



*In the Community to Serve®*

# 2022 Annual Conservation Report



# Contents

<b>Background</b> .....	<b>3</b>
Cost-Effectiveness Inputs .....	3
Goal Setting.....	4
<b>Summary of 2022 Program Achievements</b> .....	<b>5</b>
Programmatic Spending .....	7
Progress To Biennial Goals .....	8
<b>Current Year Highlights</b> .....	<b>9</b>
Residential .....	9
Application intake .....	11
Commercial/Industrial .....	14
Low-Income Weatherization Program .....	17
Cumulative Savings – Overview of the larger impact .....	20
<b>Quality Management System – Quality Control, Review and Evaluation, Process Improvements.</b>	<b>21</b>
Pilots .....	21
New Home Air Sealing.....	21
Home Energy Reports .....	22
Radiant heating focus .....	22
Hard-to-reach areas .....	22
Midstream Tankless Program .....	22
Gas Heat Pumps.....	23
Demand Control for Kitchen Hood Makeup Air Units .....	23
Strategic Energy Management (SEM).....	23
Evaluation, Measurement & Verification .....	23
Continual Process Improvements.....	24
Software Customization .....	25
Resource management .....	25
Balancing a Hybrid Remote Work Model .....	26
Disqualified Measure Applications.....	27
<b>Quality Control Inspections</b> .....	<b>27</b>
Residential Sector .....	28
Commercial/Industrial Sector .....	29

<b>Participation Summary .....</b>	<b>30</b>
<b>Updates to 2021 Program Achievements .....</b>	<b>30</b>

## List of Tables:

Table 1: 2022 Program Achievements.....	6
Table 2: 2022 Program Cost-effectiveness .....	6
Table 3: 2022 Programmatic Expenses and Paid Rebates .....	7
Table 4: Biennial Targets for Spending and Savings.....	8
Table 5: Residential Program Highlights.....	11
Table 6: C/I Program Prescriptive Measure Highlights .....	16
Table 7: Community Action Agencies.....	17
Table 8: 2022 Low-Income Programmatic Costs .....	19
Table 9: WIP & EWIP Measure Highlights.....	20
Table 10: Residential Program 2022 inspection Summary .....	28
Table 11: C/I inspections by Zone.....	29

## List of Figures:

Figure 1: Residential Monthly Intake 2019-2022.....	12
Figure 2: New Home Applications per Year by Climate Zone .....	12
Figure 3: Prescriptive vs Custom C/I Therms Savings 2020-2022 .....	14
Figure 4: Weatherization Incentive Program Participation Levels since 2020 .....	18
Figure 5: Residential Monthly Queue 2019-2022 .....	26
Figure 6: Residential Denials by Denial Reason .....	27

# Cascade Natural Gas Corporation Annual Conservation Achievement Report Calendar Year 2022

## Background

Cascade Natural Gas Corporation’s (CNGC, Cascade, or the Company) Energy Efficiency Department presents this Annual Conservation Achievement Report of 2022 Energy Efficiency Program accomplishments and activities, satisfying the commitment made by the Company in Docket UG-210838 Attachment A Biennial Conservation Plan (BCP) Conditions. Per the commitment made by CNGC this report shall be submitted to the Washington Utilities and Transportation Commission (WUTC) by June 15 each year, with advance copies provided to the Company’s Conservation Advisory Group (CAG) 30 days prior to Commission filing. The report contains the following:

- Planned and claimed gas savings from conservation, including a description of the key sources of variance between the planned and actual savings
- Budgeted and actual expenditures made to acquire conservation through the conservation cost recovery adjustment described in Condition 12
- The portfolio- and program-level cost-effectiveness of the actual gas savings from conservation
- The biennial conservation target
- A discussion of the steps taken to adaptively manage conservation programs throughout the preceding year
- All program evaluations completed in the preceding year
- Program outreach in 2022

## Cost-Effectiveness Inputs

Avoided Costs for calculating annual achievements coincide with the tariffs in effect at the time of Program participation. For 2022 the Residential and Commercial/Industrial (C/I) cost-effectiveness is

Docket UG-210838 Annual Conservation Achievement Report 2022

## Annual Report Acronyms

<b>AEG</b>	Applied Energy Group
<b>BCP</b>	Biennial Conservation Plan
<b>C/I</b>	Commercial/ Industrial
<b>CAG</b>	Conservation Advisory Group
<b>CNGC</b>	Cascade Natural Gas Corporation
<b>CO2e</b>	Carbon Dioxide Equivalent
<b>CPA</b>	Conservation Potential Assessment
<b>DBtC</b>	Direct Benefit to Customer
<b>DSM</b>	Demand Side Management
<b>EE</b>	Energy Efficiency
<b>EEIP</b>	Energy Efficiency Incentive Program
<b>EM&amp;V</b>	Evaluation Measurement & Verification
<b>ESK</b>	Energy Saving Kit
<b>EWIP</b>	Enhanced Weatherization Incentive Program
<b>HE</b>	High Efficiency
<b>IRP</b>	Integrated Resource Plan
<b>LIW</b>	Low Income Weatherization
<b>MOU</b>	Memorandum of Understanding
<b>NEEA</b>	Northwest Energy Efficiency Alliance
<b>NEI</b>	Non-Energy Impact
<b>PIV</b>	Post Installation Verification
<b>POS</b>	Point of Sale
<b>PUX</b>	Public User Experience
<b>QC</b>	Quality Control
<b>RCW</b>	Revised Code of Washington
<b>RFP</b>	Request for Proposal
<b>RTF</b>	Regional Technical Forum
<b>SCC</b>	Social Cost of Carbon
<b>SEM</b>	Strategic Energy Management
<b>TA</b>	Trade Ally
<b>TRC</b>	Total Resource Cost Test
<b>UCT</b>	Utility Cost Test
<b>UEF</b>	Uniform Energy Factor
<b>WAP</b>	Weatherization Assistance Program
<b>WIP</b>	Weatherization Incentive Program
<b>WSEC</b>	Washington State Energy Code
<b>WUTC</b>	Washington Utilities and Transportation Commission



calculated based on the Avoided Costs in the 2020 Integrated Resource Plan (IRP). As required by Revised Code of Washington (RCW) 80.28.380 this set of Avoided Costs includes the Social Cost of Carbon (SCC)<sup>1</sup>.

Demand Side Management (DSM) inputs include a 3.4% long-term discount rate and an inflation rate of 2.0% for the Avoided Costs from the 2020 IRP; these inputs are applicable to the Residential, C/I, and Low-Income Weatherization Programs. Please note these rates were used to develop the 2022-2023 BCP in 2021 and do not reflect updates that may have taken place since 2021.

Discrete non-energy impacts (NEI) are calculated per measure for the Residential and C/I Programs. Cascade revised the NEIs included in its cost-effectiveness calculations for the Residential and C/I Programs as part of Phase Two of its 2020-2021 Conservation Potential Assessment (CPA). Further information on Program NEIs can be referenced in UG-210838 CNGC 2022-2023 BCP<sup>2</sup>. The Low-Income Weatherization Program uses a flat 10% of costs to represent the benefits of non-energy impacts. These non-energy impacts traditionally have the greatest influence on the Total Resource Cost (TRC) test which is included in this report. However, for the purposes of Program evaluation Cascade applies the modified Utility Cost Test (UCT) as required by the BCP conditions document under UG-210838<sup>3</sup>.

In compliance with House Bill-1257 the Company completed Phase two of its CPA update in the first half of 2021; Phase One was completed in the summer of 2020. This CPA, performed by Applied Energy Group (AEG), used the Avoided Costs from the Company's 2020 IRP. The findings of this CPA were used in the 2022-2023 BCP submitted by the Company in Q4 of 2021.

## Goal Setting

The Company's Energy Efficiency (EE) portfolios are periodically reevaluated and updated to balance cost-effectiveness (using current Avoided Costs), participation outcomes, new legislation, and updated building codes. The Company confers with its CAG when alterations to the Program portfolios are necessary.

The Company has used the LoadMAP forecasting tool as the end use planning software for the DSM section of the IRP and Program planning since Q2 2018. One of the primary benefits of this forecasting tool is alignment with regional standard practices per the Northwest Power and Conservation Council and its ability to run the forecast based on a methodology consistent with the National Action Plan for Energy Efficiency *Guide for Conducting Energy Efficiency Potential Studies*<sup>4</sup>. In alignment with the Environmental Protection Agency guide, "Three types of potential were developed as part of this

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<sup>1</sup> RCW 80.28.280 Gas Companies-Conservation Targets | [RCW 80.28.380 \(wa.gov\)](https://leg.wa.gov/RCW/default.aspx?cite=80.28.380)

<sup>2</sup> Docket UG-210838-CNGC-2022-2023-BCP-Plan-11-01-21.pdf pgs. 31-33 November 3, 2021. | [UTC \(wa.gov\)](https://www.wa.gov/ug-210838-cngc-2022-2023-bcp-plan-11-01-21.pdf)

<sup>3</sup> Docket UG-210838 Attachment A.pdf January 18, 2022 | [UTC \(wa.gov\)](https://www.wa.gov/ug-210838-attachment-a.pdf)

<sup>4</sup> [Guide for Conducting Energy Efficiency Potential Studies | Climate and Energy Resources for State, Local, and Tribal Governments | US EPA](https://www.epa.gov/energy-efficiency/guide-for-conducting-energy-efficiency-potential-studies)

effort: technical potential, achievable technical potential, and achievable economic potential”<sup>5</sup>. During Phase Two of the 2020 CPA, AEG adapted the 2021 ramp rates from the Northwest Power and Conservation Council for use with each measure included in the CPA<sup>6</sup>.

As goal setting is only an estimate, the achievable economic level of potential savings identified by a model is unable to fully account for industry changes which can also have a large impact on Program performance, such as the implementation of the 2018 Washington State Energy Code (WSEC) or changing market conditions that affect supply chains or consumer willingness to invest in energy efficient upgrades. For more information on how the Company adapts to these challenges please reference the [Quality Management System](#)~~Error! Reference source not found.~~ section of this report.

## Summary of 2022 Program Achievements

2022 required the Company’s Energy Efficiency Incentive Programs (EEIP) to fully embrace adaptive management practices to maintain Program momentum and customer support. In 2022, Cascade focused on increasing participation levels in the face of high inflation and a decrease in New Home Program rebates as a result of the 2018 WSEC. While the Residential Program maintained cost-effectiveness overall, the hurdles encountered in 2022 did impact the Residential Program therm savings achievements. The Residential Program received a record number of applications, however average deemed therm savings per project decreased preventing the program from meeting its therm savings goal. This decrease in therms is tied to the lower number of new home rebate applications received in 2022 vs previous Program Years (PY); on average qualifying new home rebate applications have 18% more therms than Existing Home rebate applications. An adaptive management strategy increased partnership between the Company and its Trade Ally (TA) contractors through the intensified promotion of the Point of Sale (POS) offering. 2022 saw significant uptake in POS rebate applications which Cascade will be looking to leverage in future PYs.

The C/I Program experienced supply chain slowdowns in 2022, pushing project completion dates later than anticipated. Additionally, the impacts of pending energy code changes and territory specific gas restrictions caused confusion related to gas service in commercial spaces. This confusion resulted in hesitation to invest in energy upgrades related to natural gas equipment. To address the concerns surrounding the suitability of gas in commercial spaces the Program focused on in-person outreach to engage in conversations about when high efficiency gas use is permitted and what opportunities are available to C/I customers under current codes and local legislation.

Table 1 represents the Company’s 2022 EEIP achievements.

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<sup>5</sup> “2020 Cascade Natural Gas Conservation Potential Assessment” pg. 15 AEG, Applied Energy Group, June 16, 2021.

<sup>6</sup> “2020 Cascade Natural Gas Conservation Potential Assessment” pg. 16 AEG, Applied Energy Group, June 16, 2021.

Table 1: 2022 Program Achievements

	Residential	Commercial	Total		Low-Income
<b>2022 Targets</b>	<b>429,213</b>	<b>419,461</b>	<b>848,674</b>		<b>17,859</b>
<b>Therms Achieved</b>	<b>330,768</b>	<b>289,919</b>	<b>620,687</b>		<b>7,254</b>
<b>NEEA Savings**</b>	<b>70,862</b>	<b>10,535</b>	<b>81,397</b>		<b>N/A</b>
<b>Measures Installed</b>	<b>5,054</b>	<b>284</b>	<b>5,338</b>		<b>137</b>
<b>Carbon Offset*</b>	<b>1,822</b>	<b>1,597</b>	<b>3,419</b>		<b>40</b>

\*Tons of Carbon Dioxide Equivalent (CO<sub>2</sub>e) avoided, based on carbon offset of 0.0055086 metric tons CO<sub>2</sub>e per therm from 2023 IRP which includes end use & upstream emissions.

\*\*Savings reported by NEEA not included in portfolio.

In 2022, the Company achieved deemed therm savings of **330,768** for its **Residential** Program. This represents 77% of the 2022 goal and satisfies 35% of the program’s biennial therm savings goal. The Company achieved deemed therm savings of **289,919** therms through its **C/I** Program. This is 69% of the C/I Program savings goal for 2022 and satisfies 30% of the Program’s biennial therm savings goal.

At a portfolio level the savings for Residential and C/I Programs equated to **620,687** therms, **achieving 73% of 2022 goal**. Underperformance across the portfolio highlights the difficulty in navigating market and policy challenges while driving participation. This story echoed across the region as other utilities struggled to meet their EE goals in 2022. Cascade saw success late in the year from efforts to overcome these hurdles. Cascade will apply lessons learned from 2022 in 2023.

Program cost-effectiveness is shown in Table 2. The UCT Ratio goals laid out in the 2022-2023 BCP for the Residential and C/I Programs were **1.67** and **2.65** respectively and **2.16** combined<sup>7</sup>. Ratios less than 1.0 indicate conservation program costs exceed the benefits gained from those programs. Ratios greater than 1.0 indicate benefits exceed the cost of conservation programs, which means that there could be some potential left on the table that would be achieved through greater program spending. Ideally, each Program operates close to a 1.0 cost effectiveness ratio. Cost effectiveness for the C/I Program was close to its projected cost effectiveness while the Residential Program ended up being 21.5% more cost effective than the BCP forecast. The measure composition for the Residential Program diverged from the projected measure composition. Weatherization measures, which rank among the programs most cost effective offerings, making up a larger portion of therms saved than was forecasted. As a result, the Residential Program UCT was above the projected **1.67** UCT ratio.

Table 2: 2022 Program Cost-effectiveness

Cost Effectiveness*	UCT	TRC
<b>Residential</b>	2.03	1.53
<b>Commercial</b>	2.68	1.75
<b>Portfolio</b>	<b>2.25</b>	<b>1.62</b>

<sup>7</sup> Docket UG-210838-CNGC-2022-2023-BCP-Plan-11-01-21.pdf | [UTC \(wa.gov\)](https://www.wa.gov)

\*Cost-effectiveness excludes Northwest Energy Efficiency Alliance and Regional Technical Forum membership.

## Programmatic Spending

Table 3 represents the Program expenditures for incentives, Programmatic delivery and administrative costs associated with implementation of the Company’s Washington EE Programs compared to estimated budgets. Note at a portfolio level, paid incentives were \$3,332,122 less than the estimated budget as a result of lower than expected program participation across the portfolio, especially in the C/I and Low-Income Weatherization (LIW) programs. Programmatic administrative costs were \$416,065 less than the estimated administrative budget. This discrepancy is due to Pay for Performance forfeited because of the 31% miss on C/I therm goal for 2022. Moreover, \$75,000 budgeted in 2022 for a Residential Pilot on air sealing in New Homes was pushed to 2023. CNGC’s aim is to budget as closely as possible to what actual spending will be. Rebate estimates are based on historic uptake of measures, and it is not unusual for actuals to vary from year to year based on measure uptake.

*Table 3: 2022 Programmatic Expenses and Paid Rebates*

	Incentive Budget Estimates	Actual Incentives Paid	Administrative Budget Estimates	Actual Administrative Expenditures	Budget Totals	Actual Totals
<b>Residential</b>	\$3,983,311	\$3,367,120	\$1,257,715	\$1,139,998	\$5,241,026	\$4,507,118
<b>Commercial</b>	\$2,453,847	\$897,307	\$1,394,623	\$1,129,225	\$3,848,470	\$2,026,532
<b>Low-Income</b>	\$1,654,829	\$495,438	\$63,252	\$30,302	\$1,718,081	\$525,740
<b>Program Totals</b>	\$8,091,987	\$4,759,865	\$2,715,590	\$2,299,525	\$10,807,577	\$7,059,391
	<b>Direct Benefit to Customers (DBtC)*</b>		<b>Program Delivery</b>		<b>Total Program Costs</b>	
<b>Expenses</b>	\$4,797,377		\$2,262,013		<b>\$7,059,391</b>	
<b>Ratio</b>	<b>68%</b>		<b>32%</b>			
<b>NEEA Gas Market Transformation &amp; Regional Technical Forum</b>					\$224,375	

\*Note DBtC includes all rebates paid through the Residential, Commercial/Industrial and Low-Income Program in addition to some expenses recorded under the “Programmatic expenditures category” like bonus coupon payments to customers, Quality Control Inspections, and partnership agreements with community organizations collaborating directly with customers to assist with rebate eligibility and installation.

Costs associated with the Northwest Energy Efficiency Alliance (NEEA) Gas Market Transformation efforts and Regional Technical Forum (RTF) participation are separated from general Programmatic expenditures for the purposes of assessing Program cost-effectiveness. Market transformation investments create conditions for future energy savings. NEEA estimates cost-effectiveness on a longer time horizon for its initiatives, in lieu of annualized cost-effectiveness calculations. A second set of UCT and TRC benefit cost ratios in *UG-210838, CNGC-2022-Conservation-Arpt-WP-1, 6.15.23.xlsx* are available to assess cost-effectiveness of the Program portfolio including the NEEA and Regional Technical Forum expenses. Note this is the 8<sup>th</sup> year of Cascade’s participation with NEEA and



membership dues were temporarily reduced quarterly to accommodate a credit from Cycle 5. This credit was expended in 2022, as such, membership dues for NEEA will return to the standard quarterly rate. This credit was the result of NEEA using less of the budget from Cycle 5 than anticipated.

For the third year NEEA is reporting savings estimates for their New Homes Program. As seen in [Table 1: 2022 Program Achievements](#) NEEA estimates that **81,397 therms** will be saved from Residential and Commercial code and standards updates. This savings is a fraction of the total amount NEEA believes will be saved through their code update efforts and is proportional to the funding provided by the Company to NEEA in support of code updates and market transformation efforts. These savings represented outside other Program accomplishments, see *UG-210838, CNGC-2022-NEEA-Arpt-for-CNGC-WP-6, 6.15.23.pdf* for details on NEEA’s efforts in 2022.

The Company includes a Direct Benefit to Customer (DBtC) ratio per Docket UG-161253 with a target of 60% expenses attributed as a direct customer benefit. The portfolio of Programs in 2022 exceeded the target by 8%, achieving a DBtC of 68%. Initial estimates of DBtC in the 2022 Conservation Plan were 70% of total Program costs.

### Progress To Biennial Goals

2022 signifies the first year for the Company’s EEIP under the new Biennial planning horizon. Pursuant to RCW 80.28.380 the “Company must establish an acquisition target every two years and must demonstrate that the target will result in the acquisition of all resources identified as available and cost-effective”<sup>8</sup>. Cascade filed its first BCP in the fall of 2021 for PYs 2022 and 2023 and these targets are shown in Table 4.

*Table 4: Biennial Targets for Spending and Savings*

	Calendar Year 2022				Calendar Year 2023				Biennial Totals
	Residential	C/I	Low Income	1st year Total	Residential	C/I	Low Income	2nd year Totals	
<b>Cascade Incentive Budget</b>	\$3,983,311	\$2,453,847	\$1,654,829	\$8,091,987	\$4,711,663	\$3,146,469	\$1,858,614	\$9,716,746	<b>\$17,808,733</b>
<b>Cascade Admin Budget*</b>	\$1,257,715	\$1,394,623	\$63,252	\$2,715,591	\$1,404,670	\$1,609,349	\$67,296	\$3,081,314	<b>\$5,796,905</b>
<b>Therm Targets**</b>	429,213	419,461	17,859	866,533	507,695	537,858	19,665	1,065,218	<b>1,931,751</b>
<b>NEEA Natural Gas Market Transformation</b>				\$182,975				\$348,908	<b>\$531,883</b>
<b>Regional Technical Forum</b>				\$31,300				\$31,300	<b>\$62,600</b>
<b>Evaluation, Measurement &amp; Verification</b>				\$70,000				\$70,000	<b>\$140,000</b>
<b>Conservation Potential Assessment</b>								\$160,000	<b>\$160,000</b>

\*Includes 15% project coordination payment and 10% indirect rate paid as part of a total rebate for a qualified project. The updated 20% project coordination fee was not in place at the time of this BCP filing.

<sup>8</sup> RCW 80.28.280 Gas Companies-Conservation Targets | [RCW 80.28.380 \(wa.gov\)](#)

\*\*Represents Cascade staff salary, and outreach costs associated with weatherization program delivery that are not part of payments to agencies.

Through the first year of the 2022-2023 Biennium Cascade saved **627,941 therms** or **32%** of the **1,931,751** therm portfolio level biennial therm goal. Spending came in at **\$7,059,391** or **30%** of the allotted Biennial budget. Cascade will continue to track achievements in real time so the Company can make up for this shortfall during the second half of the biennium. For more information on process improvements that will help the company increase program participation please see the Quality Management System – Quality Control, Review and Evaluation section.

## Current Year Highlights

### Residential

The 2022 results represent a participation decrease of 21% versus 2021, where participation represents the total number of rebate applications approved for payment during 2022. This decrease in participation is tied to fewer builders submitting applications, unfavorable market conditions for equipment measure installations, in addition to a small application queue size entering 2022. In other words, there were few remaining applications in the queue from 2021 to process at the start of 2022. This participation shortfall resulted in 24% less therm savings than in 2021.

Despite lower overall participation, Existing Home weatherization measures had higher participation than the previous PY. The measures which saw the most growth were ceiling insulation and air sealing measures. Updates to the ceiling insulation measures in 2022 removed the lower R value offering of insulation at R-38, encouraging customers to pursue R-49 ceiling insulation. In conjunction with a new focus from TA POS contractors ceiling insulation installs increased by 106% and therm savings by 26%. The Whole Home Air Sealing rebate, which requires pre and post install blower door testing, decreased in participation by 14% with only 19 participants, however a new measure for the program, Prescriptive Air Sealing, eclipsed the existing air sealing measure by more than 400 participants. This new measure accounted for 32,564 therms, or 10% of total therms saved. While this measure does not save as much energy as whole house air sealing on a per home basis, it is a more accessible offering which requires air sealing of the attic and crawl space thermal and pressure boundaries in accordance with Bonneville Power Administration weatherization manual standards. Additionally, this measure rebate is only available when installed concurrently with ceiling, wall, or floor insulation. Therm savings from all Existing Home weatherization measures combined were up 42% in 2022 vs 2021.

Equipment measures saw a decrease in participation across the board with 52% less participants and 47% less therm savings. Cascade understands that there were two primary drivers behind the decrease in equipment measure applications. First is the continued decrease in New Home rebate applications with an increase in the denial rate for New Home rebate applications as builders submit more applications for electric space and water heating equipment. Secondly, market forces related to inflation and supply chain issues discouraged homeowners from seeking out upgrades to their gas

equipment, and the rebates were not great enough to make up for the increased costs and delays for these energy efficiency upgrades.

Even with this decrease in applications for equipment measures, high efficiency Natural Gas Furnaces remains the most popular measure offering in the Program, continuing the trend from recent years. A notable change to the composition of measures is evident in insulation measures now being the second most popular offering (previously held by tankless water heaters) with a combined 1,361 participants. Ranked third is Programmable Thermostats, with Prescriptive Air Sealing following closely behind. One peculiar increase came from the massive uptick in Built Green Certification rebates in 2022. These all came from one builder who applied for the rebate on 136 homes at the end of 2021. Beyond Q1 2022 there were no other Built Green Certification rebates paid. The builder was finishing the last homes permitted under the previous energy code (2015 WSEC) as they are now constructing homes using electric space and water heating equipment to cost effectively obtain energy efficiency credits required by the 2018 WSEC. For more information on the impacts of the 2018 WSEC code update please reference the 2021 Annual Conservation Report, UG-210838-CNGC-2021-Conservation-Arpt-06.1.22.pdf<sup>9</sup> section “Impacts from the Implementation of the 2018 WSEC”.

For more details on measure performance for 2022 refer to Table 5.

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<sup>9</sup> UG-210838-CNGC-2021-Conservation-Arpt-06.1.22.pdf pg. 20-22 | [UTC \(wa.gov\)](https://www.utc.wa.gov)

Table 5: Residential Program Highlights

New and Existing Residential Equipment & Weatherization Measures						
Existing Home Weatherization		Measures installed			Therms	
Insulation (in sq. ft.)		2022	Change from Previous Year	2022	Change from Previous Year	% of Therms Saved
Ceiling or Attic Insulation:	<b>995,814</b>	706	106%	38,333	26%	12%
Floor Insulation:	<b>514,474</b>	399	-9%	21,917	-26%	7%
Wall Insulation:	<b>87,238</b>	100	4%	6,228	2%	2%
Duct Insulation:	<b>37,601</b>	156	7%	3,371	223%	1%
Windows:	<b>13,487</b>	117	-27%	4,479	-46%	1%
<b>Other Weatherization</b>						
Duct Sealing:		143	-13%	7,193	58%	2%
Whole Home Air Sealing:		19	-14%	1,434	-13%	0%
Prescriptive Air Sealing		458	N/A	32,564	N/A	10%
Weatherization Bundle A*:		176	17%	N/A	N/A	N/A
Weatherization Bundle B*:		11	-15%	N/A	N/A	N/A
<b>Subtotals</b>		<b>2,285</b>	<b>49%</b>	<b>115,520</b>	<b>42%</b>	<b>35%</b>
<b>New Home Measures**</b>						
Built Green Certified:		136	268%	31,144	268%	9%
ENERGY STAR® Certified:		22	-56%	4,510	-56%	1%
<b>Subtotals</b>		<b>158</b>	<b>82%</b>	<b>35,654</b>	<b>91%</b>	<b>11%</b>
<b>New &amp; Existing Equipment Measures</b>						
ENERGY STAR® Clothes Washer:		38	N/A	294	N/A	0%
HE Tankless Water Heater		301	-66%	18,811	-68%	6%
HE Combination Domestic Hot Water & Hydronic Space Heating:		27	-31%	4,153	-33%	1%
HE Boiler:		18	-36%	1,609	-27%	0%
HE Exterior Door:		48	-85%	650	-85%	0%
HE Natural Gas Furnace:		1,428	-44%	127,884	-40%	39%
HE Natural Gas Hearth:		92	-44%	5,387	-44%	2%
ENERGY STAR® Smart Thermostat:		257	N/A	8,466	N/A	3%
Programmable Thermostat:		549	-69%	12,340	-64%	4%
<b>Subtotals</b>		<b>2,758</b>	<b>-53%</b>	<b>179,594</b>	<b>-47%</b>	<b>54%</b>
<b>Residential Totals</b>		<b>5,201</b>	<b>-31%</b>	<b>330,768</b>	<b>-24%</b>	<b>100%</b>

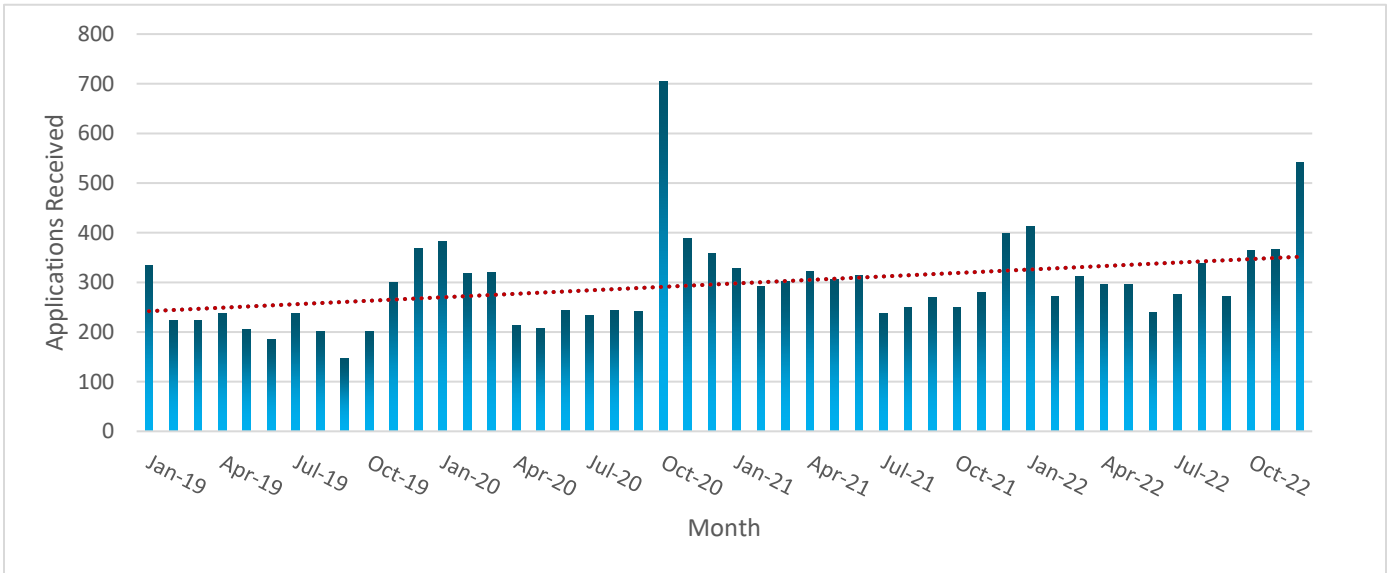
\*Weatherization Bundle Measures are non-energy saving measures. These bundles encourage multi-measure weatherization projects.

\*\*New Home (or Builder) Program excludes all weatherization measures except for High Efficiency (HE) Exterior Doors.

### Application intake

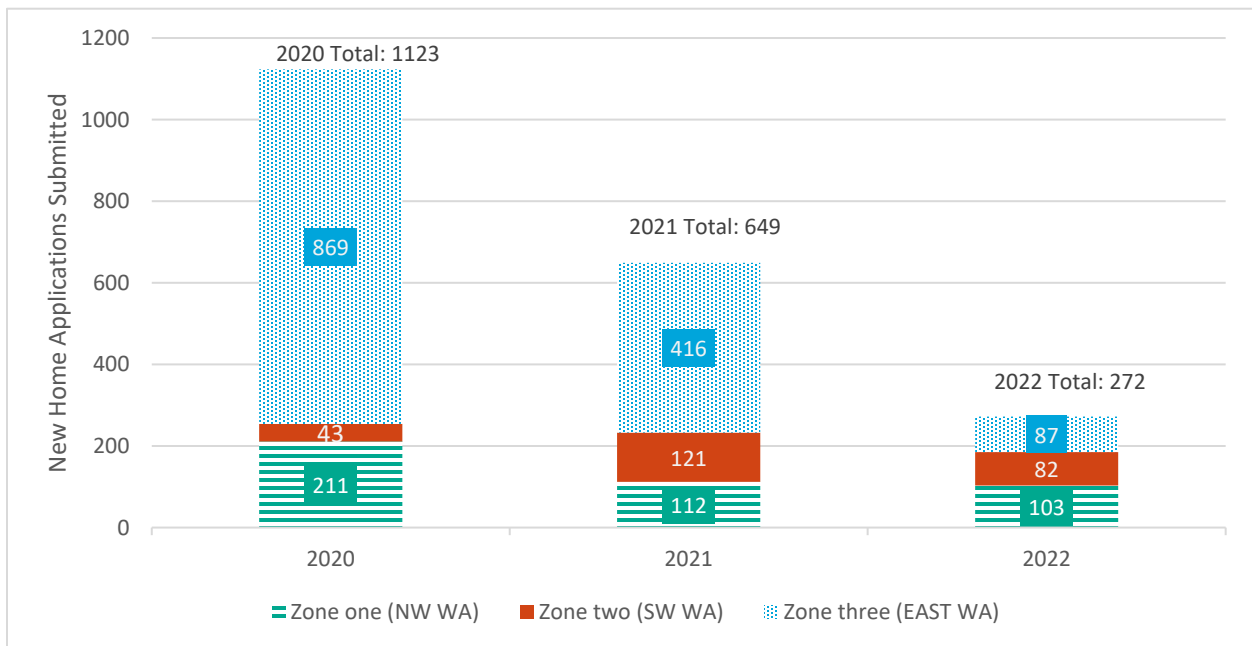
The Company historically experienced an uptick in Residential rebate submittals in a cyclical pattern from late November through March as demonstrated in Figure 1. This cycle persisted for PY 2022.

Figure 1: Residential Monthly Intake 2019-2022



The Program has focused on increasing application intake for the Residential program over the past several years. Following a dip in submissions during 2021, the 2022 PY saw a resurgence of increased application submissions with 3,983 applications received vs 3,532 applications in 2021. Application intake increased despite decreasing new home rebate submissions as seen in Figure 2. The decrease in new home applications resulted in a drop of 377 new home applications or a 58% decrease year over year. This is a trend influenced by updates from the 2018 WSEC<sup>10</sup>.

Figure 2: New Home Applications per Year by Climate Zone



<sup>10</sup> UG-210838-CNGC-2021-Conservation-Arpt-06.1.22.pdf pg. 20-22 | [UTC \(wa.gov\)](http://UTC.wa.gov)



The program level increase in applications received was primarily driven by the Company's efforts to improve the online application portal and a focus on increasing the number of TAs utilizing the POS rebate program. Both rebate submission types saw large gains with a 416-application increase for POS rebates, and a 233-application increase for online submissions. Traditional receipt types such as email and mail saw 6% increases, up 24 and 100 applications, respectively. For more information on how Cascade enhanced the online portal and improved the POS program see the Quality Management System – Quality Control, Review and Evaluation section of this report.

Please note, that while application intake increased, Program participation, defined as the total number rebate applications approved for payment in 2022, did decrease from the previous year. Even if every application received in 2022 had been processed, the Residential Program would have still missed its goal. The program is rolling over a substantial number of rebate applications into 2023. This will be an area of focus for the Program in 2023, and using the lessons learned from increasing participation for weatherization measures, Cascade will work diligently to increase intake enough to meet its 2023 therm saving goal.

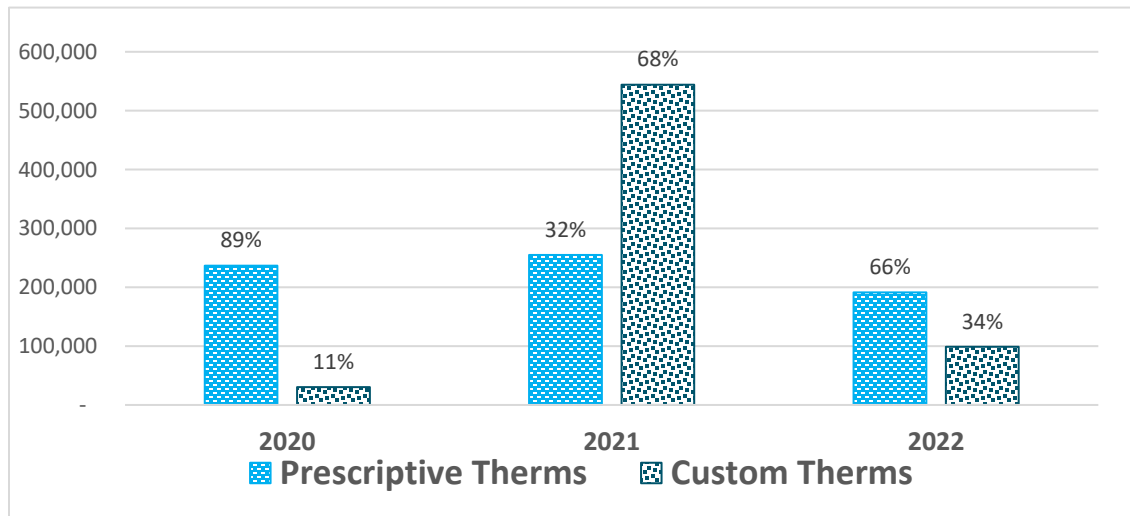
## Commercial/Industrial

The CNGC C/I Program finished 2022 saving customers 289,919, or 69% of the overall goal for 2022. The Program saw significant drop-offs in several measures in 2022 due to changing market conditions and supply chain challenges delaying projects. These headwinds affected both Prescriptive and Custom projects throughout 2022.

Therms achieved through Custom projects in 2022 totaled 98,789 therms, a drop from 544,080 therms in 2021. Despite the drop in therms from Custom projects, the C/I Program had an increase in the number of Custom projects completed in 2022, with a total of 11 projects, up from nine in 2021. The projects included an excellent connection with a vendor who collaborates with large national retailers to promote energy savings and led to a series of projects which are likely to lead to more installations in the future.

For only the second time in the last six years, the Program saw a drop in prescriptive therms, delivering projects totaling 191,129 therms, 25% less than in 2021. As seen in Figure 3, both Custom and prescriptive therms were down in 2022 vs 2021, with Custom therms affected disproportionately compared to prescriptive therms. The drop in therms derived from boilers and fryers was the most impactful, with both falling more than 50% as compared to the previous year. As in previous PYs boilers remained the measure which delivered the most therms to the program, 56,517 in total, but they were still down from a program high of 117,956 in 2021. Therm savings achieved from domestic hot water heaters were higher than any previous year and grew more than 300%.

*Figure 3: Prescriptive vs Custom C/I Therms Savings 2020-2022*



Despite the drop in prescriptive therm savings in 2022, several other measures did see an uptick, including tankless water heaters and convection ovens. Therms saved from tankless water heaters were up 62% from 2021. With the loss of incentives for fryers, steamers, and dishwashers early in 2022, due to the change in WSEC, the increased traction with convection ovens helped prop up foodservice measures.

Market conditions related to supply chain challenges slowed down numerous projects and caused the majority of the projects which completed in 2022 to fall into the final half of 2022. In the final half of 2022, the program achieved 75% of the therms achieved in the year, including nearly half of all therms achieved in Q4.

Another challenge which, while not new, was much more pervasive in 2022, was the impact of customers believing that adding new gas equipment was either not allowed or could become prohibited in the future. This uncertainty in the industry created a cooling effect, in some cases discouraging customers from upgrading as they were not clear on what the impact would be for their return on investment. To combat this, the team adapted to more in-person outreach and having conversations more directly with customers so they could be assured of their ability to use high efficiency natural gas equipment. In addition, the team reinstated key account management approaches in the final quarter of 2022. These customers were identified as most likely to expand their efficient gas use and/or complete a custom project to increase their efficiency. While there were no projects completed in 2022 with these key account holders, this outreach is expected to yield projects in 2023 and beyond.

Further C/I program highlights for prescriptive measures can be found in Table 6, including changes in participation levels, therms achieved per measure, and total prescriptive therms for 2022

Table 6: C/I Program Prescriptive Measure Highlights

Commercial Equipment & Weatherization Measure						
Weatherization		Participants		Therms		
Insulation Measures (in sq. ft.)		2022	Change from 2021	2022	Change from 2021	% of Prescriptive therms saved
Insulation - Attic - Tier 1	12,873	3	50%	3,990	-46%	2%
Insulation - Attic - Tier 2	45,996	7	-13%	14,718	28%	8%
Insulation - Floor	1,559	1	-75%	87	-90%	0%
Insulation - Roof - Tier 1	45,348	3	0%	15,871	410%	8%
Insulation - Roof - Tier 2	7,500	2	0%	2,700	-84%	1%
Insulation - Wall - Tier 2	20,642	4	0%	3921	25%	2%
Windows	2,410	5	150%	2,804	225%	1%
<b>Subtotal</b>		<b>25</b>	<b>-11%</b>	<b>44,092</b>	<b>-2%</b>	<b>23%</b>
<b>Foodservice</b>						
Convection Oven (All)		9	125%	9,954	156%	5%
Fryer (All)		6	-79%	10,960	-69%	6%
Gas Conveyor Oven		1	N/A	154	N/A	0%
Low Temp Door Dishwasher		1	-75%	448	-75%	0%
<b>Subtotal</b>		<b>17</b>	<b>-55%</b>	<b>21,516</b>	<b>-49%</b>	<b>11%</b>
<b>Space and Water Heating Measures</b>						
Boiler		15	-67%	56,518	-52%	30%
Radiant Heating		26	-46%	19,269	-10%	10%
Warm-Air Furnace		29	-24%	4,482	-21%	2%
HVAC Unit Heater - Condensing		12	-54%	3,644	-19%	2%
DCV		2	-75%	182	-75%	0%
Domestic Hot Water Tanks - Condensing		40	29%	27,210	319%	14%
Tankless Water Heater - Tier 1		3	N/A	1,153	N/A	1%
Tankless Water Heater - Tier 2		16	-20%	7,351	40%	4%
Motion Faucet Controls		1	-80%	5,712	24%	3%
<b>Subtotal</b>		<b>144</b>	<b>-33%</b>	<b>125,520</b>	<b>-25.0%</b>	<b>66%</b>
<b>Prescriptive Program Totals</b>		<b>186</b>	<b>-34%</b>	<b>191,129</b>	<b>-17.0%</b>	<b>100%</b>

\* Please note the drastic decrease in participation is the result of discontinued Energy Saving Kit (ESK) measures as a result in appliance standard updates. ESKs made up more than half of Program participants in 2020 yet contributed only 15% of the total 2020 prescriptive therm savings.

## Low-Income Weatherization Program

The Company has offered its Schedule 301, Low-Income Weatherization Incentive Program (WIP), since 2008. The WIP offers rebates for weatherization measures to qualified Agencies delivering whole-home energy improvements through the Weatherization Assistance Program (WAP) to income-eligible customers in the CNGC service territory. In addition to the rebate offering in the WIP, the Company also offers an Enhanced Weatherization Incentive Program (EWIP) aimed at removing barriers for the Agencies delivering home improvements through the WAP. The project coordination fee and indirect rate (20% and 10%, respectively) are periodically revisited to reduce financial barriers to Agencies when performing whole-home energy improvements. The Company supports Low-Income Weatherization; it reduces the customer energy burden, improves indoor air quality, and increases building durability. CNGC is committed to ensuring as many low-income natural gas customers receive weatherization services as possible and believes it can achieve this through the WIP and EWIP.

As seen in Table 7 CNGC works with twelve Agencies across Washington, of which ten Agencies actively participate. In 2022 the Company did not receive projects from the following Agencies: Community Action Council of Lewis, Mason, and Thurston Counties and the Snohomish Office of Energy and Sustainability.

*Table 7: Community Action Agencies*

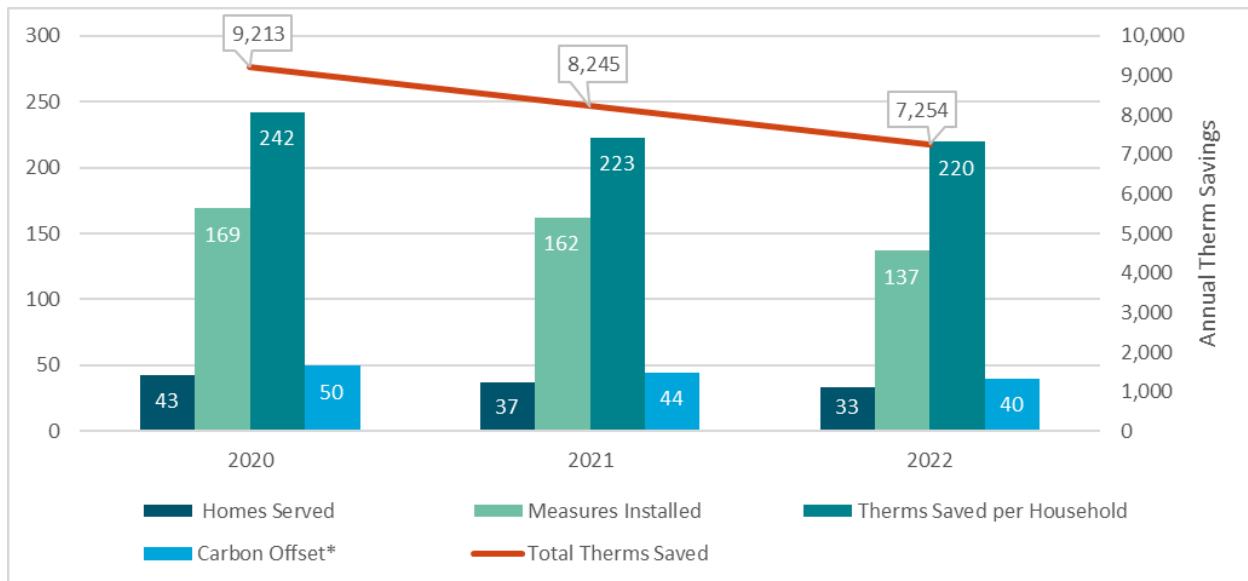
<b>COMMUNITY ACTION AGENCY</b>	<b>COUNTY SERVED WITH CNGC CUSTOMERS</b>
Blue Mountain Action Council	Walla Walla
Chelan-Douglas Community Action Council	Chelan
Coastal Community Action Program	Grays Harbor, and Pacific
Community Action Council Benton, Franklin	Benton, and Franklin
Community Action Council of Lewis, Mason, Thurston	Lewis, Mason, Thurston
Housing Authority of Skagit County	Skagit
Kitsap Community Resources	Kitsap
Lower Columbia Community Action Program	Cowlitz
Opportunities Industrialization Center of Washington	Adams, Grant, Yakima N of Union Gap
Opportunity Council	Island, Whatcom
Snohomish Office of Energy and Sustainability	Snohomish
Yakima Valley Farm Workers Clinic DBA NWCAC	Yakima, South of Union Gap

CNGC requires a Memorandum of Understanding (MOU) for Agencies to access the EWIP. The MOU describes Program qualifications, the obligations of the Agency and CNGC, as well as specifies insurance requirements, indemnification, and confidentiality/non-disclosure agreements. The MOU also serves as an opportunity for the Agency to supply an estimated number of project completions in the coming year. Without an MOU, Agencies are eligible for only the WIP portion of the rebate. In 2022 all participating Agencies delivered their MOU. In their MOUs with the Company, the Agencies preliminarily committed to serving **92** homes through the WIP/EWIP Program in 2022, which aligned



closely with Cascades estimate of **89** homes served in 2022 according to its 2022-2023 BCP<sup>11</sup>. This count is an estimate considering the uncertainty of when normalcy would return to WAP operations post COVID. The Company served **33** homes in 2022, four fewer than the previous year resulting in reductions to all measurements as shown in Figure 4. Total therm savings for the PY were 7,254 therms. The Company’s 2022-2023 BCP initially estimated 17,859 therms would be saved through the WIP and EWIP.

*Figure 4: Weatherization Incentive Program Participation Levels since 2020*



\*Based on carbon offset of 0.0055086 metric tons CO<sub>2</sub>e per therm from 2023 IRP which includes end use and upstream emissions, calculated as metric tons of CO<sub>2</sub>e avoided.

There are many challenges associated with providing weatherization services to a vulnerable population. The Agencies, faced with continued supply chain issues, also struggled with contractor retention due to the high opportunity cost for contractors working on weatherization projects. In other words, qualified contractors sought opportunities outside of Low-Income Weatherization projects. Without experienced labor, the Agencies cannot complete projects. Additionally, changes in Labor & Industries (L&I) requirements resulted in added clerical tasks for the Agencies that burdened the administrative side of their business. These added clerical tasks include obtaining prevailing wage intents and affidavits, maintaining certified payroll records, and processing permits. These added burdens brought delays in project completions, delayed contractor payments and further strained Agencies facing capacity issues.

To better understand the challenges facing the Agencies, Cascade convened two all Agency meetings early in the PY (Feb. 2, 2022) and another at the end of 2022 (Nov. 9, 2022). These meetings are the foundation of understanding between CNGC and the Agencies and are a primary avenue to hearing about the burdens facing the agencies, how the WIP and EWIP programs are currently performing for them, and what other improvements Cascade can support to increase program participation.

<sup>11</sup> Docket UG-210838-CNGC-2022-2023-BCP-Plan-11-01-21.pdf pg. 10 | | [UTC \(wa.gov\)](http://UTC.wa.gov)

In response to the increasing project costs and administrative burden to the Agencies, CNGC in coordination with its CAG, increased the project coordination fee from 15% to 20%. While the cost of installation for qualifying projects is covered through the WIP and EWIP the agencies depend on the project coordination fee to aid in the funding for the administrative side of their operation which can be challenging to properly fund. The Company also continued to show flexibility to aid the Agencies by revising the Tariff language for the WIP to allow exemptions, on a case by case basis, for measures that do not meet the requirement of a 1.0 Savings to Investment Ratio as long as the project will remain cost effective under the WIP, and the exemption is consistent with provisions in the Department of Commerce Weatherization manual. This enables additional measures to be considered for inclusion in the program, and with the EWIP program ensures Agencies will receive the funding they need to complete projects.

Table 8 shows the total spending for the WIP and EWIP in 2022. Please note there are two project coordination fee rows as the updated project coordination fee was not instituted until mid-year. The work paper *UG-210838, CNGC-2022-Conservation-Arpt-WP-4, 6.1.23.xlsx* breaks out the details for projects paid under both sets of coordination fees.

*Table 8: 2022 Low-Income Programmatic Costs*

<i>Total Costs *</i>	<b>Low-Income</b>
<b>Total WIP Incentives</b>	\$155,299
<b>Total EWIP Incentives</b>	\$236,143
<b>20% Project Coordination</b>	\$24,548
<b>15% Project Coordination</b>	\$40,305
<b>10% Indirect Rate</b>	\$39,144
<b>Total Project Costs with Agency Admin</b>	\$495,438
<b>Cascade Admin (Including Program Outreach) **</b>	\$30,302

\*Totals rounded to the nearest dollar. The Low-Income Program does not fall under the same cost-effectiveness criteria as the rest of the portfolio, and while both the UCT and TRC are provided in UG-210838, CNGC-2022-Conservation-Arpt-WP-4, 6.1.23.xlsx, they are not included in the full portfolio cost-effectiveness calculation.

\*\* Reflects Cascade staff time and funding for weatherization outreach support. Does not include the Project Coordination and Indirect rate, which are funded as part of the tariffed EWIP rebate and accounted for in a separate line item for the purposes of Program reporting.

The incentive spending of \$391,442 was 24% of the forecasted budget and homes served represented 35% of estimates provided by the Agencies. The budget forecasted in the 2022-2023 BCP of \$1,654,829<sup>12</sup> assumed a per home cost of \$18,594, whereas actual spending in 2022 saw a per home cost of \$11,862. This divergence was primarily the result of scarce contractor availability and an increase in additional funding sources for Agencies to leverage. The Agencies were incented to prioritize smaller projects with lower cost and shorter timelines to make the most of scarce contractor availability. The costs of these projects were also split amongst additional funding sources that were not available to the Agencies when the Program developed the budget for the 2022 PY.

<sup>12</sup> Docket UG-210838-CNGC-2022-2023-BCP-Plan-11-01-21.pdf pg. 10 | [UTC \(wa.gov\)](https://www.utc.wa.gov)

That being said, the cost to deliver weatherization services to those who need it most is increasing and when other funding sources become unavailable Cascade has poised itself to help the agencies continue their work. The expansion of funding available through the WIP & EWIP are the result of Cascade’s drive to deliver equitable support to its customers. The Low-Income Weatherization Program is crucial to the Company’s mission to assist the historically disadvantaged communities within its territory.

Table 9 outlines measure level highlights for the WIP and EWIP programs. This table provides a breakdown of achievements by measure, changes vs previous PY, and total therms achieved in 2022.

*Table 9: WIP & EWIP Measure Highlights*

<b>Low Income Weatherization Program Measures</b>					
<b>Weatherization</b>	<b>Participants</b>		<b>Therms</b>		
<i>Insulation (in sq. ft.)</i>	2022	Change from Previous Year	2022	Change from Previous Year	% of Therms Saved
Ceiling or Attic Insulation:	22	-8%	2,276	-2%	31%
Floor Insulation:	19	-27%	908	-38%	13%
Wall Insulation:	19	111%	1,269	221%	17%
Duct Insulation:	18	-14%	318	-41%	4%
<b>Other Weatherization</b>					
Duct Sealing:	13	-24%	1,001	-24%	14%
Infiltration Reduction:	28	-10%	364	-10%	5%
<b>Subtotals</b>	<b>119</b>	<b>-7%</b>	<b>6,135</b>	<b>-5%</b>	<b>85%</b>
<b>Equipment Upgrades</b>					
95%+ Furnace	7	-42%	777	-42%	11%
Furnace Tune Up	2	-60%	42	-60%	1%
90%+ Direct Vent Space Heater	0	0%	0	0%	0%
91+ UEF Tankless Water Heater	4	0%	216	0%	3%
64+ UEF Storage Water Heater	2	-33%	66	-33%	1%
Water Heater Insulation	2	-50%	13	-50%	0%
Low Flow Faucet Aerator	1	-75%	5	-75%	0%
Low Flow Showerhead	0	-100%	0	-100%	0%
<b>Subtotals</b>	<b>18</b>	<b>-47%</b>	<b>1,119</b>	<b>-38%</b>	<b>15%</b>
<b>Residential Totals</b>	<b>137</b>	<b>-15%</b>	<b>7,254</b>	<b>-12%</b>	<b>100%</b>

### Cumulative Savings – Overview of the larger impact

The EE department updated its tracking of cumulative savings from previous PYs. This new method uses each PYs present value lifetime therm savings (lifetime energy savings discounted to its present value) accounted for over the weighted average measure life (weighted against therm savings) of that PY and applies a variable declining depreciation method to find the cumulative savings per year. For example, measures installed in 2008 have a weighted average measure life of 20 years and present value lifetime energy savings of 5,679,071 therms. Each year for 20 years after 2008, a portion of the

remaining therm savings from measures installed in 2008 will be added to the Company's cumulative energy savings. This portion is found using a variable declining depreciation method which adds a smaller number of therms to the cumulative savings each subsequent year following the initial PY. In other words, the first year accounts for more therms than the second year, so on and so forth until the full amount of present value therms from a PY has been accounted for. This process is repeated for each PY and summed to provide cumulative therm savings. This calculation results in a total of **60,073,943** therms saved since Cascade's EEIPs started in 2008. This sum of therm savings can then be multiplied by a metric ton of CO<sub>2</sub>e/therm factor that includes an estimate of the Company's upstream emissions. This factor, provided by the Company's Resource Planning Team in Cascades 2023 IRP, is 0.0055086 metric tons CO<sub>2</sub>e/therm which results in **330,923** tons of CO<sub>2</sub>e reduction attributable to the energy efficiency programs.

## Quality Management System – Quality Control, Review and Evaluation, Process Improvements

2022 presented many opportunities for the Company's EEIP to strengthen and improve the EE Quality Management System. Through regular reporting of Key Performance Indicators (KPI), the program observes challenges in real time and uses projections to understand the EEIPs trajectory. Corrective action is taken when KPIs indicate the program is likely to deviate from budgets and goals set in the Company's BCP. Facing its highest goal to date while seeing applications from new construction dwindle, the residential program had to adaptively manage its approach to overcome these burdens. While goals were missed in the first half of the biennium the lessons learned on the POS program, and software improvements made in 2022, will help the Company make up some lost ground in 2023.

### Pilots

#### New Home Air Sealing

In 2022 Cascade, in coordination with its CAG, launched the development of two Residential Pilots. The first, a New Home Air Sealing Pilot, is the Company's response to the increasing efficiency of the energy code over the past two code cycles. As options for high efficiency equipment have become standard practice in new homes in Washington state, the Company saw an opportunity to focus on an area which had not been updated in the WSEC for over a decade. The New Home Air Sealing Pilot focused on understanding how viable a rebate would be for the product AeroBarrier, an atomized air sealing technology which can reliably produce tight building envelopes with less hands-on labor than traditional methods. The reduction in labor and improvement in air sealing can reduce energy and help builders meet the energy code air sealing requirements with little to no guess work. The Pilot seeks to provide incentives for using the technology on a total of 30 homes across its service territory in exchange for the opportunity to perform blower door testing and gather data related to cost and the hurdles builders may face when choosing to use AeroBarrier.

## Home Energy Reports

The second pilot the Residential Program began development on is focused on encouraging behavioral changes for its customers through Home Energy Reports. These reports inform customers about their energy use and provide personalized, accurate reports outlining specific opportunities for households to save energy in their home. The platform leverages artificial intelligence and publicly available information to provide this reporting independent of advanced metering infrastructure, which is frequently not used for natural gas grids. The pilot will focus these reports on a subsector of the Company's residential customers and evaluate the results against a control group of residential customers. A key point in the development of this pilot has been Cascade's focus on ensuring the report will be suitable for all its customers. Reviewing the language, layout, and data visualizations for ease of comprehension was integral to this process. Moreover, it will be presented in a format suitable for customers with color blindness. This focus on equity ensures that the Company's diverse demographic of customers get the most out of the Energy Efficiency programs. Cascade will continue the pilots during the second half of the biennium and hopes to provide its findings to the CAG in 2024.

The C/I program developed six pilot projects in 2022, with varying degrees of success but had some solid finding to help the program progress into the future.

## Radiant heating focus

This pilot had two aspects: A partnership with a manufacturer, Space-Ray, and a new, higher incentive for bundling radiant heaters with insulation. The partnership with Space-Ray led to more awareness in the marketplace and involvement in at least two projects which have yet to come to fruition. The radiant heating/insulation bundle was successful for awareness of both measures, though no projects in 2022 actually received the incentive. One customer, who did not finish their project by the end of 2022, was motivated to do both because of the incentive. This project was completed in Q1 2023.

## Hard-to-reach areas

Like the radiant heating, there were two foci for this pilot. The southern part of Zone Two (Longview/Kelso area) and the Spanish-speaking population. The program increased outreach in Zone Two by increasing the portion of hours its employee focused on Zone Two set aside for outreach by 15%. The results were significant, with therms saved from Zone Two increasing from 15,850 in 2021 to 27,377 in 2022. The second aspect, outreach to the Spanish-speaking population, the program began running streaming ads in both English and Spanish. The listen through rates for these advertisements were extremely high and the campaign is something likely to continue into 2023.

## Midstream Tankless Program

This program was a carryover from 2021. As in 2021, though the distributors participating increased, there were zero projects attributed to this pilot. Part of the challenge was related to supply chain, where customers were electing to install anything that was available, and tankless units were less stocked with distributors than standard efficiency water heaters. Another challenge communicated by the distributors was low interest in tankless units in commercial buildings relative to the residential sector. As a result of the low interest, and the stocking practices of distributors the likelihood of a



tankless water heater being available at the time of failure of a water heater in a commercial building had an extremely low incidence rate. Due to lack of participation, this program will not continue in 2023. Although the midstream program will not go on, Cascade will continue to offer a prescriptive rebate for qualifying tankless water heaters.

### Gas Heat Pumps

The market has been slow to implement gas heat pumps. As a part of the pilot, the program manager traveled to the Energy Solutions Center conference to participate in the Gas Heat Pump Consortium and see about future potential market penetration. Though this technology remains a significant part of the future, the current climate does not offer a significant opportunity.

### Demand Control for Kitchen Hood Makeup Air Units

This measure was explored as a potential option for future uptake and whether it made sense to add to the prescriptive offerings. It was determined that this measure should be added and will join program offerings in 2023.

### Strategic Energy Management (SEM)

The opportunity for a gas-only utility to offer an SEM program was explored for 2022 and the future. Through discussions with other utilities, the program explored how best to position SEM for C/I customers. It was determined that stronger promotion of retro commissioning for the program would be the best route for the future of the program. The program is expected to continue into 2023, promoting walkthroughs and staff expertise on potential projects to help drive these projects through the custom program.

### Evaluation, Measurement & Verification

In August of 2022, Cascade distributed a Request for Proposal (RFP) for third-party measure level Evaluation, Measurement, and Verification (EM&V) of the program to build on historic internal evaluation efforts as outlined in section 9c of the condition's documents for docket UG-210838<sup>13</sup>:

“Cascade must perform EM&V annually on a maximum four-year schedule of selected programs such that, over the EM&V cycle, all major programs are covered. The EM&V function includes impact, process, market, and cost test analyses. The results must verify the level at which claimed energy savings have occurred, evaluate the existing internal review processes, and suggest improvements to the program and ongoing EM&V processes.”

Cascade chose to review commercial program offerings in the first-year schedule of EM&V activities. Research areas for the commercial program include space heating, water heating, building envelope, food service, and custom projects. The work will include, but is not limited to:

- Pre and post-billing data statistical analysis

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<sup>13</sup> Docket UG-210838 Attachment A.pdf January 18, 2022 | [UTC \(wa.gov\)](https://www.wa.gov)

- Baseload estimation
- Impacts from code and standard changes
- Quantification of custom project energy savings
- Review of project implementation and documentation
- Improvement opportunities

Following an RFP, the contract for this work was awarded to ADM Associates, Inc. on December 1st, 2022. Collaborations with ADM in the month of December centered around specifying the goals and timeline for the study, expediting a thorough vendor security review, and outlining datasets and required supplementary files. Delivery of a draft report is anticipated in May of 2023 with a final report delivered in the subsequent month.

In 2023, Cascade will expand EM&V efforts through continuation of measure level review and a program level review for the 2022-2023 biennium. The second-year schedule of third-party measure level review is anticipated to encompass a subset of the residential program including space heating, water heating, and appliance measures. Program level review for the 2022-2023 biennium will begin in the second half of the year per requirements in section 9d of the conditions document for docket UG-210838.

### Continual Process Improvements

In 2022 Cascade engaged in the following continual process improvement activities to maintain Program momentum and build interest in the incentives:

- The POS Program continued working with current POS TAs and onboarded additional TAs to facilitate POS rebates for Cascade’s customers. These efforts increased rebate submissions.
  - The Residential Program delivered a streamlined version of its online application portal, now called the Public User eXperience (PUX), facilitating an increase in POS application submissions of 416 over the previous PY
    - The company will look to leverage the online portal to increase non-POS rebate applications in 2023
  - The program worked closely with a new POS TA to enhance the door-to-door model the contractor uses, and ensure the TA followed all industry best practices.
  - The Residential Program reduced calls requesting clarification on POS rebates through improvements to Cascade’s Energy Efficiency webpage
    - Cascade continues to encourage customers to get three bids when seeking contractors for home energy upgrades
  - Cascade worked closely with other POS TAs looking to emulate the success of the door-to-door model and ensure a consistent approach to managing the POS program across its vast service territory
- The EE Department implemented a tariff change in April, which involved updating rebates based on phase two of the 2020-2021 CPA.
  - Window rebates were revised to adapt the two efficiency levels. For windows installed after April 1, 2022, two efficiency levels were available at U-Factor 0.22 and

- U-factor 0.3. U-Factor 0.22 had little uptake. The Company expects the U-Factor 0.22 efficiency level to see increased uptake under the new ENERGY STAR® northern zone window requirements which require 0.22 U-Factor to qualify for the certification
- Tankless water heater incentives were revised from a two-level approach (0.87 and 0.93 Uniform Energy Factor models) to a single efficiency (0.91 UEF) to drive customers purchasing 0.87 UEF units towards a more efficient option
- Cascade removed the lower efficiency (R-38) offering for Ceiling Insulation to drive higher-efficiency upgrades. Customers could no longer qualify for R-38 insulation rebates. This efficiency level accounted for a small portion of weatherization incentives. The simplification of this measure to one tier reduces administrative burden while pushing customers towards a more efficient option
- Many rebates saw an increase thanks to the inclusion of the SCC in the Company's Avoided Cost calculations.
- The C/I Program removed incentives for fryers, steamers, and dishwashers to align with WSEC and Appliance Standard updates enacted in 2022
- Outreach for the Residential and C/I Program leveraged digital resources to increase participation. This included:
  - A new live action 30 second ad delivered to customers through a variety of Connected TV streaming platforms including Direct TV, Pluto TV, Roku, and Tubi
  - Increased presence at in-person events, signifying a resurgence of pre-pandemic outreach methods
  - For more detailed information regarding outreach efforts in 2022 please reference *UG-210838-CNGC-2022-Conservation-Arpt-WP-5-6.15.23.pdf*

### Software Customization

During 2022 the Company focused on improving the PUX so that the POS TAs could leverage it in addition to residential customers. This online portal, originally launched at the end of 2021, enabled participating TAs to submit POS applications online and provide assignment of funds signatures from the customers to facilitate rebate payments. A major benefit of the portal was increased communication between the Company and its TAs. Contractors can log into the portal and see the status of projects they have submitted and confirm if there are rebates with missing information to resolve. This improvement reduces the resources that Cascade must commit to facilitating a POS rebate program and minimizes the turnaround time for TAs to receive reimbursement for POS rebates.

### Resource management

During 2022 the EE department onboarded a new Economic Analyst, lost and onboarded a new outreach coordinator, and maintained a contracted data entry clerk throughout the year to help address resources needed to keep up with rebate processing. This allowed the EE Department to focus on processing rebate applications through the final quarter of the year. This is particularly important around the end of each PY as application intake typically spikes in a seasonal rhythm as demonstrated in Figure 5.

Figure 5: Residential Monthly Queue 2019-2022



The seasonal increase in monthly intake results in a larger application queue. 2022 was an exceptional year with regard to maintaining a low processing queue. By the end of 2022 the program was averaging a receipt to paid age, a metric used to understand the turnaround time from when Cascade receives an application to when the rebate is approved for payment, of under eight weeks. This significantly improves the customer experience and helps the company ensure customers as well as POS TAs can feel confident in recommending the program to others.

The addition of the Economic Analyst allowed the company to focus on areas needing attention, primarily EM&V and program planning. The Economic Analyst is responsible for guiding these areas of program management and enables the department to plan for success around its major WUTC deliverables. In Q2 of 2022 the Department lost its Outreach Analyst, which stalled the Company's momentum for increasing participation following a decrease in applications during the previous PY. In Q3 the Company brought on a new Outreach Analyst which renewed the efforts to drive participation and focus on a return to in-person outreach. For more information on outreach efforts in 2022 reference UG-210838, CNGC-2022-Conservation-Arpt-WP-5, 6.15.23.xlsx.

### Balancing a Hybrid Remote Work Model

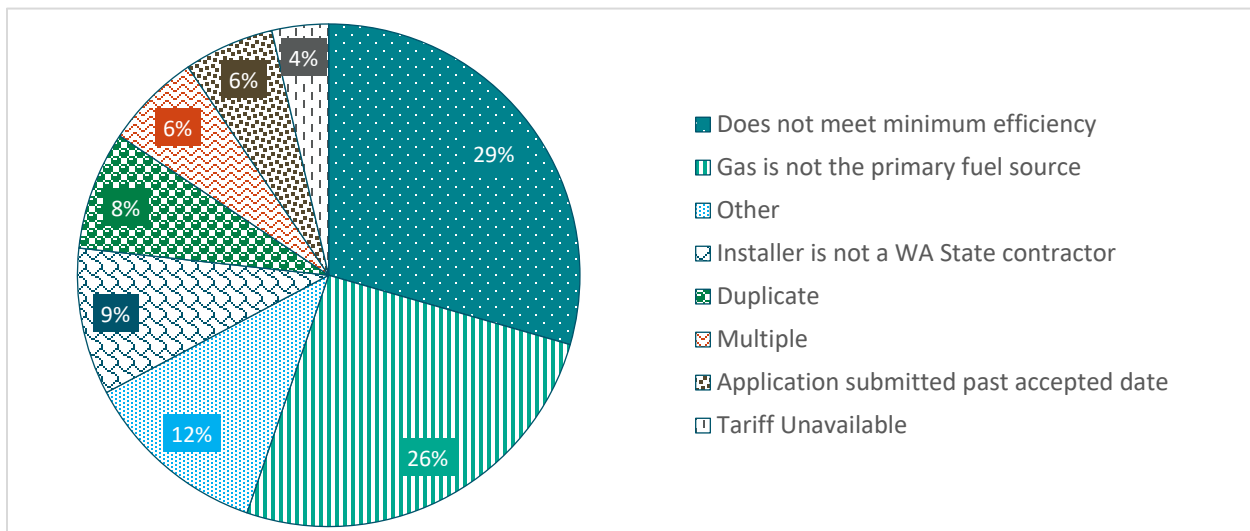
Following the COVID-19 Pandemic, Cascade continued to support a hybrid remote work model for the EE department. This model provides flexibility to the department and its employees. The flexibility allows the EE department, located in Bellingham, Washington to source talent from outside of Whatcom County. Additionally, employees can cover a larger range of the vast geographic service territory covered by Cascade resulting in increased access to underserved parts of the territory.

To balance the remote work model, the EE department engages in quarterly all hands-on- deck meetings, bringing the entire department under one roof to engage in team building and to brainstorm on how the department can tackle mounting challenges to the success of the EE programs. During these onsite meetings, the regular reporting on KPIs plays a key role in identifying which issues are most salient to the department and informs the plan of action developed to address these hurdles. These in-person quarterly meetings led to an increased focus on working with the program’s TAs and partnering more closely with Cascade’s Energy Service Representatives to get the message of EE to customers at their first point of contact with the Company.

### Disqualified Measure Applications

The Company denied 372 measures across 272 applications in the PY; 167 of these were fully denied applications, with the remaining being partial denials. Fully denied projects accounted for 5.1% of all applications processed in 2022, up from 3.9% of applications in 2021. The denied measures represent 7.2% of all measures processed in 2022 which matches the measure denial rate from 2021. As Figure 6 illustrates, most measures were denied because they fell short of the Program’s efficiency requirements (29% of all denials).

Figure 6: Residential Denials by Denial Reason



\*OTHER includes: Invoice incomplete/illegible/not submitted, gas account is not active, application is incomplete, installer is not a trade ally, measure only valid for Existing Homes.

The most common denied measures were gas furnaces, tankless water heaters, exterior entry doors, and gas hearths.

### Quality Control Inspections

Cascade’s EE Program tracks customer installations by Climate Zone. Within these Climate Zones, Cascade performs Quality Control (QC) activities through both the C/I and Residential Programs.

## Residential Sector

In 2022 the number of QC Inspections increased from the previous year due to use of a remote tool implemented by Cascade in partnership with Energy Solutions Group. See Table 10 for QC activity totals. The projects inspected consisted of randomly selected and flagged Residential submissions. Most of the QC performed leveraged the remote inspection tool. Please note that Zone Two received far less inspections than other zones but is aligned with the savings attributed to 2022 Residential Program Achievements. Zone Two accounted for 9% of Program savings in 2022 and made up 8% of QC activities. Cascade performs in-person inspections, remote video virtual verifications, and contracts with a third-party vendor to complete in-person inspections on the east side of the territory.

*Table 10: Residential Program 2022 inspection Summary*

<b>Climate Zone</b>	<b>QC performed</b>
<b>Zone One</b>	<b>18</b>
<b>Zone Two</b>	<b>6</b>
<b>Zone Three</b>	<b>53</b>
<b>Total</b>	<b>77</b>

Residential inspections are intended to confirm that submitted applications match the installed measures, that measures meet Program minimum efficiency requirements, that all health and safety requirements are addressed, and that industry best practices are demonstrated. The inspector verifies the efficiency of the equipment, and in the case of insulation/windows, the R-values and U-factors to confirm deemed savings are viable for those projects. If an issue is noted as part of an inspection the customer and contractor are notified of the issue, and the contractor is given an opportunity to remediate. Cascade also uses QC inspections to confirm the quality of installations performed by TA contractors and to vet contractors seeking admittance to the Program.

QC activities performed through the remote tool are designated as Virtual Verifications, which differ in scope from standard in-person QC inspections. Virtual Verifications are primarily used to: confirm the installation address and model number, check for a handful of best practices such as confirming the installation of ventilation and condensate drains and review the customer's experience. Certain measures are not suited to a Virtual Verification, such as insulation measures that would require customers to enter potentially hazardous areas of their home to complete the verification. Although Virtual Verifications cannot be as thorough as an in-person inspection, they offer several advantages that in-person inspections do not. This includes reduced travel time, customer convenience, increased access to underserved areas of the Company's service territory, and recorded videos of the calls that can be used for training purposes.

When circumstances permit in-person visits, the Company will be utilizing QC inspections and Virtual Verifications to expand the coverage and frequency of QC activities.

In 2022 Cascade collaborated with its third-party vendor to perform multiple inspections for a new POS TA looking to install insulation in Climate Zone Three as this new TA was interested in pursuing a door-to-door sales model. Cascade wanted to ensure that this new vendor met the Company's quality standards before permitting them to participate in the POS program. QC activities such as these allow the company to vet TAs and verify that quality standards are being upheld.

### Commercial/Industrial Sector

The Post-Installation Verification (PIV) process was much closer to historic practices in 2022 compared to the two previous years, where PIVs were impacted by COVID-19. Typically, a trigger for a PIV is determined by the dollar amount of the project and what measures were completed. For example, Radiant Heating, Boilers, Domestic Hot Water Tankless and all Insulation measures over \$10,000 receive PIV. All other measures that exceed \$5,000 in the C/I sector, most Custom projects, and every C/I self-install insulation project requires inspection as well. In total, 26 projects were eligible for PIVs in 2022 and 24 received a PIV. The two which did not receive in-person inspections were confirmed with pictures from the customer with model and serial numbers matching those displayed on the invoice.

All C/I inspections are performed by the Company's C/I vendor as part of their Program delivery. The C/I inspection includes one of four elements: pre-installation, post-installation, study review, and/or general project review. The reviewer verifies all measures listed on the application were installed, are operational, meet the Program requirements, include startup reports and invoices, and often includes photos of the installed equipment for verification. The reviewer then confirms their approval and signs and dates the form.

See Table 11 for total inspections by zone.

*Table 11: C/I inspections by Zone*

Climate Zone	Projects Eligible for QC	Received QC
Zone One	11	10
Zone Two	6	6
Zone Three	9	8
<b>Total</b>	<b>26</b>	<b>24</b>



## Participation Summary

A full breakdown of therm savings, Utility Costs, and Total Resource Costs by all measures and Programs for the 2022 PY can be found within the following documents filed in addition to this report with the WUTC:

- *UG-210838-CNGC-2022-Conservation-Arpt-WP-1-6.15.23.xlsx* – Cost-effectiveness calculation for the entire portfolio.
- *UG-210838-CNGC-2022-Conservation-Arpt-WP-2-6.15.23.xlsx* – Cost-effectiveness calculation for the C/I Program.
- *UG-210838-CNGC-2022-Conservation-Arpt-WP-3-6.15.23.xlsx* – Cost-effectiveness calculation for the Residential Program.
- *UG-210838-CNGC-2022-Conservation-Arpt-WP-4-6.15.23.xlsx* – Cost-effectiveness calculation for the Low-Income Weatherization Program.
- *UG-210838-CNGC-2022-Conservation-Arpt-WP-5-6.15.23.pdf* – Outlines the community outreach efforts of the EE Program.
- *UG-210838,-CNGC-2022-NEEA-Arpt-for-CNGC-WP-6-6.15.23.pdf* – Outlines NEEA’s efforts on behalf of CNGC.

## Updates to 2021 Program Achievements

No 2021 True-up is provided as no material additional expenditures or rebates were submitted after the report was filed.