ 1,689,479	\$ 3,269,679

Figure 10 - Incentive Budgets by Program

Low-Income Program

The WA-LIEE program will strive to weatherize 16 homes in the 2024-2025 program years. Our main weatherization partners are going through a transitional period, and they anticipate that this transition will impact the number of projects they can complete in 2024. A breakout of costs and therm savings estimates are reflected below.

Historically the WA-LIEE program has had a \$1,000 cap on health and safety measures. In response to feedback from community partners and considering rising costs and inflation, NW Natural is proposing an additional \$4,000 in flexible spending to be used for additional energy efficiency measures or health and safety measures. NW Natural is also exploring ways to make the program more visible with distinct types of enhanced outreach strategies like bill inserts for customers in Clark County and strategic outreach with community-based organizations in the area. NW Natural will begin seeking community-based partners to help reach more customers. Program details are available in the Company’s Schedule I, “Washington Low Income Energy Efficiency Program (WA-LIEE).”

The targets below assume a standard \$8,933 for energy efficiency measures and \$1,000 on health and safety measures with an additional \$4,000 in flexible spending to be distributed as needed between energy efficiency measures, health, and safety. Program providers may recover agency administrative costs up to 25% of project costs. The company is allowed up to 5% for processing administration.

Low Income Performance Targets

WA-LIEE	2023 Goal	2024 Goal	Biennial Goal
Number of Homes Weatherized	6	10	16
Therms Savings	3255	5425	8680

Figure 11 - WA-LIEE Program Goals

Low Income Budget

WA-LIEE		Budget
WA-LIEE	WA-LIEE Measures	\$ 142,928.0
	Health/Safety	\$ 16,000.0
	Flexible Funds for H/S/R or EE	\$ 64,000.0
	WA-LIEE Agency Administration (25%)	\$ 55,732.0
	WA-LIEE application processing admin (5% cap)	\$ 13,933.0
	WA-LIEE Total	\$ 283,884.9

Figure 12 - WA-LIEE Program Budget

Low Income Cost Effectiveness

The goal of the low-income program is primarily to address underserved markets and customers that do not have access to the energy efficiency incentive programs. NW Natural’s goal is for these eligible households to reduce energy consumption, lower energy bills, and improve living conditions while also ensuring the durability and safety of their homes. For whole home efforts, WA-LIEE leverages funds provided by other state, federal, and local agencies. Those leveraged funds also utilize Total Resource Costs (TRC) tests or approved measures lists.

Gas Market Transformation

NW Natural will continue its participation with NEEA on regional natural gas market transformation. 2024 represents the final year of the current 5-year funding cycle.

The next funding cycle for NEEA is currently under development. Budget and savings values for 2025 are based on current drafts and will likely be refined in 2024. NEEA is currently anticipating a natural gas portfolio budget increase of approximately 87% over the previous funding cycle. The budget increase is driven by the expansion of the gas portfolio; multiple programs will be maturing into the market development stage and new programs will be added. In addition, costs have increased significantly in comparison to the previous budget cycle due to high inflation rates. NW Natural’s direct funding share for its Washington service territory is also seeing a slight increase (from 3.1% to 3.4%) due to the Company’s increased customer count.

During the 2024-2025 period, NEEA will focus its natural gas work on evaluating emerging technologies for inclusion into the portfolio while simultaneously advancing existing programs. Current areas of focus are efficient rooftop units, efficient gas water heaters, and high-performance windows. Another area of primary focus will be developing the gas heat pump market. NEEA has been critically influential in the product development and path to commercialization with manufactures and will continue to support the effort through participating in national collaborations and equipment testing.

NEEA savings are highly volatile. NW Natural uses the low end of the savings estimate range provided by NEEA to account for the uncertainty.

	2024	2025	Biennial Total
NEEA Funding	\$88,149	\$241,204	\$329,353
Savings Estimate (therms)	20,000	40,000	60,000

Figure 13 - NEEA Summary

Pilots & Trial Programs

As the Company looks to acquire cost-effective savings, pilot or trial programs are offered to investigate the potential and initiate new offerings. Over the 2022-2023 Biennium, NW Natural further explored the potential by contracting for a residential home energy report pilot and launched an industrial audit program to gather more information on the industrial sector potential. Budgets are based on contracted amounts; actuals may vary based on program uptake and contractor billing.

Behavioral Energy Efficiency

NW Natural has been working to develop a behavioral energy efficiency program throughout 2023. The pilot program is set to run for 3 years. Anticipated program costs and saving goals are listed below. Platform costs for 2024 include a one-time set up fee for the delivery platform. Paper report costs are

anticipated to decline in 2025 as participants opt-out of the program. Program savings will be reported by Bidgely and separately verified through a third-party evaluator.

BEE Program	2024	2025	Biennial Total
Platform Cost	\$250,000	\$100,000	\$350,000
Treatment Cost	\$123,840	\$106,502	\$230,342
Paper Report Cost	\$86,829	\$74,673	\$161,502
Program Budget	\$460,669	\$281,175	\$741,844
Program Savings Goal (therms)	93,024	112,684	205,708

Figure 14 - BEE Pilot Summary

Industrial Program Pilot

NW Natural is planning to launch an industrial incentive program in 2025. Given the lead time associated with starting programs NW Natural anticipates the first year of the program to be focused on customer recruitment and project lead generation. Budgets are expected to ramp up in the following year as projects are completed and incentives are paid out.

NW Natural will seek guidance from the EEAG on program development and provide a detailed program budget to the advisory group in 2024. Current estimates included in this plan are based on the industrial audit program activity that took place in the previous biennium.

Industrial Pilot	2024	2025	Biennial Total
Budget	N/A	\$150,000	\$150,000
Savings	N/A	-	-

Figure 15 - Industrial Pilot

Northwest Power and Conservation Council

The Company has agreed to support the work of the Northwest Power and Conservation Council’s Regional Technical Forum. The Company is entering the last year of the 2020-2024 Business Plan and is currently working with the RTF to establish funding levels for the 2025-2029 Business Plan.

Regional Technical Forum	2024	2025	Biennial Total
Budget	\$11,100	\$15,000	\$26,100

Figure 16 - RTF Funding

On-the-Bill Repayment Services

NW Natural will continue to provide access to a low-interest, unsecured financing offer to residential homeowners who heat their homes with natural gas. The program lender will originate loans granted for the purposes of purchasing and installing conservation and energy efficiency measures incented by the existing homes program. The Company will provide billing and remittance services to the program lender by placing the loan repayment fee on the participating customers’ monthly gas bill. Customers who obtain a loan with on-the-bill repayment services will receive a loan repayment charge itemized as “Energy Upgrade Loan” on their monthly bill for natural gas service. This will be reflected for the term of the loan or until the loan has been paid off, transferred, or otherwise discharged or removed from the

bill in accordance with the terms and conditions of the Company’s service agreement. The Company will lead and manage the coordination of activities between the program lender, the program management contractor, and the Company. More information can be found in Appendix 2.

Evaluations

NW Natural has several evaluations planned for the 2024-2025 Biennium to evaluate both program activity and savings reporting. In 2024, NW Natural plans to conduct an independent third-party evaluation of portfolio-level biennial conservation savings achievement for inclusion in the 2022-2023 Biennial Energy Efficiency Report. In 2025, NW Natural plans to conduct an impact evaluation on the BEE pilot to validate reported savings.

The budgeted values are estimates based on previous evaluation work. NW Natural will hold a request for proposal process to ensure competitive pricing on evaluation. The EEAG will be kept apprised of the process and budget variances will be discussed with the advisory group prior to moving forward with evaluations.

Evaluations	2024	2025	Biennial Total
Budget	\$60,000	\$100,000	\$160,000

Figure 17 - Evaluation Budget

Development Considerations

Targets for the 2024 and 2025 program years are based on the 2023 CPA provided by AEG. NW Natural initially selected AEG as the independent third-party contractor for the analysis through a competitive bid process for 2021 CPA. In early 2023, NW Natural contracted with AEG again to provide the 2023 CPA. The assessment uses standard industry and Northwest regional methodologies to develop reliable estimates of technical, achievable, and economic potentials. The work was performed in collaboration with NW Natural and Energy Trust of Oregon staff using information specific to NW Natural’s customers and existing energy efficiency programs wherever possible.

NW Natural decided to include transportation rate customers in the assessment even though it was not required by statute. The impacts of the inclusion of transportation customers in energy efficiency programs will continue to be explored in the 2024-2025.

2023 Conservation Potential Assessment

To perform the CPA analysis, AEG used a bottom-up approach in which they characterized the current market using NW Natural usage and customer data, calibrated a baseline projection, created a list of measures, and estimated the technical, achievable, and economical energy savings. AEG also included an income-level analysis for the residential sector, which can be found in the “2023 NW Natural Washington Conservation Potential Assessment”. The following tables summarize the potential and the top measures for the residential, commercial, and industrial sectors.

Rank	Measure / Technology	2024 Achievable Economic TRC Potential (thousand therms)	2050 Achievable Economic TRC Potential (thousand therms)	% of Total
1	ENERGY STAR - Connected Thermostat - Interactive/learning thermostat	69	2,110	28.1%
2	Water Heater (<= 55 gal) - UEF 0.87 (Instantaneous, ENERGY STAR 4.0)	11	1,690	22.5%
3	Furnace - AFUE 95% (ENERGY STAR 4.1)	23	1,330	17.7%
4	Fireplace - Tier 2 (>75% FE)	0	422	5.6%
5	Insulation - Ceiling, Installation - R-49 (Retro only)	3	306	4.1%
6	Water Heater - Low Flow Showerhead - 1.5 GPM showerhead	2	257	3.4%
7	Ducting - Repair and Sealing - 50% reduction in duct leakage	1	232	3.1%
8	ENERGY STAR Clothes Washers - ENERGY STAR unit	11	150	2.0%
9	Stove/Oven - High Efficiency (730 + 1660 IAEC)	0	138	1.8%
10	Water Heater - Pipe Insulation - Insulated 5' of pipe between unit and conditioned space	1	138	1.8%
11	Water Heater - Temperature Setback - Setback to 120° F	1	110	1.5%
12	Built Green homes - Built Green spec (NC Only)	0	103	1.4%
13	Insulation - Wall Cavity, Installation - R-11	1	102	1.4%
14	Insulation - Ducting - duct thermal losses reduced 50%	1	90	1.2%
15	Behavioral Programs - HER-style customer awareness program	63	88	1.2%
16	Water Heater - Faucet Aerator - 1.5 GPM aerator	1	76	1.0%
17	Intermittent Ignition System - Installed switch/remote on burner system	0	48	0.6%
18	Insulation - Basement Sidewall - R-15	0	42	0.6%
19	Insulation - Floor/Crawlspace - R-30	0	22	0.3%
20	Building Shell - Whole-Home Aerosol Sealing - 20% reduction in ACH50	0	15	0.2%
	Subtotal	190	7,469	99.6%
	Total Savings in Year	191	7,500	100%

Figure 18 - Residential Top Measures

Rank	Measure / Technology	2024 Achievable Economic TRC Potential (thousand therms)	2050 Achievable Economic TRC Potential (thousand therms)	% of Total
1	Water Heater - Tankless	4	781	23.1%
2	Insulation - Roof/Ceiling - R-38	49	703	20.8%
3	Broiler - Infrared Burners	3	270	8.0%
4	Insulation - Wall Cavity - R-21	21	255	7.5%
5	Boiler - TE 98%	5	178	5.3%
6	Gas Boiler - Insulate Hot Water Lines - Insulated water lines	9	132	3.9%
7	Range - High Efficiency	1	98	2.9%
8	ENERGY STAR Connected Thermostat - Wi-Fi/interactive thermostat installed	15	90	2.7%
9	Furnace - AFUE 96%	0	82	2.4%
10	Hydronic Heating Radiator Replacement - TBD	4	75	2.2%
11	Double Rack Oven - FTSC Qualified (>50% Cooking Efficiency)	1	71	2.1%
12	HVAC - Demand Controlled Ventilation - DCV enabled	1	65	1.9%
13	Thermostat - Programmable - Programmable thermostat installed	4	55	1.6%
14	Kitchen Hood - DCV/MUA - DCV/HUA vent hood	4	53	1.6%
15	Gas Boiler - Insulate Steam Lines/Condensate Tank - Lines and condensate tank insulated	4	52	1.5%
16	Oven - ENERGY STAR (3.0)	1	47	1.4%
17	Building Automation System - Automation system installed and programmed	0	46	1.4%
18	Strategic Energy Management - Energy management system installed and programmed	3	43	1.3%
19	Gas Boiler - Hot Water Reset - Reset control installed	2	43	1.3%
20	Thermostatic Radiator Valves - TBD	2	34	1.0%
	Subtotal	131	3,172	93.7%
	Total Savings in Year	147	3,384	100.0%

Figure 19 - Commercial Top Measures

Rank	Measure / Technology	2024 Achievable Economic TRC Potential (thousand therms)	2050 Achievable Economic TRC Potential (thousand therms)	% of Total
1	Strategic Energy Management - Energy management system installed and programmed	4.4	65	26.6%
2	Gas Boiler - Insulate Hot Water Lines - Insulated water lines	2.1	37	14.9%
3	Gas Boiler - Stack Economizer - Economizer installed	2.1	18	7.4%
4	Insulation - Roof/Ceiling - R-38	1.7	18	7.4%
5	Gas Boiler - Insulate Steam Lines/Condensate Tank - Lines and condensate tank insulated	1.0	18	7.2%
6	Gas Boiler - Hot Water Reset - Reset control installed	0.7	16	6.7%
7	Process - Insulate Heated Process Fluids - Insulated process fluid lines	1.9	16	6.4%
8	Building Automation System - Automation system installed and programmed	0.1	15	6.1%
9	Gas Boiler - Burner Control Optimization - Optimized burner controls	0.1	10	4.2%
10	Boiler - TE 98%	0.3	8	3.1%
	Subtotal	14	221	90%
	Total Savings in Year	16	245	100%

Figure 20 - Industrial Top Measures

Appendices

APPENDIX 1: List of Abbreviations

Abbreviation	Definition
AEER	Annual Energy Efficiency Report
AEG	Applied Energy Group
AFUE	Annual Fuel Utilization Efficiency
BEE	Behavioral Energy Efficiency
BEEP	Biennial Energy Efficiency Plan
BEER	Biennial Energy Efficiency Report
BOC	Building Operator Certification
CAC	Conservation Advisory Council
CDFI	Community Development Financial Institution
CPA	Conservation Potential Assessment
DAC	Diversity Advisory Council
DHW	Domestic Hot Water
DSM	Demand-Side Management
EEAG	Energy Efficiency Advisory Group
EPS	Trademarked name used for residential new homes program
ETO	Energy Trust of Oregon
EUI	Energy Usage Index
HER	Home Energy Report
HVAC	Heating Ventilation and Air Conditioning
IOU	Investor Owned Utility
IRP	Integrated Resource Plan
NEB	Non-Energy Benefit
NEEA	Northwest Energy Efficiency Alliance
O&M	Operations and Maintenance
PUD	Public Utility District
RTF	Regional Technical Forum
SEM	Strategic Energy Management
TRC	Total Resource Cost
UCT	Utility Cost Test
WAC	Washington Administrative Code
WA-LIEE	Washington Low-Income Energy Efficiency
WSEC	Washington State Energy Code
WUTC	Washington Utility and Transportation Commission

APPENDIX 2: On-The-Bill Repayment

The Company assists in marketing a low-interest financing offer to residential homeowners who heat their homes with natural gas. The program lender will originate loans granted for the purposes of installing conservation and energy efficiency measures incented by the existing homes program. The Company will provide billing and remittance services to the program lender by placing the loan repayment fee on the customers' monthly gas bill. Customers who obtain a loan with On-the-Bill Repayment Services will receive a loan repayment charge separately itemized as "Energy Upgrade Loan" on their monthly bill for natural gas service. This will be reflected for the term of the loan or until the loan has been paid off, transferred, or otherwise discharged or removed from the bill in accordance with the terms and conditions of the Company's service agreement.

Craft3, a non-profit community development financial institution ("CDFI") lender, will act as the program lender under the terms and conditions of a service agreement with Energy Trust. Craft3 received a grant from the State of Washington's Clean Energy Revolving Loan Fund for the purpose of providing financing to Washington residents for installing energy efficiency measures. The intent of this offering is to facilitate the acquisition of cost-effective natural gas savings while extending the benefit of the Loan Fund to natural gas ratepayers in Southwest Washington.

The loan offerings through Craft3 that will qualify for On-the-Bill Repayment Services must fit the following parameters:

- Loans must be granted to residential homeowners who use natural gas as their primary heating fuel.
- Loan amounts must be used to install conservation and energy efficient measures that are incented under NW Natural's existing homes program.
- Loan amounts must be no less than \$2,500 and no more than \$15,000.
- The term of the loan can not exceed 7 years for loans up to \$7,500. 15 years is the maximum term for loans between \$7,500 and \$15,000.
- The program has a fixed interest rate at 4.99%. Contingent on market conditions, Craft3 may at a later date revise the interest rate offer for future customers, not to exceed 5.49%. Under all circumstances rates will be fixed and consistent for any qualifying customer.
- Loans will be unsecured, and there is no penalty for early repayment.
- Craft3 may assess a financing fee of \$100 for loans between \$2,500-\$7,500, \$200 for loans between \$7,500-\$15,000.
 - Fees may be financed as an addition to the loan balance.
- At least 51% of the loan must be for costs that are directly attributable to the commissioning and installation of the qualifying measure(s), costs incurred to comply with applicable building code, mechanical code, or other pertinent regulations, or costs incurred to meet any technical specifications established by the Energy Trust. Whereas 49% of the loan may be allocated toward non-qualifying energy measures such as cooling.

Terms and Conditions:

1. The Company will directly bill Energy Trust or Craft3 for ongoing administrative costs, including costs associated with loan setup, loan termination and other incremental activities related to accounting and processing of bill payments.

2. The business relationship and the services exchanged between Energy Trust and the Company shall be in accordance with an executed Service Agreement. The Energy Trust will act as the program manager of this offering.
3. The provision of On-the-Bill Repayment Services will in no way conflict with the Company's compliance to WAC 480-90, Washington Administrative Code (WAC).
4. A Customer's decision to enter into a loan agreement with Craft3 will not affect his/her ability to establish credit with the Company; it will have no impact on the amount that a Customer may be required to pay on deposit for Natural Gas utility service; and it will have no effect on a Customer's ability to receive reliable natural gas service. The Company will communicate this in writing to customers who participate in this loan program.
5. By entering into a loan agreement with Craft3, the customer will be responsible to remit the monthly loan repayment amount to NW Natural with his/her monthly bill payment for natural gas services.
6. NW Natural is not a party to the loan agreements and has no financial interest in these loans.
7. Monthly payments received from customers participating in this program will be allocated to the customers' account in accordance with Rule 4 of this the Company's Tariff.
8. The Company will not disconnect gas service to a customer for non-payment of loan repayment charges.
9. NW Natural is solely a billing agent for Craft3. Participating Customers must acknowledge that the Company shall be held harmless for any liability resulting from contractors' actions with regard to installation of energy efficiency measures resulting from this program.
10. NW Natural has no responsibility to collect charges, penalties, or fees beyond the remitting to Craft3 the loan repayment collections the Company receives from Customers in accordance with the services described herein.
11. Craft3 is responsible to tell the Company how much to bill per month for each loan and how many months each customer should be billed. The Company is not responsible for any information provided by Craft3.
12. The Company will not a) accept loan pay-offs, b) issue refunds on loan payments, c) offer payment arrangements on loan amounts due, or d) allow energy assistance to be applied to loan balances.
13. Craft3 must obtain a signed consent form from participating Customers that states that the Customer agrees to allow the Company to provide Craft3 with Customer-specific bill payment information.
14. Craft3 must obtain signed documentation from the Customer that certifies that the Customer has been made aware of the Company's limited role in the loan repayment process.
15. Craft3 must provide the Company with a toll-free customer service phone number to which the Company will refer Customers who have questions or concerns about their loan. The Company

is not responsible for Customer questions and disputes related to the loan or the Customer's perceived or real experience related to any portion of the loan or energy efficiency measures.

16. The Company will provide Customers with an overview of the loan product. Specific terms and conditions of the loan will be provided by Craft3.
17. A Customer with a loan open at the time he/she sells his/her home may either pay the loan off at the time of the sale; or if the new homeowner is willing to assume the loan and is able to pass the Craft3's credit requirements, the new homeowner may assume the remaining balance of the loan.
18. If a Customer with a loan refinances his/her mortgage, Craft3 will work with the Customer. A fee may be assessed if Craft3 subordinates its lien to the new mortgage lender.

APPENDIX 3: UES Measure List

2024 Change	PROGRAM CODE	Measure Description	Incentive per Quantity	Incremental (TRC) Cost per Quantity	Savings (kWh) per Quantity	Savings (Therms) per Quantity	Estimated Max Incentive	Other NEB (Annual \$)	UCT BCR at Anticipated Incentive Level (2022 v1 AC)	TRC BCR (2022 v1 AC)	MAD #
No change	Home Retrofit - Single Family Homes	Smart Thermostat - Gas Only Territory	80	189.99	0	32.07	\$134.90	\$4.80	1.69	0.71	153
No change	Home Retrofit - Small Multifamily	Smart Thermostat - Gas Only Territory	80.00	189.99	\$0.00	32.07	\$0.00	4.8	-	-	153
Incentive change	Home Retrofit - Single Family Homes	Smart Thermostat Contractor Installed - Gas Only Territory	250	250	0	30.63	\$0.00	\$5.18	-	-	153
No change	Home Retrofit - Small Multifamily	Smart Thermostat Contractor Installed - Gas Only Territory	100	250	0	14.12	#N/A	\$2.51	N/A	N/A	153
No change	Home Retrofit - Single Family Homes	Direct Ship Smart Thermostat Gas Only - Zero Savings	189.99	189.99	0	0	#N/A	\$0.00	N/A	N/A	153
No change	Home Retrofit - Small Multifamily	Direct Ship Smart Thermostat Gas Only - Zero Savings	189.99	189.99	0	0	#N/A	\$0.00	N/A	N/A	153
No change	Home Retrofit - Small Multifamily	Community Partner DI SmartStat- Gas Furnace Gas Only	150	261.36	0	14.12	\$261.36	\$2.51	2.18	1.25	153
No change	Home Retrofit - Single Family Homes	Community Partner DI SmartStat- Gas Furnace Gas Only	150	564.62	0	30.63	\$564.62	\$5.18	4.72	1.25	153
No change	Home Retrofit - Single Family Homes	Smart Thermostat Instant Coupon - Gas Only Territory	80	189.99	0	32.07	\$189.99	\$4.80	9.27	3.90	153

No change	Home Retrofit - Small Multifamily	Direct Ship Smart Thermostat Gas Only	189.99	189.99	0	32.07	\$189.99	\$4.80	3.90	3.90	153
No change	Home Retrofit - Single Family Homes	Direct Ship Smart Thermostat Gas Only	189.99	189.99	0	32.07	\$189.99	\$4.80	1.71	1.74	153
No change	Home Retrofit - Small Multifamily	Smart Thermostat Instant Coupon - Gas Only Territory	80	189.99	0	32.07	\$189.99	\$4.80	15.46	6.51	153
No change	Home Retrofit - Single Family Homes	Windows - U-Value = 0.22 GOT	1.5	5.18	0	0.08	\$3.08	\$0.01	2.06	0.64	28
No change	Home Retrofit - Small Multifamily	Windows - U-Value = 0.22 GOT	1.5	5.18	0	0.08	\$3.08	\$0.01	2.06	0.64	28
No change	Home Retrofit - Single Family Homes	Windows - U-Value 0.23-0.27 GOT	1	3.31	0	0.05	\$1.93	\$0.01	1.93	0.71	28
No change	Home Retrofit - Small Multifamily	Windows - U-Value 0.23-0.27 GOT	1	3.31	0	0.05	\$1.93	\$0.01	1.93	0.71	28
New Incentive	Home Retrofit - Single Family Homes	Windows - Metal Double Pane to U-Value = 0.22 WA GOT	10	31.05	0	0.28	\$10.80	\$0.04	1.08	0.37	28
New Incentive	Home Retrofit - Small Multifamily	Windows - Metal Double Pane to U-Value = 0.22 WA GOT	10	31.05	0	0.28	\$10.80	\$0.04	1.08	0.37	28
New Incentive	Home Retrofit - Small Multifamily	Windows - Metal Double Pane to U-Value 0.23-0.27 WA GOT	8	29.18	0	0.25	\$3.45	\$0.04	0.43	1.38	28
New Incentive	Home Retrofit - Single Family Homes	Windows - Metal Double Pane to U-Value 0.23-0.27 WA GOT	8	29.18	0	0.25	\$3.45	\$0.04	0.43	1.38	28

New Incentive	Home Retrofit - Single Family Homes	Windows - Metal Double Pane to U-Value 0.28-0.30 WA GOT	6	27.05	0	0.22	\$3.03	\$0.03	0.51	1.48	28
New Incentive	Home Retrofit - Small Multifamily	Windows - Metal Double Pane to U-Value 0.28-0.30 WA GOT	6	27.05	0	0.22	\$3.03	\$0.03	0.51	1.48	28
New Incentive	Home Retrofit - Small Multifamily	Windows - Single Pane to U-Value = 0.22 WA GOT	10	31.05	0	0.44	\$6.06	\$0.06	0.61	1.38	28
New Incentive	Home Retrofit - Single Family Homes	Windows - Single Pane to U-Value = 0.22 WA GOT	10	31.05	0	0.44	\$6.06	\$0.06	0.61	1.38	28
New Incentive	Home Retrofit - Single Family Homes	Windows - Single Pane to U-Value 0.23-0.27 WA GOT	8	29.18	0	0.41	\$0.59	\$0.06	0.07	0.15	28
New Incentive	Home Retrofit - Small Multifamily	Windows - Single Pane to U-Value 0.23-0.27 WA GOT	8	29.18	0	0.41	\$5.90	\$0.06	0.74	0.20	28
New Incentive	Home Retrofit - Small Multifamily	Windows - Single Pane to U-Value 0.28-0.30 WA GOT	6	27.05	0	0.38	\$0.54	\$0.05	0.09	0.24	28
New Incentive	Home Retrofit - Single Family Homes	Windows - Single Pane to U-Value 0.28-0.30 WA GOT	6	27.05	0	0.38	\$14.65	\$0.05	2.44	0.57	28
No change	Home Retrofit - Single Family Homes	Resideo Annual Thermostat Optimization gFAF Gas Only	12	12	0	14.72	\$12.00	\$3.68	47.30	47.35	217
No change	Home Retrofit - Single Family Homes	Resideo Annual Thermostat Optimization gFAF + AC Gas Only	12	12	0	14.72	\$12.00	\$6.01	47.30	47.35	217

No change	Home Retrofit - Single Family Homes	Resideo Annual Thermostat Optimization gFAF Gas Only Cont Group	12	13.24	0	0	\$0.00	\$0.00	-	0.05	217
No change	Home Retrofit - Single Family Homes	Resideo Annual Thermostat Optimization gFAF + AC Gas Only C Grp	12	13.24	0	0	\$0.00	\$0.00	-	1.20	217
No change	Home Retrofit - Single Family Homes	Attic Insulation/SQFT, Gas Only Heat R0-R11	1.25	1.53	0	0.11	\$1.52	\$0.01	1.21	11.41	58
No change	Home Retrofit - Small Multifamily	Attic Insulation/SQFT, Gas Only Heat R0-R11	1.25	1.53	0	0.11	\$0.16	\$0.01	0.13	2.50	58
No change	Home Retrofit - Single Family Homes	Attic Insulation/SQFT, Gas Only Heat R12-R18	1.25	1.53	0	0.06	\$1.39	\$0.01	1.11	0.91	58
No change	Home Retrofit - Small Multifamily	Floor Insulation/SQFT, Gas Only Heat	1.25	2.01	0	0.09	\$2.01	\$0.02	1.67	1.04	58
No change	Home Retrofit - Single Family Homes	Floor Insulation/SQFT, Gas Only Heat	1.25	2.01	0	0.09	\$2.01	\$0.02	2.00	18.39	58
No change	Home Retrofit - Small Multifamily	Wall Insulation, Gas Heat, Gas Only	1.25	2.78	0	0.08	\$2.22	\$0.01	1.78	13.20	58
No change	Home Retrofit - Single Family Homes	Wall Insulation, Gas Heat, Gas Only	1.25	2.78	0	0.08	\$2.22	\$0.01	1.78	13.20	58
Incentive and savings change	Home Retrofit - Small Multifamily	Gas Furnace - Community Partner Funded	1600	1630	0	112.6	\$1,630.00	\$0.00	1.95	1.94	23

Savings change	Home Retrofit - Small Multifamily	Gas Furnace SW WA 95%+ AFUE	650	1630	0	112.6	\$1,630.00	\$0.00	4.81	1.94	23
Savings change	Home Retrofit - Single Family Homes	Gas Furnace SW WA 95%+ AFUE	650	1630	0	112.6	\$1,630.00	\$0.00	4.81	1.94	23
Incentive and savings change	Home Retrofit - Single Family Homes	Gas Furnace- WA Rentals	1600	1607.32	0	91.81	\$1,607.32	\$2.16	2.21	2.44	23
Incentive and savings change	Home Retrofit - Small Multifamily	Gas Furnace- WA Rentals	1600	1607.32	0	91.81	\$1,265.47	\$2.16	0.79	0.81	23
Savings change	Home Retrofit - Single Family Homes	Gas Hearth 75+ FE w/ ele ignition	250	0.01	0	23.22	\$0.01	\$0.00	1.28	34,042.38	29
Savings change	Home Retrofit - Small Multifamily	Gas Hearth 75+ FE w/ ele ignition	250	0.01	0	23.22	\$0.01	\$0.00	3.58	89,553.29	29
Savings change	Home Retrofit - Single Family Homes	Gas Hearth 70-74 FE w/ ele ignition	150	0.01	0	15.36	\$0.01	\$0.00	3.95	59,246.63	29
Savings change	Home Retrofit - Small Multifamily	Gas Hearth 70-74 FE w/ ele ignition	150	0.01	0	15.36	\$0.01	\$0.00	3.95	59,246.63	29
Discontinued	Retail	Gas hearth—electronic ignition \$25, retailer/distributor incent	25	105	0	7.41	\$105.00	\$0.00	11.43	2.72	29
Discontinued	Retail	Gas hearth—electronic ignition \$30, retailer/distributor incent	30	105	0	7.41	\$105.00	\$0.00	9.52	2.72	29

New Incentive (draft MAD)	Home Retrofit - Single Family Homes	TBD	0	0.01	0	15	\$0.01	\$0.52	N/A	57,858.54	197
New Incentive (draft MAD)	Home Retrofit - Small Multifamily	TBD	0	0.01	0	15	\$0.01	\$0.52	N/A	57,837.14	197
Savings change (draft MAD)	Home Retrofit - Small Multifamily	Gas Tankless Water Heater	400	1025.17	0	61	\$1,025.17	-\$1.84	5.88	2.29	197
Savings change (draft MAD)	Home Retrofit - Small Multifamily	Gas Tankless Water Heater w gas line upgrade	400	2225.17	0	61	\$2,225.17	-\$1.84	5.88	1.06	197
Savings change (draft MAD)	Home Retrofit - Single Family Homes	Gas Tankless Water Heater w gas line upgrade	400	1025.17	0	61	\$1,025.17	-\$1.84	5.88	2.29	197
Savings change (draft MAD)	Home Retrofit - Single Family Homes	Gas Tankless Water Heater	400	2225.17	0	61	\$2,225.17	-\$1.84	5.88	1.06	197
New Incentive (draft MAD)	Home Retrofit - Small Multifamily	Gas Tankless Water Heater - w/ cofunding	TBD	1402.98	0	66	\$533.62	\$243.90	N/A	0.68	197
New Incentive (draft MAD)	Home Retrofit - Small Multifamily	Gas Tankless Water Heater - w/ cofunding	TBD	1402.98	0	66	\$533.62	\$243.90	N/A	0.66	197
No change	Home Retrofit - Small Multifamily	Community Partner Funded Home Audit	250	0	0	0	\$0.00	\$0.00	-	N/A	0

No change	Home Retrofit - Single Family Homes	Community Partner Funded Home Audit	250	0	0	0	\$0.00	\$0.00	-	N/A	0
No change	Home Retrofit - Single Family Homes	Market Transformation Thermostat Optimization - Gas Heat	0	0	0	0	\$0.00	\$0.00	N/A	N/A	0
No change	EPS New Construction	New Homes Code Creds	1,103.50	1,104.00	0	34.28	\$0.00		-	-	267
No change	EPS New Construction	New Homes gas fireplace	251.81	1.00	0	18.3	\$0.00		-	-	267
No change	EPS New Construction	New Homes T-STATs	125.00	125.00	0	14.1	\$0.00		-	-	267
No change	EPS New Construction	SW WA EPS Path 1 - 2018	\$467.60	\$ 949.00	0	79.9	\$949.00	\$13.18	5.79	1.85	145
No change	EPS New Construction	SW WA EPS Path 2 - 2018	\$952.55	\$ 2,463.00	0	142.1	\$2,463.00	\$14.88	5.41	1.27	145
No change	EPS New Construction	SW WA EPS Path 3 - 2018	\$1,143.67	\$ 6,437.00	0	258.2	\$5,278.50	\$52.36	8.47	0.99	145
No change	EPS New Construction	SW WA EPS Path 4 - 2018	\$1,440.00	\$ 8,519.00	0	293	\$6,035.48	\$53.90	7.71	0.84	145

Commercial Existing Buildings New Or Updated MADs for 2024 for Washington:

Data Taken From MADs in October 2023

MAD ID	Measure Application	Savings (therms/yr)	Max Incentive	Starts	Expires
201	Refrigeration Case w/ Door - remote condensing, vertical med temp - Gas Heat	66.40	\$293.82	1/1/2024	12/31/2026
201	Refrigeration Case w/ Door - remote condensing, horizontal med temp - Gas Heat	25.68	\$293.82	1/1/2024	12/31/2026
201	Refrigeration Case w/ Door - remote condensing, horizontal low temp - Gas Heat	15.91	\$293.82	1/1/2024	12/31/2026
256	ARC-full gas heat - 500 to 1500 hrs	15.20	\$425.70	1/1/2024	12/31/2026
256	ARC-full gas heat - 1500 to 2500 hrs	15.20	\$425.70	1/1/2024	12/31/2026
256	ARC-full gas heat - 2500 to 3500 hrs	15.20	\$425.70	1/1/2024	12/31/2026
256	ARC-full gas heat - 3500 to 4500 hrs	15.20	\$425.70	1/1/2024	12/31/2026
256	ARC-full gas heat - 4500 to 5500 hrs	15.20	\$425.70	1/1/2024	12/31/2026
256	ARC-full gas heat - 5500 to 6500 hrs	15.20	\$425.70	1/1/2024	12/31/2026
256	ARC-full gas heat - 6500 to 7500 hrs	15.20	\$425.70	1/1/2024	12/31/2026
256	ARC-full gas heat - 7500 to 8760 hrs	15.20	\$425.70	1/1/2024	12/31/2026
265	Outdoor Pool Cover -Non-Condensing Gas Heater	2.77	\$6.51	1/1/2024	12/31/2026
265	Outdoor Pool Cover - Condensing Gas Heater	2.37	\$6.51	1/1/2024	12/31/2026
265	Indoor Pool Cover - Non-Condensing Gas Heater	2.09	\$6.51	1/1/2024	12/31/2026
265	Indoor Pool Cover - Condensing Gas Heater	1.78	\$6.51	1/1/2024	12/31/2026
212	CTWH - Restaurant <200 kBtu/h	8.18	\$140.21	7/1/2023	12/31/2025
212	CTWH - Motel <200 kBtu/h	14.46	\$140.21	7/1/2023	12/31/2025
212	CTWH - School <200 kBtu/h	19.33	\$140.21	7/1/2023	12/31/2025
212	CTWH - Coin-op Laundry <200 kBtu/h	47.12	\$140.21	7/1/2023	12/31/2025
212	CTWH - Gym <200 kBtu/h	21.90	\$140.21	7/1/2023	12/31/2025
212	CTWH - All Commercial	15.51	\$140.21	7/1/2023	12/31/2025
21	Office - Condensing Tank WH	0.94	\$3.69	7/1/2023	12/31/2025
21	Schools- Condensing Tank WH	0.93	\$3.75	7/1/2023	12/31/2025
21	Healthcare - Condensing Tank WH	0.63	\$3.73	7/1/2023	12/31/2025
21	Hotel - Condensing Tank WH	1.90	\$3.78	7/1/2023	12/31/2025
21	Restaurant - Condensing Tank WH	1.84	\$3.68	7/1/2023	12/31/2025
21	Multifamily - Condensing Tank WH	1.44	\$3.79	7/1/2023	12/31/2025

21	Gym/Fitness Center - Condensing Tank WH	0.43	\$3.80	7/1/2023	12/31/2025
21	Coin-op Laundry - Condensing Tank WH	0.87	\$3.81	7/1/2023	12/31/2025
21	All Commercial - Condensing Tank WH	1.11	\$3.76	7/1/2023	12/31/2025
42	Steam Trap Replacement (all trap sizes) - Multifamily Space Heating- Operating Pressure <5 psig	116.68	\$491.21	7/1/2023	12/31/2025
42	Steam Trap Replacement (all trap sizes) - Commercial Space Heating - Operating Pressure < 30 psig	331.79	\$549.22	7/1/2023	12/31/2025
42	Steam Trap Replacement (all trap sizes) - Commercial Space Heating - Operating Pressure ≥ 30 psig and ≤ 50 psig	697.80	\$576.96	7/1/2023	12/31/2025
42	Steam Trap Replacement (all trap sizes) - Dry Cleaners (no test report required) - Operating Pressure ≥ 75 psig and ≤ 125 psig	211.14	\$376.96	7/1/2023	12/31/2025
42	Steam Trap Replacement (all trap sizes) - Commercial Space Heating (High Use) - Operating Pressure < 30 psig	654.86	\$549.22	7/1/2023	12/31/2025
42	Steam Trap Replacement (all trap sizes) - Commercial Space Heating (High Use) - Operating Pressure ≥ 30 psig and ≤ 50 psig	1,377.23	\$576.96	7/1/2023	12/31/2025
42	Steam Trap Repair (for trap size ≤ 1/2") - Multifamily Space Heating- Operating Pressure <5 psig	116.68	\$491.21	7/1/2023	12/31/2025
42	Steam Trap Repair (for trap size ≤ 1/2") - Commercial Space Heating - Operating Pressure < 30 psig	331.79	\$549.22	7/1/2023	12/31/2025
42	Steam Trap Repair (for trap size ≤ 1/2") - Commercial Space Heating - Operating Pressure ≥ 30 psig and ≤ 50 psig	697.80	\$576.96	7/1/2023	12/31/2025
42	Steam Trap Repair (for trap size ≤ 1/2") - Commercial Space Heating (High Use) - Operating Pressure < 30 psig	654.86	\$549.22	7/1/2023	12/31/2025
42	Steam Trap Repair (for trap size ≤ 1/2") - Commercial Space Heating (High Use) - Operating Pressure ≥ 30 psig and ≤ 50 psig	1,377.23	\$576.96	7/1/2023	12/31/2025
42	Steam Trap Repair (for trap size ≥ 3/4") - Multifamily Space Heating- Operating Pressure <5 psig	116.68	\$366.21	7/1/2023	12/31/2025
42	Steam Trap Repair (for trap size ≥ 3/4") - Commercial Space Heating - Operating Pressure < 30 psig	331.79	\$424.22	7/1/2023	12/31/2025

42	Steam Trap Repair (for trap size $\geq 3/4$ ") - Commercial Space Heating - Operating Pressure ≥ 30 psig and ≤ 50 psig	697.80	\$451.96	7/1/2023	12/31/2025
42	Steam Trap Repair (for trap size $\geq 3/4$ ") - Commercial Space Heating (High Use) - Operating Pressure < 30 psig	654.86	\$424.22	7/1/2023	12/31/2025
42	Steam Trap Repair (for trap size $\geq 3/4$ ") - Commercial Space Heating (High Use) - Operating Pressure ≥ 30 psig and ≤ 50 psig	1,377.23	\$451.96	7/1/2023	12/31/2025
101	Rack Oven - Gas - Single	129.99	\$2,273.15	7/1/2023	12/31/2025
101	Rack Oven – Gas - Double	218.44	\$2,079.78	7/1/2023	12/31/2025
101	Convection Oven - Gas - Full-size	62.15	\$798.04	7/1/2023	12/31/2025
101	Combination Oven – Gas	207.91	\$3,425.02	7/1/2023	12/31/2025
101	Steam Cookers - Gas	555.32	\$3,400.00	7/1/2023	12/31/2025
101	Conveyor Broilers with belt width < 20 "	1,145.29	\$2,523.03	7/1/2023	12/31/2025
101	Conveyor Broilers with belt width 20 " - 26 "	1,932.84	\$3,145.87	7/1/2023	12/31/2025
101	Conveyor Broilers with belt width > 26 "	3,161.26	\$3,658.65	7/1/2023	12/31/2025
80	Ozone Laundry System - less than 75 lbs laundry capacity - Gas WH	2,232.29	\$10,092.68	1/1/2024	12/31/2026
80	Ozone Laundry System - 75 to 125 lbs laundry capacity - Gas WH	4,464.57	\$13,479.48	1/1/2024	12/31/2026
80	Ozone Laundry System - 126 to 400 lbs laundry capacity	11,719.50	\$25,433.87	1/1/2024	12/31/2026
80	Ozone Laundry System - 401 to 600 lbs laundry capacity	22,322.85	\$39,816.22	1/1/2024	12/31/2026
80	Ozone Laundry System - more than 600 lbs laundry capacity	31,251.99	\$47,957.66	1/1/2024	12/31/2026
291	Two-stage Gas Valve on Clothes Dryers in Multifamily Buildings	24.67	\$260.80	1/1/2024	12/31/2026
291	Two-stage Gas Valve on Clothes Dryers in Coin-Operated Laundromats	52.61	\$556.11	1/1/2024	12/31/2026
291	Two-stage Gas Valve on Clothes Dryers in On-Premises Laundries	351.82	\$875.00	1/1/2024	12/31/2026
235	Smart Thermostat Grocery - Gas Heat w/ Cooling (HZ1)	88.59	\$599.00	5/25/2023	12/31/2025
235	Smart Thermostat Grocery - Gas Heat NO Cooling (HZ1)	88.59	\$599.00	5/25/2023	12/31/2025

235	Smart Thermostat Non-Grocery - Gas Heat w/ Cooling (HZ1)	30.98	\$599.00	5/25/2023	12/31/2025
235	Smart Thermostat Non-Grocery - Gas Heat NO Cooling (HZ1)	30.98	\$599.00	5/25/2023	12/31/2025
235	Smart Thermostat Grocery - Gas Heat w/ Cooling (HZ2)	98.58	\$599.00	5/25/2023	12/31/2025
235	Smart Thermostat Grocery - Gas Heat NO Cooling (HZ2)	98.58	\$599.00	5/25/2023	12/31/2025
235	Smart Thermostat Non-Grocery - Gas Heat w/ Cooling (HZ2)	44.52	\$599.00	5/25/2023	12/31/2025
235	Smart Thermostat Non-Grocery - Gas Heat NO Cooling (HZ2)	44.52	\$599.00	5/25/2023	12/31/2025
89	MF Commercial Washer Ele Dryer Gas WH Tier 1	8.53	\$98.09	1/1/2024	12/31/2026
89	MF Commercial Washer Ele Dryer Gas WH Tier 2	12.10	\$139.18	1/1/2024	12/31/2026
89	MF Commercial Washer Gas Dryer Ele WH Tier 1	15.37	\$176.73	1/1/2024	12/31/2026
89	MF Commercial Washer Gas Dryer Ele WH Tier 2	20.71	\$238.11	1/1/2024	12/31/2026
89	MF Commercial Washer Gas Dryer Gas WH Tier 1	23.90	\$274.82	1/1/2024	12/31/2026
89	MF Commercial Washer Gas Dryer Gas WH Tier 2	32.81	\$377.29	1/1/2024	12/31/2026
89	Commercial Washer Ele Dryer Gas WH Tier 1	11.66	\$89.24	1/1/2024	12/31/2026
89	Commercial Washer Ele Dryer Gas WH Tier 2	16.55	\$126.62	1/1/2024	12/31/2026
89	Commercial Washer Gas Dryer Ele WH Tier 1	21.01	\$160.79	1/1/2024	12/31/2026
89	Commercial Washer Gas Dryer Ele WH Tier 2	28.31	\$216.63	1/1/2024	12/31/2026
89	Commercial Washer Gas Dryer Gas WH Tier 1	32.67	\$250.03	1/1/2024	12/31/2026
89	Commercial Washer Gas Dryer Gas WH Tier 2	44.86	\$343.25	1/1/2024	12/31/2026
29	Gas Hearth 70-74 FE w/ ele ignition	15.36	\$150.00	1/1/2024	12/31/2026
29	Gas Hearth 75+ FE w/ ele ignition	23.22	\$250.00	1/1/2024	12/31/2026
29	New Home Gas Hearth 70+ FE w/ ele ignition	16.68	\$200.00	1/1/2024	12/31/2026

These are Residential MADs with Commercial applicability

These are Residential MADs with Commercial applicability

These are Residential MADs with Commercial applicability

All Other Commercial Existing Buildings Active MADs for Washington (neither new nor updated for 2024):

Data Taken From MADs in October 2023

MAD ID	Measure Application	Savings (therms/yr)	Max Incentive	Starts	Expires
28	Windows - U-Value ≤ 0.22 WA GOT	0.08	\$3.58	1/1/2023	12/31/2025
28	Windows - U-Value 0.23-0.27 WA GOT	0.05	\$2.27	1/1/2023	12/31/2025
28	Windows - U-Value 0.28-0.30 WA GOT	0.02	\$0.80	1/1/2023	12/31/2025
28	Windows - Metal Double Pane to U-Value ≤ 0.22 WA GOT	0.28	\$12.30	1/1/2023	12/31/2025
28	Windows - Metal Double Pane to U-Value 0.23-0.27 WA GOT	0.25	\$10.99	1/1/2023	12/31/2025
28	Windows - Metal Double Pane to U-Value 0.28-0.30 WA GOT	0.22	\$9.52	1/1/2023	12/31/2025
28	Windows - Single Pane to U-Value ≤ 0.22 WA GOT	0.44	\$19.48	1/1/2023	12/31/2025
28	Windows - Single Pane to U-Value 0.23-0.27 WA GOT	0.41	\$18.24	1/1/2023	12/31/2025
28	Windows - Single Pane to U-Value 0.28-0.30 WA GOT	0.38	\$16.82	1/1/2023	12/31/2025
58	Wall Insulation R0-R4 Gas Heat SF/SMF	0.08	\$2.78	1/1/2023	12/31/2025
58	Floor Insulation R0-R11 Gas Heat SF/SMF	0.09	\$2.01	1/1/2023	12/31/2025
58	Attic Insulation R0-R11 Gas Heat SF/SMF	0.11	\$1.53	1/1/2023	12/31/2025
58	Attic Insulation R12-R18 Gas Heat SF/SMF	0.06	\$1.53	1/1/2023	12/31/2025
58	Floor Insulation R0-R11 Gas Heat XMH	0.04	\$1.96	1/1/2023	12/31/2025
58	Attic Insulation R0-R11 Gas Heat XMH	0.04	\$1.53	1/1/2023	12/31/2025
58	Attic Insulation R12-R18 Gas Heat XMH	0.02	\$0.70	1/1/2023	12/31/2025
153	Smart Thermostat- SF & MH- Direct/ Contractor Install- gFAF	30.63	\$250.00	1/1/2023	12/31/2025
153	Smart Thermostat- Multifamily- Direct/Contractor Install- gFAF	14.12	\$239.12	1/1/2023	12/31/2025
153	Smart Thermostat- Retail/Online- gFAF	32.07	\$189.99	1/1/2023	12/31/2025
153	Smart Thermostat- New Homes- gFAF	21.74	\$250.00	1/1/2023	12/31/2025
153	Smart Thermostat- SF & MH- Direct/ Contractor Install- gFAF- with Co-Funding	30.63	\$518.81	1/1/2023	12/31/2025
153	Smart Thermostat- Multifamily- Direct/ Contractor Install- gFAF- with Co-Funding	14.12	\$239.12	1/1/2023	12/31/2025
153	Smart Thermostat- Retail/ Online- gFAF- with Co-Funding	32.07	\$543.14	1/1/2023	12/31/2025

153	Smart Thermostat- New Homes- gFAF- with Co-Funding	21.74	\$368.20	1/1/2023	12/31/2025
203	Furnace, 91%, Multifamily	1.34	\$8.43	1/1/2023	12/31/2025
203	Furnace, 95%, Multifamily	1.83	11.35	1/1/2023	12/31/2025
203	Furnace, 98%, Multifamily	2.20	14.90	1/1/2023	12/31/2025
203	Incremental, 91% to 95%	0.49	2.92	1/1/2023	12/31/2025
203	Incremental, 91% to 98%	0.86	\$6.47	1/1/2023	12/31/2025
203	Incremental, 95% to 98%	0.37	\$3.55	1/1/2023	12/31/2025
171	Single Pane Window to 0.22 < U value ≤ 0.30 Window HZ1 Gas heating	1.15	\$24.70	1/1/2023	12/31/2025
171	Single Pane Window to 0.22 < U value ≤ 0.30 Window HZ2 Gas heating	1.51	\$24.70	1/1/2023	12/31/2025
171	Single Pane Window to U value ≤ 0.22 Window HZ1 Gas heating	1.27	\$28.60	1/1/2023	12/31/2025
171	Single Pane Window to U value ≤ 0.22 Window HZ2 Gas heating	1.68	\$28.60	1/1/2023	12/31/2025
171	Storm Window for Single Pane Window (Non-metal Frame) HZ1 Gas heating	0.92	\$10.46	1/1/2023	12/31/2025
171	Storm Window for Single Pane Window (Non-metal Frame) HZ2 Gas heating	1.22	\$10.46	1/1/2023	12/31/2025
171	Storm Window for Single Pane Window (Metal Frame) HZ1 Gas heating	1.18	\$10.46	1/1/2023	12/31/2025
171	Storm Window for Single Pane Window (Metal Frame) HZ2 Gas heating	1.55	\$10.46	1/1/2023	12/31/2025
171	Double Pane Window to 0.22 < U value ≤ 0.30 Window HZ1 Gas	0.62	\$24.70	1/1/2023	12/31/2025
171	Double Pane Window to 0.22 < U value ≤ 0.30 Window HZ2 Gas	0.83	\$24.70	1/1/2023	12/31/2025
171	Double Pane Window to U value ≤ 0.22 Window HZ1 Gas	0.75	\$28.60	1/1/2023	12/31/2025
171	Double Pane Window to U value ≤ 0.22 Window HZ2 Gas	1.00	\$28.60	1/1/2023	12/31/2025
171	Storm Window for Double Pane Window (Metal Frame) HZ1 Gas	0.60	\$10.46	1/1/2023	12/31/2025
171	Storm Window for Double Pane Window (Metal Frame) HZ2 Gas	0.80	\$10.46	1/1/2023	12/31/2025
110	MF Attic Insulation R11 or less - R49 HZ1 Gas Heat	0.05	\$1.41	1/1/2023	12/31/2025

110	MF Floor Insulation R11 or less - R30 HZ1 Gas Heat	0.06	\$1.90	1/1/2023	12/31/2025
110	MF Wall Insulation R6 or less - R11 HZ1 Gas Heat	0.10	\$2.24	1/1/2023	12/31/2025
110	MF Attic Insulation R11 or less - R49 HZ2 Gas Heat	0.05	\$1.41	1/1/2023	12/31/2025
110	MF Floor Insulation R11 or less - R30 HZ2 Gas Heat	0.08	\$1.90	1/1/2023	12/31/2025
110	MF Wall Insulation R6 or less - R11 HZ2 Gas Heat	0.13	\$2.24	1/1/2023	12/31/2025
104	IR Poly Film (per SF of film)	0.23	\$0.08	1/1/2023	12/31/2025
104	Thermal Curtain (per SF floor space)	0.41	\$1.15	1/1/2023	12/31/2025
104	Under Bench Heating (per SF floor space)	1.25	\$2.19	1/1/2023	12/31/2025
68	HZ1 - Roof Insulation - R5 or less to R30 - gas heat - gas only	0.09	\$2.85	1/1/2023	12/31/2025
68	HZ2/HZ3 - Roof Insulation - R5 or less to R30 - gas heat - gas only	0.15	\$2.85	1/1/2023	12/31/2025
68	HZ1 - Roof Insulation - R0 to R15 - gas heat - gas only	0.43	\$2.85	1/1/2023	12/31/2025
68	HZ2/HZ3 - Roof Insulation - R0 to R15 - gas heat - gas only	0.66	\$2.85	1/1/2023	12/31/2025
68	HZ1 - Roof Insulation - R0 to R30 - gas heat - gas only	0.51	\$2.85	1/1/2023	12/31/2025
68	HZ2/HZ3 - Roof Insulation - R0 to R30 - gas heat - gas only	0.76	\$2.85	1/1/2023	12/31/2025
68	HZ1 - Attic Insulation - R9 or less to R25 - gas heat - gas only	0.14	\$1.28	1/1/2023	12/31/2025
68	HZ2/HZ3 - Attic Insulation - R9 or less to R25 - gas heat - gas only	0.25	\$1.28	1/1/2023	12/31/2025
68	HZ1 - Wall Insulation - R6 or less to R20 - gas heat - gas only	0.19	\$1.61	1/1/2023	12/31/2025
68	HZ2/HZ3 - Wall Insulation - R6 or less to R20 - gas heat - gas only	0.31	\$1.61	1/1/2023	12/31/2025
103	Greenhouse Controller Weighted Average Size/Schedule	0.29	\$0.44	1/1/2023	12/31/2025
134	Condensing Unit Heater in Greenhouses	6.29	\$13.90	1/1/2023	12/31/2025
91	Commercial DHW 1" pipe insulated to 1.5"	2.11	\$18.41	1/1/2023	12/31/2025
91	Commercial DHW 2" pipe insulated to 2.0"	3.68	\$25.49	1/1/2023	12/31/2025
91	Commercial DHW 3" pipe insulated to 2.0"	5.22	\$31.47	1/1/2023	12/31/2025
91	Commercial DHW 4" pipe insulated to 2.0"	6.53	\$37.46	1/1/2023	12/31/2025
91	Commercial HHW 1" pipe insulated to 1.5"	2.68	\$33.48	1/1/2023	12/31/2025
91	Commercial HHW 2" pipe insulated to 2.0"	4.65	\$40.56	1/1/2023	12/31/2025
91	Commercial HHW 3" pipe insulated to 2.0"	6.57	\$46.54	1/1/2023	12/31/2025

91	Commercial HHW 4" pipe insulated to 2.0"	8.22	\$52.53	1/1/2023	12/31/2025
91	Commercial LPS 1" pipe insulated to 1.5"	4.49	\$33.48	1/1/2023	12/31/2025
91	Commercial LPS 2" pipe insulated to 2.0"	7.81	\$40.56	1/1/2023	12/31/2025
91	Commercial LPS 3" pipe insulated to 2.0"	11.01	\$46.54	1/1/2023	12/31/2025
91	Commercial LPS 4" pipe insulated to 2.0"	13.78	\$52.53	1/1/2023	12/31/2025
91	Commercial MPS 1" pipe insulated to 2.0"	4.63	\$33.48	1/1/2023	12/31/2025
91	Commercial MPS 2" pipe insulated to 2.5"	8.01	\$40.56	1/1/2023	12/31/2025
91	Commercial MPS 3" pipe insulated to 2.5"	11.29	\$46.54	1/1/2023	12/31/2025
91	Commercial MPS 4" pipe insulated to 2.5"	14.13	\$52.53	1/1/2023	12/31/2025
91	Industrial LPS 0.5-1" pipe insulated to 1.5"	12.51	\$33.03	1/1/2023	12/31/2025
91	Industrial LPS 1.25-1.5" pipe insulated to 1.5"	17.47	\$35.72	1/1/2023	12/31/2025
91	Industrial LPS 2.0-2.5" pipe insulated to 2.0"	25.26	\$42.05	1/1/2023	12/31/2025
91	Industrial LPS 2.5-3.5" pipe Insulated to 2.0"	34.68	\$48.04	1/1/2023	12/31/2025
91	Industrial LPS 4-6" pipe Insulated to 2.0"	49.21	\$58.51	1/1/2023	12/31/2025
91	Industrial LPS 8-10" pipe Insulated to 2.0"	80.56	\$82.46	1/1/2023	12/31/2025
91	Industrial MPS 0.5-1" pipe insulated to 2.0"	21.14	\$33.03	1/1/2023	12/31/2025
91	Industrial MPS 1.25-1.5" pipe insulated to 2.0"	29.54	\$35.72	1/1/2023	12/31/2025
91	Industrial MPS 2.0-2.5" pipe insulated to 2.5"	42.34	\$42.05	1/1/2023	12/31/2025
91	Industrial MPS 2.5-3.5" pipe insulated to 2.5"	58.14	\$48.04	1/1/2023	12/31/2025
91	Industrial MPS 4-6" pipe insulated to 2.5"	82.56	\$58.51	1/1/2023	12/31/2025
91	Industrial MPS 8-10" pipe insulated to 2.5"	135.22	\$82.46	1/1/2023	12/31/2025
91	Industrial PHW 0.5-1" pipe insulated to 1.5"	7.36	\$33.03	1/1/2023	12/31/2025
91	Industrial PHW 1.25-1.5" pipe insulated to 1.5"	10.20	\$35.72	1/1/2023	12/31/2025
91	Industrial PHW 2.0-2.5" pipe insulated to 2.0"	14.72	\$42.05	1/1/2023	12/31/2025
91	Industrial PHW 2.5-3.5" pipe insulated to 2.0"	20.24	\$48.04	1/1/2023	12/31/2025
91	Industrial PHW 4-6" pipe insulated to 2.0"	28.76	\$58.51	1/1/2023	12/31/2025
91	Industrial PHW 8-10" pipe insulated to 2.0"	47.40	\$82.46	1/1/2023	12/31/2025
72	Large Office - CTWH \geq 200 kBtu/h	0.44	\$1.42	1/1/2023	12/31/2025
72	School - CTHW \geq 200 kBtu/h	0.28	\$1.42	1/1/2023	12/31/2025
72	Healthcare - CTWH \geq 200 kBtu/h	0.14	\$1.42	1/1/2023	12/31/2025
72	Hotel - CTWH \geq 200 kBtu/h	0.21	\$1.44	1/1/2023	12/31/2025
72	Restaurant - CTWH \geq 200 kBtu/h	0.15	\$1.43	1/1/2023	12/31/2025
72	Multifamily - CTWH \geq 200 kBtu/h	0.42	\$1.43	1/1/2023	12/31/2025
72	Commercial Gym - CTWH \geq 200 kBtu/h	0.31	\$1.42	1/1/2023	12/31/2025

72	Coin-op Laundry - CTWH \geq 200 kBtu/h	0.67	\$1.43	1/1/2023	12/31/2025
72	All Commercial - CTWH \geq 200 kBtu/h	0.28	\$1.43	1/1/2023	12/31/2025
196	Multifamily - Condensing Tankless Water Heater <200 kBtu/h	25.67	\$140.21	1/1/2023	12/31/2025
238	Non-condensing heater – uncovered, indoor pool	0.21	\$1.04	1/1/2023	12/31/2025
238	Non-condensing heater – uncovered, outdoor pool	0.38	\$1.04	1/1/2023	12/31/2025
238	Non-condensing heater – covered, indoor pool	0.12	\$0.98	1/1/2023	12/31/2025
238	Non-condensing heater - covered, outdoor pool	0.25	\$1.04	1/1/2023	12/31/2025
238	Condensing heater – uncovered, indoor pool	0.70	\$5.51	1/1/2023	12/31/2025
238	Condensing heater – uncovered, outdoor pool	1.29	\$8.78	1/1/2023	12/31/2025
238	Condensing heater – covered, indoor pool	0.42	\$3.27	1/1/2023	12/31/2025
238	Condensing heater – covered, outdoor pool	0.85	\$6.69	1/1/2023	12/31/2025
111	3/4" DHW MF pipe insulated to 1.5"	2.27	\$16.91	1/1/2023	12/31/2025
111	1" DHW MF pipe insulated to 1.5"	2.79	\$18.41	1/1/2023	12/31/2025
111	2" DHW MF pipe insulated to 2"	4.87	\$25.49	1/1/2023	12/31/2025
111	3" DHW MF pipe insulated to 2"	6.88	\$31.47	1/1/2023	12/31/2025
111	4" DHW MF pipe insulated to 2"	8.61	\$37.46	1/1/2023	12/31/2025
111	3/4" LPS (<15 psig) MF pipe insulated to 1.5"	1.73	\$31.98	1/1/2023	12/31/2025
111	1" LPS (<15 psig) MF pipe insulated to 1.5"	2.12	\$33.48	1/1/2023	12/31/2025
111	2" LPS (<15 psig) MF pipe insulated to 2"	3.69	\$40.56	1/1/2023	12/31/2025
111	3" LPS (<15 psig) MF pipe insulated to 2"	5.19	\$46.54	1/1/2023	12/31/2025
111	4" LPS (<15 psig) MF pipe insulated to 2"	6.49	\$52.53	1/1/2023	12/31/2025
111	3/4" HHW MF pipe insulated to 1.5"	1.05	\$22.84	1/1/2023	12/31/2025
111	1" HHW MF pipe insulated to 1.5"	1.28	\$27.98	1/1/2023	12/31/2025
111	2" HHW MF pipe insulated to 2"	2.22	\$40.56	1/1/2023	12/31/2025
111	3" HHW MF pipe insulated to 2"	3.13	\$46.54	1/1/2023	12/31/2025
111	4" HHW MF pipe insulated to 2"	3.91	\$52.53	1/1/2023	12/31/2025
66	GAS TEMP 1 1/4 HP Gas-Only	91.74	\$897.17	1/1/2023	12/31/2025
66	GAS TEMP 1 3/4 HP Gas-Only	91.74	\$1,112.46	1/1/2023	12/31/2025
66	GAS TEMP 1/2 HP Gas-Only	91.74	\$944.09	1/1/2023	12/31/2025
66	GAS TEMP 1/4 HP Gas-Only	76.45	\$927.05	1/1/2023	12/31/2025
66	GAS TEMP 1/6 HP Gas-Only	60.36	\$731.86	1/1/2023	12/31/2025
66	GAS TEMP 1/8 HP Gas-Only	30.18	\$224.80	1/1/2023	12/31/2025
66	GAS TEMP 2 HP Gas-Only	91.74	\$1,112.46	1/1/2023	12/31/2025

66	GAS TEMP 3 1/2 HP Gas-Only	91.74	\$1,112.46	1/1/2023	12/31/2025
66	GAS TEMP 3/4 HP Gas-Only	91.74	\$920.63	1/1/2023	12/31/2025
66	GAS TEMP 4 1/2 HP Gas-Only	91.74	\$1,112.46	1/1/2023	12/31/2025
66	GAS TEMP 5 HP Gas-Only	91.74	\$1,112.46	1/1/2023	12/31/2025
66	GAS COMB 1 1/4 HP Gas-Only	430.04	\$2,017.00	1/1/2023	12/31/2025
66	GAS COMB 1 3/4 HP Gas-Only	430.04	\$2,619.47	1/1/2023	12/31/2025
66	GAS COMB 1/2 HP Gas-Only	430.04	\$2,063.91	1/1/2023	12/31/2025
66	GAS COMB 1/4 HP Gas-Only	358.36	\$2,087.37	1/1/2023	12/31/2025
66	GAS COMB 1/6 HP Gas-Only	282.91	\$2,095.19	1/1/2023	12/31/2025
66	GAS COMB 1/8 HP Gas-Only	141.46	\$455.49	1/1/2023	12/31/2025
66	GAS COMB 2 HP Gas-Only	430.04	\$3,221.95	1/1/2023	12/31/2025
66	GAS COMB 3 1/2 HP Gas-Only	430.04	\$4,426.90	1/1/2023	12/31/2025
66	GAS COMB 3/4 HP Gas-Only	430.04	\$2,040.46	1/1/2023	12/31/2025
66	GAS COMB 4 1/2 HP Gas-Only	430.04	\$5,214.56	1/1/2023	12/31/2025
66	GAS COMB 5 HP Gas-Only	430.04	\$5,214.56	1/1/2023	12/31/2025
66	GAS LRN 1 1/4 HP Gas-Only	260.89	\$897.17	1/1/2023	12/31/2025
66	GAS LRN 1 3/4 HP Gas-Only	260.89	\$1,219.69	1/1/2023	12/31/2025
66	GAS LRN 1/2 HP Gas-Only	260.89	\$944.09	1/1/2023	12/31/2025
66	GAS LRN 1/4 HP Gas-Only	217.41	\$967.55	1/1/2023	12/31/2025
66	GAS LRN 1/6 HP Gas-Only	171.63	\$975.37	1/1/2023	12/31/2025
66	GAS LRN 1/8 HP Gas-Only	85.82	\$334.55	1/1/2023	12/31/2025
66	GAS LRN 2 HP Gas-Only	260.89	\$1,542.21	1/1/2023	12/31/2025
66	GAS LRN 3 1/2 HP Gas-Only	260.89	\$2,187.25	1/1/2023	12/31/2025
66	GAS LRN 3/4 HP Gas-Only	260.89	\$920.63	1/1/2023	12/31/2025
66	GAS LRN 4 1/2 HP Gas-Only	260.89	\$2,832.29	1/1/2023	12/31/2025
66	GAS LRN 5 HP Gas-Only	260.89	\$3,163.51	1/1/2023	12/31/2025
122	DCKV – gas heat -gas only	142.00	\$2,187.50	1/1/2023	12/31/2025
88	Condensing Boiler - Multifamily	1.16	\$6.64	1/1/2023	12/31/2025
88	Condensing Boiler - Healthcare	2.67	\$6.64	1/1/2023	12/31/2025
88	Condensing Boiler - Office	0.80	\$6.64	1/1/2023	12/31/2025
88	Condensing Boiler - Restaurant	1.33	\$6.64	1/1/2023	12/31/2025
88	Condensing Boiler - Retail	1.19	\$6.64	1/1/2023	12/31/2025
88	Condensing Boiler - School	0.93	\$6.64	1/1/2023	12/31/2025
88	Condensing Boiler - Hotel	1.78	\$6.64	1/1/2023	12/31/2025

88	Condensing Boiler - Warehouse	1.44	\$6.64	1/1/2023	12/31/2025
184	Outputs from the tool may be used through custom or semi-custom program tracks, when cost effective.			1/1/2023	12/31/2025
137	BOC in Existing Buildings	1,592.80	\$1,895.00	1/1/2023	12/31/2025
137	BOC in Multifamily	626.04	\$1,895.00	1/1/2023	12/31/2025
152	MF WA Clothes Washer - Gas DHW	5.53	\$51.96	1/1/2022	12/31/2024
152	MF WA Laundry Center Washer/Dryer - Gas DHW	5.46	\$45.10	1/1/2022	12/31/2024
200	<0.5 inch Orifice, Low Pressure Steam Trap	343.49	\$500.00	1/1/2022	12/31/2024
200	0.5 to <1 inch Orifice, Low Pressure Steam Trap	2,421.62	\$550.00	1/1/2022	12/31/2024
200	1 to 1.5 inch Orifice, Low Pressure Steam Trap	6,984.35	\$600.00	1/1/2022	12/31/2024
200	<0.5 inch Orifice, Medium Pressure Steam Trap	1,768.91	\$500.00	1/1/2022	12/31/2024
200	0.5 to <1 inch Orifice, Medium Pressure Steam Trap	13,487.97	\$550.00	1/1/2022	12/31/2024
197	SW WA Gas ESTAR Tankless WH	60.69	\$449.77	1/1/2022	12/31/2023
197	SW WA Gas ESTAR Tankless WH - w/ Gas Upgrade	60.69	\$873.52	1/1/2022	12/31/2023
270	Furnace >=95% AFUE in existing commercial buildings	0.82	\$8.44	1/1/2022	12/31/2024
270	Furnace >=95% AFUE in new commercial buildings	0.51	\$8.44	1/1/2022	12/31/2024
117	Infrared Radiant Heaters, low intensity, non-modulating, non-condensing	2.93	\$1.31	1/1/2022	12/31/2024
117	Infrared Radiant Heaters, low intensity, modulating, non-condensing	3.80	\$2.44	1/1/2022	12/31/2024
253	PRSV - 0.81 to 1.00 gpm, gas water heat – Standard measure - EB	25.00	\$30	8/1/2020	12/31/2023
253	PRSV - 0.61 to 0.80 gpm, gas water heat – Standard measure - EB	39.00	\$30.00	8/1/2020	12/31/2023
253	PRSV - 0.81 to 1.00 gpm, gas water heat – Direct Install - EB	25.00	\$84.00	8/1/2020	12/31/2023
253	PRSV - 0.61 to 0.80 gpm, gas water heat – Direct Install - EB	39.00	\$132.00	8/1/2020	12/31/2023
253	PRSV - 0.81_to_1.00_gpm - gas water heat – Standard measure - MF	30.00	\$30.00	8/1/2020	12/31/2023
253	PRSV - 0.61_to_0.80_gpm - gas water heat – Standard measure - MF	47.00	\$30.00	8/1/2020	12/31/2023
253	PRSV - 0.81_to_1.00_gpm - gas water heat - Direct Install - MF	30.00	\$100.00	8/1/2020	12/31/2023
253	PRSV - 0.61_to_0.80_gpm - gas water heat - Direct Install - MF	47.00	\$159.00	8/1/2020	12/31/2023

47	Door Retrofit - vertical med temp - Gas Heat	56.48	\$420.92	1/1/2023	12/31/2025
47	Door Retrofit - horizontal low temp - Gas Heat	11.96	\$235.71	1/1/2023	12/31/2025
47	Door Retrofit - horizontal med temp - Gas Heat	19.39	\$382.05	1/1/2023	12/31/2025
195	DCV, New gas heat RTU	21.46	\$38.28	1/1/2024	12/31/2024
45	Multifamily Buildings - Thermostatic Radiator Valve	42.01	215.00	1/1/2022	12/31/2024
280	This tool is used to calculate savings for custom projects or "special measures" that are tested individually for cost-effectiveness.			8/9/2023	12/31/2025
142	Modulating Boiler Burner - 5:1 turndown or higher	0.87	\$13.03	1/1/2023	12/31/2025
102	Gas Storage WH - ESTAR non-power non-cond	15.10	\$100.00	1/1/2022	12/31/2023

APPENDIX 4: Measure Approval Documents