



In the Community to Serve®



2022-2023 Biennial Conservation Plan

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Acronym Key

AEG- Applied Energy Group	JUARC- Joint Utility Advanced Rooftop Control
AFUE- Annual Fuel Utilization Efficiency	LDC- Local Distribution Companies
BCP – Biennial Conservation Plan	LoadMAP- Load Management Analysis and Planning
C/I- Commercial/Industrial	MDUG- Montana Dakota Utilities Group
CAG- Conservation Advisory Group	MI – Missing Information
CBSA- Commercial Building Stock Assessment	MOU- Memorandum of Understanding
CEC- Community Energy Challenge	NEEA- Northwest Energy Efficiency Alliance
CEEP- Community Energy Efficiency Programs	NEI- Non-Energy Impacts
CNGC- Cascade Natural Gas Corporation	NFRC- National Fenestration Rating Council
CPA- Conservation Potential Assessment	NGAC- Natural Gas Advisory Committee
CRTU- Condensing Rooftop Unit	NWPCC- Northwest Power and Conservation Council
CY- Calendar Year	POS- Point of Sale
DBtC- Direct Benefit to Customers	PRSV- Pre-Rinse Spray Valve
DCV- Demand Control Ventilation	PUI- Public User interface
DHW- Domestic Hot Water	PUX- Public User Experience
DOE- Department of Energy	QI – Quality Inspection in-person, onsite
DSM- Demand Side Management	QV – Quality Verification, remote software
EE- Energy Efficiency	RBSA- Residential Building Stock Assessment
EEIP- Energy Efficiency Incentive Programs	RTF- Regional Technical Forum
eM&V- Inhouse evaluation Measurement and Verification	RTU – Roof Top Units
EM&V- Third party Evaluation Measurement and Verification	RVT- Resource Value Test
ESAP- Energy Savings Action Plan	SC- Sustainable Connections
ESK- Energy Saving Kit	SCC- Social Cost of Carbon
ESR- Energy Service Representatives	SEM- Strategic Energy Management
EUI – Energy Use Intensity	SHGC- Solar Heat Gain Coefficient
EWIP- Enhanced Low-Income Weatherization Incentive Program	SIR- Savings to Investment Ratio
FE- Fireplace Efficiency	SWAG- Statewide Advisory Group
GEP- Global Energy Partners, LLC	TA- Trade Ally
gpm- gallons per minute	TE- Thermal Efficiency
GTI- Gas Technology Institute	TRC- Total Resource Cost
GHPWH – Gas Heat Pump Water Heater	TRC Companies – Third party C/I business development
HB- House Bill	TREAT- Targeted Residential Energy Analysis Tool
HBA- Home Builders Association	UEF- Uniform Energy Factor
HDD- Heating Degree Days	UCT- Utility Cost Test
HEPA- High-efficiency particulate Air (filter)	WACC- Weighted Average Cost of Capital
HTR- Hard to Reach	WIP- Low-Income Weatherization Incentive Program
HVAC- heating, ventilation, air conditioning	WSEC- Washington State Energy Code
IECC- International Energy Conservation Code	WUTC- Washington Utilities and Transportation Commission
IRP- Integrated Resource Plan	WWU- Western Washington University



1. Introduction

Cascade Natural Gas Corporation (Company, Cascade, or CNGC) submits its first Biennial Conservation Plan (BCP) in consultation with its Conservation Advisory Group (CAG) as a roadmap to the 2022 and 2023 Energy Efficiency (EE) Program strategy. This plan aligns with requirements established as part of House Bill (HB)-1257 within RCW [80.28.380](#) which include:

1. Gas companies must identify and acquire all conservation measures that are available and cost effective
2. In addition, each company must establish an acquisition target every two years and must demonstrate the target will result in the acquisition of all resources identified as available and cost-effective
3. The cost-effectiveness analysis required by this section must include the costs of greenhouse gas emissions established in [RCW 80.28.395](#).
4. These targets must also be based on a Conservation Potential Assessment (CPA) prepared by an independent third party and approved by the Commission to become effective as of 2022

This BCP is a companion document to the Demand Side Management (DSM) chapter and appendices within the Company's 2020 Integrated Resource Plan (IRP)¹.

The DSM Chapter of the IRP includes an executive summary of the forecasting potential for the Company's EE efforts, under a 20-year horizon. It incorporates the 2020 CPA Phase 1 report, performed by Applied Energy Group (AEG), and outlines the Company's EE efforts as a resource toward meeting future demand in the context of environmental and legislative externalities.

In the BCP the Company focuses on near-term conservation and energy-efficiency program development as it addresses items noted in the Two-Year action plan included with the IRP². Cascade identifies and acquires conservation opportunities through the CPA filed with the Washington Utilities and Transportation Commission (WUTC or Commission) on June 15th 2021³. This CPA used the Avoided Costs as calculated through the 2020 IRP, which incorporated a 2.5% rate to account for the Social Cost of Carbon (SSC). The BCP also contains program implementation considerations, discussions about regional efforts to improve market transformation of high-efficiency natural gas measures, scenarios for

¹ Cascade Natural Gas Corporation 2020 Integrated Resource Plan: Docket U-190714 Chapter 7 – Demand Side Management & Appendix D [UTC Case Docket Document Sets | UTC \(wa.gov\)](#)

² Cascade Natural Gas Corporation 2020 Integrated Resource Plan: Docket U-190714 , See page 12-4

³ Cascade Natural Gas Corporation 2020 Conservation Potential Assessment U-210450 [UTC Case Docket Document Sets | UTC \(wa.gov\)](#)



forecasting through the Company's potential forecasting tool, outreach plans and community engagement through real time program updates.

The BCP discusses savings potential for the Company's Washington (WA) service territory through its Load Management Analysis and Planning (LoadMAP) model tool developed by AEG.

The 2020 & 2021 Calendar Years required the Company's Energy Efficiency Incentive Programs (EEIP) to embrace adaptive, real-time management to maintain program momentum amid an unprecedented pandemic. The 2022 outlook promises some of the same hurdles in addition to environmental headwinds and building standards and codes which disincentivize natural gas use as a focus of decarbonization efforts. Pressure to adapt traditional EEIP programs to accommodate Greenhouse Gas (GHG) emission reductions and a widespread focus on electrification over improvement of efficient gas technologies offers unique complications requiring unique solutions.

Economic repercussions from COVID-19's impacts continue to affect both residential and business customers moving into 2022. Supply chain shortages and building material costs will play a significant role for customers and contractors in deciding whether to install higher-efficiency equipment as availability and affordability are uncertain.

Last year the Company noted the new year offered an opening to explore alternative ways to connect with customers through technology and shared experiences. This continues as hybrid and work from home business models evolve as the new norm. Throughout 2022 and into 2023 Cascade will remain focused on immediate customer needs while exploring opportunities to expand the department's role from focusing only on the traditional EE realm. This will involve exploring more pilot opportunities and reevaluating the department's tasks and duties within the organization to develop carbon offset programs, explore renewable natural gas and support regional work on hydrogen ready natural gas appliances through the Company's community energy engagement programs. In Q1 of 2022 the Company will also leverage internal resources, lessons learned and available staffing due to a recent integration with Montana Dakota Utility Group's (MDUG) Intermountain Gas Company to form a new MDUG Western EE Department.

1.1 Overview

Cascade is a natural gas provider serving 294,000 customers in 96 communities concentrated in western and central Washington and central and eastern Oregon. Cascade covers more than 32,000 square miles and is a subsidiary of MDUG, a multidimensional natural resources enterprise with sister utility Companies Intermountain Gas Company,



Great Planes Natural Gas and Montana Dakota Utilities. As a utility Company Cascade focus on DSM as a means to meet future load requirements. DSM refers to resources acquired through the reduction of natural gas consumption due to increases in efficiency of energy use and/or load management. Unlike supply side resources, which are purchased directly from a supplier, demand side resources are purchased from individual customers in the form of unused energy from energy-efficiency upgrades. The WUTC requires gas utilities to consider cost-effective DSM resources in their energy portfolio on an equal and comparable basis with supply side resources. In the gas industry, DSM resources are energy-efficiency measures that include insulation, higher efficiency natural gas appliances, insulated doors, ventilation heat recovery systems and other Residential and Commercial/Industrial (C/I) equipment upgrades. By prompting rate payers to reduce their individual demand for gas, Cascade can replace the need to purchase additional supplies; displace or delay contracting for incremental pipeline capacity; and possibly negate or delay the need for reinforcements on the Company's distribution system. Ultimately it is the consumer's choice to manage energy use and the DSM efforts help influence those decisions. Ideally rate payers recognize the inherent value of energy-efficiency and implement efficiency upgrades whenever possible.

There are two basic types of demand side resources: base load resources and heat sensitive resources. Base load resources offset gas supply requirements throughout the year, regardless of outdoor weather. Base load DSM resources include measures like high-efficiency water heaters, cooking equipment and ozone injection laundry systems. Heat sensitive DSM resources are measures whose therm savings increase during cold weather. For example, a high-efficiency furnace will lower therm usage in the winter months when the furnace is utilized the most and will provide little, if any, savings in the summer months. Examples of heat sensitive DSM measures include ceiling, floor, and wall insulation measures, high-efficiency gas furnaces, and improvements to ductwork and air sealing. These types of heat sensitive measures offset increased amounts of the more expensive peaking and seasonal gas supply resources.



1.2 Program Goals & Budgets at a glance

Table 1: EEIP Biennial Goals

	Calendar Year 2022				Calendar Year 2023				Biennial Totals
	Residential	C/I	Low ³ Income	1st year Total	Residential	C/I	Low ³ Income	2nd year Totals	
Cascade Admin Budget¹	\$1,257,715	\$1,394,623	\$63,252	\$2,715,591	\$1,404,670	\$1,609,349	\$67,296	\$3,081,314	\$5,796,905
Therm Targets²	429,213	419,461	17,859	866,533	507,695	537,858	19,665	1,065,218	1,931,751
NEEA Natural Gas Market Transformation				\$182,975				\$348,908	\$531,883
Regional Technical Forum				\$31,300				\$31,300	\$62,600
Evaluation, Measurement & Verification				\$70,000				\$70,000	\$140,000
Conservation Potential Assessment								\$160,000	\$160,000

¹ Budgets in this table are estimates and refer to administrative costs for program implementation, not rebates

² Therm targets have been developed with LoadMAP through the 2020 CPA Phase 2

³ Represents Cascade staff & outreach for Low-income program delivery and does not include payments for agency overhead

1.3 Performance Comparison

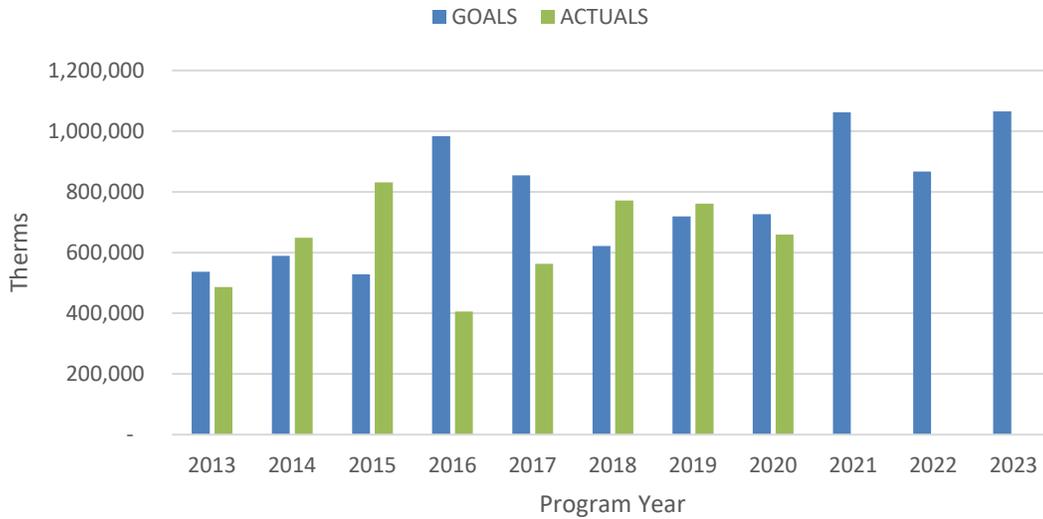
Figure 1 notes Company annual therm savings compared to IRP goals. Official totals for 2021 are not available until the annual report is filed in June 2022, but as of August 2021 the combined Residential and C/I portfolio achieved 487,957 therms and the program is tracking toward goal achievement. Despite the lower actuals to goals for CY 2016 & CY 2018, therm savings continued to grow over previous years, a reflection of the Company's drive toward increased savings. This represents the evolution of the program's goals as goal setting matures and evolves with the more nuanced tools available through the new CPA.

In fact, the recent CPA identified lower potential for CY 2022 than CY 2021. This reduction in savings potential is tied to influences that drive down the potential in the first year. Near term program participation is expected to be similar to recent accomplishments and the associated savings and opportunities for those measures has shrunk as a result of technical and market changes including lower New Homes potential and updates to assumptions pulled from the Regional Technical Forum (RTF) measure lives and incremental costs. The growth of the potential as the years progress is due to ramp rate increases consistent with council methodology, which as defined in the Power Plan, can



include market effects beyond utility programs.⁴

Figure 1: Portfolio Level Goals and Achievements



Note 2014 IRP goals were not acknowledged by the WUTC

1.4 Budgeting for 2022 & 2023 biennium

The Company provides the biennial budget highlights in Table 2 and includes a more detailed version in Exhibit 1 to clarify elements included as Direct Benefits to Customers (DBtC) versus costs incurred as administrative expenses. The Company also provides a copy of the 2021 Program budget for comparison in the Appendix and the Work Papers for reference as part of this filing.

⁴2020 Cascade Natural Gas Conservation Potential Assessment Phase 2 Final Report – Applied Energy Group Volume pg. 40



Table 2: Biennial Program Budgets

Program Budgets			
Incentive Estimates			
Program	CY 2022	CY 2023	BIENNIUM
Residential	\$3,983,311	\$4,711,663	\$8,694,975
Commercial/Industrial	\$2,453,847	\$3,146,469	\$5,600,316
Low Income	\$1,654,829	\$1,858,614	\$3,513,443
Total Incentives	\$8,091,987	\$9,716,747	\$17,808,734
Non-Incentive/CNGC Program Implementation Expenses			
Program	CY 2022	CY 2023	BIENNIUM
Residential	\$1,257,715	\$1,404,670	\$2,662,385
Commercial/Industrial	\$1,394,623	\$1,609,349	\$3,003,972
Low Income	\$63,252	\$67,296	\$130,548
Portfolio Admin Total	\$2,715,591	\$3,081,314	\$5,796,905
Portfolio Admin Expenses Breakout:			
<i>Labor</i>	\$768,977	\$896,788	\$1,665,765
<i>Third Party Commercial/ Industrial Program Mgmt.</i>	\$979,192	\$1,156,787	\$2,135,979
<i>Annual Software fees</i>	\$213,288	\$219,687	\$432,975
<i>Outreach / Pilots / Trade Ally / Quality Control</i>	\$500,300	\$552,994	\$1,053,294
<i>Other</i>	\$53,834	\$55,059	\$108,892
Total Incentives	\$8,091,987	\$9,716,747	\$17,808,734
Portfolio Admin Total (Included from above)	\$2,715,591	\$3,081,314	\$5,796,905
Regional Collaboration	\$214,275	\$380,208	\$594,483
Evaluation, Measurement & Verification	\$70,000	\$70,000	\$140,000
Conservation Potential Assessment (CY 2024/2025)	n/a	\$160,000	\$160,000
Total Portfolio Expense	\$11,091,852	\$13,408,270	\$24,500,122

*Detailed program budget table is available in Appendix and indicates DBtC categories

Cascade sets an administrative budget to plan and operate programs under the Avoided Costs shown in Appendix H of the 2020 IRP. This budget must ensure an acceptable ratio of costs balanced with therm savings achievements. Since therm savings offset the costs of administrative investment, the greater the achievements, the more cost-effective the programs. If the budget or therm savings upon which the portfolio is built are unrealistic, the Company risks developing a scale-dependent portfolio unable to maintain cost effectiveness.

For the rebate budget in 2022 and 2023 Cascade is using spending from the three



previous program years as a reference. To deliver the therm savings in 2018, 2019, and 2020 Cascade spent roughly \$8.05/Therm for the Residential program and \$5.85/therm for the C/I program. To determine the incentive budget for the Residential program, the rate is multiplied by the annual goal for each year in the BCP. To account for historically strong performance in the Residential program the Company factors in an additional 15% as the program has exceeded the annual goal every year since 2018. For the C/I program budget, the dollar per therm rate is multiplied by the annual goal for each year in the BCP and this produces the C/I budget; C/I historical performance does not suggest an adder is necessary.

Various benefit-cost ratios are modeled as part of the planning process to maintain a reasonable administrative budget and protect the EEIP's cost-effectiveness. The Company explores options at the portfolio level to determine which types of fiscal measures can be taken in the event an unexpected cost is incurred, economic conditions significantly vary from assumptions (like the recent pandemic) or participation levels do not meet ramp rate estimates. Should the programs meet goals for the biennium the portfolio budget will have adequate room to support administrative expenses for activities that do not tie directly to therm savings, but support program uptake. The costs are included in the Cost-benefit analysis during program reporting, however having this room in the planning phase allows for flexibility in the DBtC ratio mid-cycle to support evolving pilot efforts, additional customer focused bonus coupons, and special promotions including a November Veteran's promo and "Thankful For You" promo to Trade Allies. This buffer allows the Company to increase incentives (where cost-effective), add measures to the bonus bundles, offer C/I promotions, expand outreach, and increase staffing to support goal acquisition.

While cost-effectiveness may be maintained as programs operate within the above budget parameters, the DBtC would be impacted based on the proportion of funds spent between rebates and administrative costs. To that end, the Company will continue to carefully balance cost-effectiveness to achieve the 60/40 DBtC target.

Meanwhile, the Company continues to monitor impacts of changing natural gas prices, Avoided Costs, GHG reduction efforts and economic impacts to the EEIP's budget.

Additionally, Cascade recognizes WUTC staff have directed the Company to achieve its targets and it will make every effort to meet the goals in the BCP.

1.5 Direct Benefit to Customer Ratios

In January of 2017 Staff from WUTC engaged in a supplemental analysis of natural gas utility budgeting as a method of measuring program success. As part of this analysis the



Company categorized its program expenditures under a ratio of DBtC compared to administrative program expenses.

Per WUTC direction DBtC ratios are to include customer incentives, payments to Community Action Agencies, and upstream incentives to energy program partners and Trade Allies (TA)s. Based on this guidance Cascade EEIP expenses are allocated as noted in Table 3:

Table 3: Direct Benefit to Customer Expenses

Cascade Natural Gas – 2021 DBtC Category Clarifications		
	Direct Benefit	Program Delivery (Not included in DBtC)
Residential	<ul style="list-style-type: none"> ✓ Rebate payments ✓ Bonus coupons to customers for using qualified Trade Allies (TAs) ✓ QC Inspections ✓ Local energy program partnerships promoting the EEIP by assisting customers with rebates ✓ Customer service resolution ✓ Bundled measure promotions 	<ul style="list-style-type: none"> ✓ Labor ✓ TA program materials ✓ Cooperative marketing & training ✓ TA outreach ✓ Residential EEIP ad placement ✓ Software access fees ✓ Industry appropriate organizational dues ✓ Travel expenses for program delivery ✓ Seminar and training attendance ✓ Miscellaneous operating expenses ✓ Admin costs for Pilots
Commercial & Industrial	<ul style="list-style-type: none"> ✓ Rebate Payments ✓ Partnerships with local energy programs promoting the EEIP through customer engagement ✓ Bundled measure promotions 	<ul style="list-style-type: none"> ✓ Third party program management inclusive of commercial marketing efforts ✓ Internal staffing & oversight from CNGC ✓ Industry specific Trade organization dues ✓ Travel expenses for program delivery ✓ Seminar and training attendance ✓ Promotional giveaways ✓ Miscellaneous operating expenses ✓ Admin costs for Pilots
Low income	<ul style="list-style-type: none"> ✓ Rebates for weatherization ✓ Agency customer outreach ✓ Agency indirect rates and administration fee 	<ul style="list-style-type: none"> ✓ CNGC labor for program administration ✓ Travel expenses for program delivery

The Company will aim for a minimum 60/40 DBtC ratio for the biennium. Per the budgets and goals the current Biennial DBtC is estimated at 76/24, see Table 4. The following should be kept in mind when determining program DBtC ratios:

- The customer rebate budgets are estimates, highly dependent on customer uptake and individual consumer decisions. The Company can encourage participation but cannot force customers to engage in the efficiency efforts.
- The programs have specific fixed costs associated with administering incentives



to customers. These costs are not affected by rebate submission volume.

- Cascade’s territory is primarily rural and geographically spread out requiring increased administrative effort and funds (lacking other’s economies of scale).
- The Company is not a dual fuel provider so does not have the same opportunity to leverage internal program efforts.

Table 4: Biennial - DBtC

DBtC - Cascade Natural Gas 2022 Conservation Budget			
	Direct Benefit to Customers	Other Costs	Total Utility Costs
Residential	\$4,058,311	\$1,182,715	\$5,241,027
Non-residential	\$2,453,847	\$1,394,623	\$3,848,470
Low income	\$1,674,829	\$43,252	\$1,718,081
			\$10,807,577
Portfolio Ratio	76%	24%	
NEEA / RTF			\$214,275
EM&V			\$70,000
Total 2022 Program Expense			\$11,091,852
DBtC - Cascade Natural Gas 2023 Conservation Budget			
	Direct Benefit to Customers	Other Costs	Total Utility Costs
Residential	\$ 4,786,663	\$1,329,670	\$6,116,333
Non-residential	\$3,146,469	\$1,609,349	\$4,755,818
Low income	\$1,878,614	\$47,296	\$1,925,910
			\$12,798,061
Portfolio Ratio	77%	23%	
NEEA / RTF			\$380,208
EM&V			\$70,000
CPA			\$160,000
Total 2023 Program Expense			\$13,408,270
Biennial Totals:	76%	24%	

1.6 Applied Energy Group CPAs

AEG’s modeling framework tool, LoadMAP, was developed as an end-use load forecasting model to allow estimation of conservation potential. It is built in Microsoft Excel and is tailored to meet the needs of the client. The scalable nature of the model allows utilities to analyze potential for a combination of market sectors, segments,



climate zones, end uses, technologies and measures. Cascade first worked with AEG in CY 2017/2018 to develop its service territory specific CPA using the Northwest Power and Conservation Council's (NWPCC) methodology to determine the Company's conservation potential.

In response to HB-1257's requirement and its CAG's guidance, Cascade contracted with AEG in mid-2020 to update the 2018 CPA through a two phased approach, which culminated in Cascade filing a revised Assessment to the Commission June 15, 2021⁵ including a fully updated Cascade CPA model. This CPA leveraged the analysis framework, and AEG's familiarity with data developed during the previous study, to support filing the BCP.

The primary goals for AEG in this assessment included:

- Conduct a natural gas CPA to identify all available and cost-effective potential to satisfy requirements of RCW 80.28.380
- Adapt the methodology utilized in NWPCC's 2021 Power Plan (2021 Electric Plan) for use in natural gas EE planning
- Customize 2021 Electric Plan ramp rates for use in a natural gas CPA by incorporating historic Cascade program accomplishments
- Conduct research into non-energy impacts (NEIs) utilized in other jurisdictions and collaborate with Cascade staff to develop proxy benefits for use in an EE sensitivity analysis, (further clarification included in section 3.1.2 Review of Non-Energy Impacts)
- Revise the Washington CPA residential market characterization and potential to include income level analysis

In the first phase of the CPA, AEG updated Cascade's models to the latest version of LoadMAP, updated key aspects of the 2017 CPA model inputs, re-based to 2019 actuals, revisited the main drivers, and laid the groundwork for Phase 2. In the second phase AEG refreshed the remaining assumptions from the original CPA, assessed the energy savings impacts of new measures in Cascade's three climate zones, and explored and incorporated NEIs when able to quantify or monetize.

AEG previously estimated EE potential based on average customer profiles without differentiation by household income. Although this approach inherently captured energy-

⁵ Cascade Natural Gas Corporation 2020 Conservation Potential Assessment U-210450 [UTC Case Docket Document Sets | UTC \(wa.gov\)](#)



efficiency potential in low-income homes Cascade sought a way to better serve the at-needs community. For this update Cascade asked AEG to provide a focused assessment of the Low-Income Potential to characterize measures and estimate potential specific to Cascade's low-income customer segment, which inform this biennial planning cycle and provide intelligence into future opportunities to work with the Community Action Agencies.



2. Development of Portfolios

Cascade's current Avoided Costs are housed within Appendix H of the 2020 IRP and the Company's EEIP offerings are highly sensitive to fluctuations in fossil fuel prices reflected in those Avoided Costs. The 2020 IRP Avoided Costs reflect an increase in per therm projected savings and provide flexibility for measure offerings across the portfolio. Added to that, the Company incorporated the SCC at a 2.5% rate as outlined in U-190730 as the main CO₂ adder in modeling emission reductions, which is a significant factor in Cascade's Avoided Costs calculations.

The Company is committed to offering meaningful Conservation and EE programs to help drive customer decisions toward higher efficiency appliances. To accomplish this Cascade works with the CAG to evaluate its programs through the lens of the Utility Cost Test (UCT) and the Total Resource Cost (TRC) in its Conservation Plan and Annual Report and is reporting achievements under both parameters. Further information on TRC valuation and calculations within the LoadMAP model can be reviewed in the Company's 2020 CPA. Definitions of potential are available in the BCP Appendix.

Under the Company's 2022 proposed budgets and goals, the UCT benefit cost ratio is estimated on the portfolio level at 2.157 (1.676 for Residential and 2.649 for Commercial/ Industrial) and a 1.576 TRC (1.216 for Residential and 1.944 for Commercial/ Industrial). The 2023 UCT is estimated at: 2.305 and the TRC is estimated at 1.834. These estimates assume the Company achieves all targets. It is important to caveat the program's cost-effectiveness is dependent on individual customer actions, and while the Company tries to influence customers through messaging and public outreach, the final cost-effectiveness is measured once the program year is closed. Additionally, the following considerations will drive the cost tests closer to a 1.0:

- The Company is including significant funding for pilots for the first time and will need flexibility in the admin budget to support the development and planning for these efforts
- It's likely additional staffing will be required beyond current staffing levels to support the proposed residential custom offering as well as pilot program administration
- Bonus Coupons are budgeted into the program admin costs based on recent trends; however overall submission rates depend on TA participation post COVID so this could equate to higher admin costs
- The program will continue to promote bundled measures which result in additional payments to the customer that are not directly accounted for as a "measure".



These bundles increase the admin expenses and do not individually add therms, but they do drive multi-measure installs and a whole-home approach to energy efficiency

- The C/I program ratios provide room to develop the Strategic Energy Management (SEM) program as significant potential was identified in the CPA. At this point the Company and C/I vendor need additional research to fully determine costs to implement a natural gas, Cascade specific, SEM program
- Incentive updates in 2022 (as a result of research from the CPA) paired with increased outreach to accommodate real-time adaptive management, will also affect the year-end results

2.1 Docket U-121207 Cost-Effectiveness of Natural Gas Conservation Programs

The Company's approach to calculating cost-effectiveness reflects docket U-121207 which offers guidance regarding valuation of natural gas conservation efforts in the State of Washington. It addresses best practices for measuring cost-effectiveness: "[W]e are unwilling to allow utilities to end natural gas conservation programs as a result of an unbalanced or incomplete TRC analysis. Any TRC analysis without these values [conservation's risk reduction value, the downward price pressure from reduced demand, and non-energy benefits] is potentially biased against conservation programs. Accordingly, the UCT is an acceptable option when a properly balanced TRC is not available."⁶

The UCT is the Company's preferred valuation (as per consultation with the CAG) as a straightforward calculation of the utility's investment in DSM that does not penalize customers for weighing the cost-benefit of an upgrade. The UCT allows the natural gas efficiency programs to leverage positive market change through the installation of measures with long-lived deeper energy savings.

As the Commission prefers valuation based under a fully balanced TRC, Cascade contracted with AEG to review NEIs during Phase 2 of the CPA. Following the CPA measure recommendations, the Company again met with AEG to review the Annual Report metrics associated with NEIs and as a result has updated the NEI valuation at both the individual measure and portfolio level. Although these efforts add transparency to NEI treatment in Cascade programs the UCT allows for a more robust portfolio of

⁶ Washington Utilities and Transportation Docket U-121207 – Policy Statement on the Evaluation of the Cost-Effectiveness of Natural Gas Conservation Programs pg. 14-15



measures in support of all cost-effective conservation as required by the Commission.

2.2 Cost-Effectiveness Testing and Program Design

Under the UCT, rebate thresholds are set to achieve an optimal balance between driving program participation through persuasive incentive offerings while maintaining cost-effectiveness and ensuring a broad menu of offerings. The current incentive levels are effective as of February 1, 2021 for the Residential and C/I program and July 22, 2020 for the LI program. See Exhibit 1 for a copy of current rebate offerings.

In addition to the impacts from Avoided Costs and cost-effectiveness tests, and to allow longer-lived measures to continue to thrive, the Company ties its DSM long-term discount rate to the average 30 Year Mortgage Rate, 3.4% for the 2020 IRP and this Plan. For context, an increased or higher discount rate lowers the therm savings potential while a lower discount rate raises the potential savings. Through the Company's participation on the Northwest Energy Efficiency Alliance (NEEA) Cost-Effectiveness committee and regional discussions on incorporation of a Resource Value Test (RVT), the Company is keeping abreast of how other Local Distribution Companies (LDCs) and regional partners are applying discount rates and may explore revision of the discount rate in the future.

Industry standard cost effectiveness tests are performed to gauge the economic merits of the portfolio within the Company's LoadMAP model. Additionally, AEG incorporated a placeholder for the RVT in LoadMAP along with the UCT and TRC to allow future valuation under this regionally evolving metric. See Appendix A for AEG's definitions of each of the three final tests applied to the forecasts, UCT Achievable Economic, TRC Achievable Economic and RVT Achievable Economic. These definitions remain consistent as part of the original 2017 AEG CPA and the revisited 2020 CPA.

2.3 Incentive Level

The Company seeks to develop a customized approach to setting incentive levels through its LoadMAP tool with an intention to adjust incentives to maximize individual measure uptake while remaining cost effective at a program portfolio level. Following the 2020 CPA Cascade worked closely with AEG to identify measures whose cost effectiveness either warrants increasing rebates and/or reducing rebates to fall within the thresholds set through the 2020 Avoided Costs. Once an evaluation is made on program viability and potential additions to the portfolio proposed incentive levels are brought to the Advisory group and explored further prior to final Commission approval. Current rebate offerings and proposed updates for 2022 and 2023 can be found in Exhibit 1.



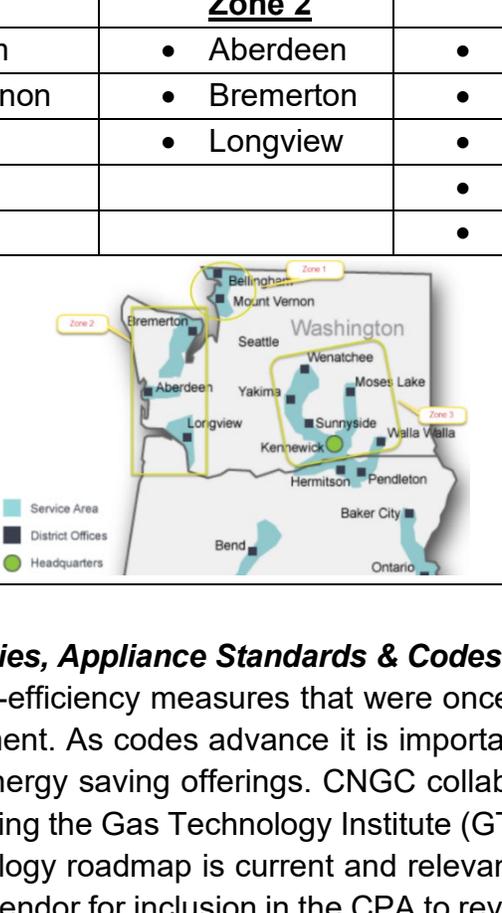
2.4 AEG CPA Library

The AEG CPA provides an update to the equipment and non-equipment measure libraries for the Residential and C/I program. The 2020 CPA updated the baseline projection from Phase 1 to reflect 2020 actual consumption and synced customer, usage, and weather data with deemed therm savings estimates.

Note measure libraries and associated deemed savings for the Residential program are reflective of the unique climate zones noted in Table 5 of the Company’s WA service territory.

Table 5: Service Territory Climate Zones

Washington Conservation Climate Zones by District		
<u>Zone 1</u>	<u>Zone 2</u>	<u>Zone 3</u>
<ul style="list-style-type: none"> • Bellingham 	<ul style="list-style-type: none"> • Aberdeen 	<ul style="list-style-type: none"> • Sunnyside
<ul style="list-style-type: none"> • Mount Vernon 	<ul style="list-style-type: none"> • Bremerton 	<ul style="list-style-type: none"> • Tri-Cities
	<ul style="list-style-type: none"> • Longview 	<ul style="list-style-type: none"> • Walla Walla
		<ul style="list-style-type: none"> • Wenatchee
		<ul style="list-style-type: none"> • Yakima



2.5 Emerging Technologies, Appliance Standards & Codes

In the coming years, high-efficiency measures that were once above code will become a standard code requirement. As codes advance it is important for Cascade to explore alternative above code energy saving offerings. CNGC collaborates with Regional and Technical partners, including the Gas Technology Institute (GTI), NEEA, and the RTF to ensure Cascade’s technology roadmap is current and relevant. Cascade also forwards these technologies to its vendor for inclusion in the CPA to review and determine if there is ample data to evaluate energy savings, availability, and incremental costs.



2.5.1 Emerging technology through market transformation

Through NEEA, Cascade and other Northwest gas funders are working on a range of projects and activities to bring emerging technologies to Northwest customers. These include:

- Joining planned North American field demonstrations of gas heat pump water heaters (GHPWH) and a gas heat pump combination space and water heating (combi) systems, both expected to come to market by 2023 from a major manufacturer
- Participating in activities of the North American Gas Heat Pump Collaborative, made up of over 14 utilities representing more than 30% of U.S. and Canadian households that use gas. The Collaborative's mission to develop and implement activities to accelerate the adoption of gas heat pump technologies
- Testing additional applications of gas heat pump technology for residential water heating and combi applications. Both currently available and emerging technologies are being evaluated for market readiness, performance, and safety. Much of this testing is co-funded by extra-regional utilities and partners
- Exploring opportunities to differentiate and promote efficient rooftop units (RTUs) in the market. This work is based on newly developed test procedures and metrics that make it easier for building owners to identify and choose energy efficient options. NEEA will continue to develop the opportunity in 2022-2023
- Providing training, education, and resources to Washington homebuilders and home energy raters to help them understand and achieve requirements in the 2018 Washington State Energy Code (WSEC)
- Engaging with GTI's Emerging Technology Program to explore new technological opportunities as they enter the market. Through these renewed efforts, the Company stays apprised of cutting-edge efficiency options with significant savings potential for customers and helps drive some of the advancements taking place in the natural gas high-efficiency realm to benefit customers in the Pacific Northwest

The Company constantly scans for new savings opportunities and a handful of emerging technologies have arisen recently with the potential to surpass building code requirements and increase natural gas energy savings. The following are some of the most intriguing and viable advances in emerging technology Cascade is considering:

2.5.2 Advanced Air Sealing

AeroBarrier® is a proprietary technology produced by AeroSeal® which uses aerosolized sealant in conjunction with a blower door. The blower door forces air into the home and pushes the aerosolized sealant into all gaps in construction materials that are ½" or less



in size. The technology can provide air tightness that will meet code (5 ACH50) and can be as tight as the passive house standard of 0.6 ACH50. This is a market ready technology that is available for builders today. Avista is currently running a pilot rebate for this technology. Cascade is meeting with Avista to learn about how the offering has performed in their service territory and what challenges remain in providing an incentive for AeroBarrier.

2.5.3 Thin Triple-Pane Windows:

NEEA is working on a market transformation strategy to bring thin-triple-pane windows into new homes. This new class of windows have an insulation value of R-5, or a 0.2 U-value, which represents an increase in efficiency of 50%. With this drop-in solution to reducing heat loss through glazing, this will address one of the least efficient components of the building envelope. As there is no definitive time to market more work will need to be done to accelerate investment into manufacturing processes and increase awareness of the product.

2.5.4 Drain Water Heat Recovery (DWHR):

This technology captures the waste heat from hot water that goes down the drain via a coil containing the inlet pipe wrapped around the drainpipe. Retailers such as Lowes and Home Depot sell three of the biggest names in this market which are Power-Pipe, Thermodrain™, and Ecodrain™. The average cost for a DWHR unit is in the hundreds of dollars, ranging from \$500-\$900 per unit.

2.5.5 Gas Fired Heat Pumps:

Gas fired heat pumps use a small, natural gas-powered engine to run the compressor and pump system on a heat pump. They offer up to 50% more efficiency than high efficiency furnaces. According to a technology rollout road map produced by GTI in November 2019, the short-term goal includes rolling out products for use in residential homes by 2025, with a long-term goal beyond 2025 for cost effective unit availability to the new home market. In conjunction with the California Energy Commission, GTI found gas fired heat pump water heaters could provide 60-65% savings over gas storage tanks, and savings of 30-35% over Tankless Water Heaters.

2.5.6 Standards and Codes:

Cascade continues to monitor the status of DOE rulemakings as they pertain to appliance standards for condensing and non-condensing equipment. On Jan. 15, 2021 the DOE determined condensing and non-condensing equipment constitute two equipment classes subject to separate efficiency standards. This is based on the understanding that non-condensing units provide performance features not provided by condensing units as the performance features are related to installation complexity. As



of August 27th, 2021, the DOE is reviewing this ruling to determine whether the performance features are legitimate and not related to the cost of installation which “Stated differently, DOE has tentatively determined that differences in cost or complexity of installation between different methods of venting (e.g., a condensing furnace versus a non-condensing furnace) do not make any method of venting a performance-related feature”⁷. Further “When this proceeding is complete, DOE plans to again evaluate whether amended energy conservation standards would result in significant savings of energy, be technologically feasible, and be economically justified, consistent with its latest interpretation”⁸. As condensing gas space and water heating equipment comprise most energy savings from the Cascade EEIP, it is imperative any update to efficiency standards is addressed in CPAs to set energy savings goals for the program.

The 2018 WSEC, adopted February 1, 2021, will impact energy savings from new homes in 2022 and 2023. Please refer to section 6.3.1 *Builder Outlook* for more information regarding possible impacts. Outside of the 2018 WSEC Cascade does not anticipate additional code or appliance standard updates that will impact program offerings this biennium. The next code update is anticipated in 2024, aligned with Washington State’s adoption of the 2021 International Energy Conservation Code.

⁷DOE DOC ID: EERE-2018-BT-STD-0018-0123 (<https://www.regulations.gov/document/EERE-2018-BT-STD-0018-0123>)

⁸ DOE DOC ID: EERE-2018-BT-STD-0018-0123



3. Biennial Strategic Plan

The Company frequently re-evaluates its program offerings in the changing context of Avoided Costs, building codes and ENERGY STAR® updates. This approach is consistent with how technology efficiencies advance within the market (i.e., market transformation). Additionally, changing environmental drivers at the federal, state, and local levels all affect rebate eligibility through utility programs and even more so in this evolving GHG reduction environment. The Company's 2020 IRP provides information on environmental policies⁹ that play a part in driving Company efforts toward increased efficiency outside of the goals set within the LoadMAP model. CY 2021 involved regional discussions as to implementation of legislation passed in 2019 and much of those requirements go into effect in CY 2022

The following section provides a synopsis of current program offerings and context on strategic planning efforts for the biennium in addition to proposed rebate updates in Exhibit 1. These updates are intended to meet therm savings goals, contribute to CO₂ emissions avoidance, and engage the communities within Cascade's WA territory to make optimal, efficient near-term and mid-term energy services decisions as part of legislation and customer-focused continual improvement cycles.

As discussed with AEG and the CAG, LoadMAP was neither designed nor intended to model economic scenarios. As a result, the economic impacts of COVID-19 on the overall potential are indeterminate, however AEG did calibrate some of these impacts on the baseline forecast to match expectations from Cascade's Resource Planning Team¹⁰. Impacts to consumer behaviors and supply chain availability are expected to continue through 2022 and into 2023.

3.1 Current Portfolio of Measures

The Company offers a robust set of rebates to its customers as a means to acquire all available and cost-effective energy efficiency opportunities. A comprehensive list of current program offerings, existing rebate amounts and proposed changes for the biennium is available in Exhibit 1, however the following synopsis is provided as an outline of the program at the start of CY 2022; existing residential offerings are also available at www.cngc.com/energy-efficiency/residential-rebate-offerings/.

⁹ Cascade Natural Gas 2020 Integrated Resource Plan Chapter 6: Environmental Policy pg. 6-1 through 6-30.

¹⁰ 2020 Cascade Natural Gas Conservation Potential Assessment Phase 2 Final Report – Applied Energy Group Volume 1 pg. 39



3.1.1 Residential Program Offerings

Customers receiving service from Cascade on a 503 rate schedule are eligible for the Company's Residential EEIP. Energy Efficiency incentives available through this program are categorized based on the age of the home, meaning some incentives target new home construction, some existing homes and others are applicable to both. Rebate eligibility is also dependent on existing equipment and building efficiencies requiring certain conditions be met to receive a rebate as these rebates are based on appliance standard requirements and estimates of savings above code. Additional requirements and restrictions apply for both the Residential and C/I program and are available for review on the Company's website under EE Terms and Conditions.

The Company currently offers two rebates for New Home Certifications, one for an ENERGY STAR certified home and one for Built Green Certified home. A new home may qualify for either of these incentives if it meets the certification requirements, although a home would not be eligible for both.

New and Existing home rebates are offered for furnace upgrades, fireplaces, combination radiant heat systems, condensing tankless water heaters and condensing boilers assuming the installations meet the minimum qualifying efficiency.

Residential incentives offered solely to existing homes include programmable thermostats and insulation upgrades including floor, wall, attic, ceiling, and duct insulation. Home eligibility for weatherization updates is dependent on the premise falling below a maximum preexisting condition and reaching a minimum improvement level post install. This program also offers rebates for windows and duct sealing as well as whole house air sealing. Cascade offers two additional incentives to customers to encourage a whole-home approach to home improvements. These bundles, or add on rebates, are provided in addition to the standard incentive and are available when the following criteria is met: Bundle A for \$250 requires a minimum of 1,000 square feet of insulation installed and any two of the following measures are upgraded simultaneously (floor, wall, ceiling, attic insulation or air sealing). Bundle B- the same conditions apply as for Bundle A, however, to qualify for this \$500 additional incentive air sealing and two insulation measures must be installed simultaneously.

3.1.2 C/I Program Offerings

Customers served by Cascade on rate schedules 504, 505, 511 and 570 are eligible to participate in the Company's Commercial and Industrial EEIP. This C/I program has two savings pathways available to customers. One is through the prescriptive rebate offerings composed of a preapproved list of upgrades and rebate levels based on deemed energy savings. The second pathway is offered as a custom engineering



calculation where multiple factors are incorporated into estimating the savings based on property characteristics and energy usage.

The prescriptive C/I EEIP offers four subcategories of rebates: Heating, Kitchen Equipment or Appliances, Weatherization and Water. Each category includes multiple options and eligibility is determined under similar parameters as the Residential program, meaning equipment must meet minimum efficiencies, weatherization upgrades are available for retrofit installs only and the customer must heat their water and/or space with natural gas. As with the Residential program baseline assumptions play a key role in determining rebates so the program holds strictly to its terms and conditions and efficiency requirements. The C/I prescriptive program uses rebate calculations that differ slightly from the Residential program and are noted both online at www.cngc.com/energy-efficiency/commercial-rebate-offerings/ and in Exhibit 1.

Heating Incentives available through the standard program include warm air furnaces, HVAC unit heaters, boiler vent dampers, boiler steam traps, demand control ventilation and condensing boilers. Kitchen equipment and appliances include gas steamers, griddles, dishwashers, ovens, and gas fryers. Weatherization measures include windows, attic insulation, roof insulation, wall insulation, floor insulation and hot water pipe insulation. Water heating and saving rebates include a pre-rinse spray valve, domestic hot water tankless water heaters, domestic hot water recirculation controls, motion control faucets, domestic hot water tanks and ozone injection laundry systems.

Bundle and save options are also available to C/I customers if two insulation measures are installed and a minimum 1000 square feet of insulation is reached for \$500. Also, if a customer installs two pieces of qualifying kitchen equipment an additional \$300 is available and \$500 if three pieces are upgraded simultaneously.

As mentioned, the C/I program also offers a custom pathway for efficiency. The Company's C/I implementation vendor TRC Companies works with each individual customer to determine eligibility, provide a custom offer, and verify installation and operation prior to incentivization. In addition, if a C/I customer's property falls outside of the deemed energy savings criteria for a prescriptive rebate a custom offering may be calculated to more accurately determine savings potential and establish rebates. Customers requesting custom incentives for site-specific energy efficiency measures must submit estimated costs and natural gas savings associated with the project. Natural gas savings are then calculated using standard engineering practices. Cascade reviews the natural gas savings calculations and reserves the right to modify energy savings estimates.



3.2 Key Strategies for the Biennium

Cascade has identified key strategies to build upon and improve the EE programs this biennium. These strategies include some ongoing activities from previous years and new tactics including an internal reorganization, a deep dive into technology and partnering opportunities between standard natural gas appliances and renewables, resiliency, pilot opportunities, focused promotions, NEEA savings assumption reviews, expanded EM&V, custom residential program support, an expanded TA network and increasing public participation.

3.2.1 Internal Reorganization

The Company's EE programs will have a twin focus on customer education and energy services optimization in light of a recent integration with MDU Group's Intermountain Gas Company to form MDUG's Western EE Department. This internal integration supports leveraging and increases available resources for Cascade's EE programs by expanding available staff and providing context on regional and national EE. At the same time, Cascade is evaluating internal solutions for cost-effective rebate processing software and will spend time in 2022 researching opportunities within its parent company and sister utility EE efforts.

3.2.2 Scanning for Emerging Technology Pilot Opportunities

With the increasing media attention on carbon emission mitigation, Cascade will also engage in cross-functional efforts to promote the responsible use of gas (natural and renewable) in conjunction with other renewable energy resources, including but not limited to solar, wind and ground source heat pumps. This may include pilots in coordination with electric providers for joint renewable/high-efficiency natural gas measures.

In addition to the hybrid natural gas/renewable opportunities there are two features of particular interest in the emerging technology sector:

The first is resiliency; keeping customers served with hot water in the event of a power outage. High-efficiency tankless water heaters paired with small battery back-ups can provide up to seven days of hot water. GHPWH, expected on the market in 2023, will operate at efficiencies greater than 100% and also support this technology.

The second feature is the ability for gas heat pumps to provide both heating and cooling. Currently available gas fired VRF heat pump systems provide efficient heating and cooling performance for small commercial applications, using natural gas in the place of an electric motor to reduce peak electric demand and lower operating costs. Emerging gas heat pump technology for residential applications will also include options providing



both heating and cooling, expected on the market in 2025.

Cascade is currently pursuing a level 2 ASHRAE audit which may provide the chance for the Company to pilot some emerging technology in the commercial equipment space. Of note, Cascade has been in discussion with NEEA regarding pilots for a 5-ton Moline condensing and heat recovery RTU or a dual fuel heat pump. These opportunities to have hands on experience with emerging technology would equip Cascade to help commercial customers explore options for reducing energy use intensity (EUI). This is of particular interest as commercial buildings are subject to EUI standards pursuant to The Clean Buildings Act (HB-1257).

3.2.3 Targeted Promotions

The C/I program had a fryer giveaway in 2021 to promote interest in high-efficiency food service equipment. This pilot effort was successful in getting C/I customers to express interest in the program by reaching out directly for entry and additional information on program offerings. Cascade is considering a similar initiative for the Residential program in 2022 to promote high-efficiency equipment installs and customer satisfaction.

3.2.4 Market Transformation Savings Allocations

The NEEA gas market alliance is halfway through its second 5-year cycle. The Company continues working with the alliance on the operation plan activities for cycle 6 (2020-2024). CY 2019 and 2020 provided minimal reportable savings as market transformation activities typically see savings after significant time has been spent on maturing the technology and informing the market. The Alliance efforts are starting to come to fruition and CY 2022 is estimated to realize significant savings through NEEA's code work. As these savings become more impactful the Company will work with its CAG on cost allocations for the NEEA partnership and determine how to report the savings.

3.2.5 Improvements to the Rebate Process Software & eM&V

Resource Innovation's iEnergy rebate software for the Residential, Low-Income and Trade Ally programs was renewed in 2020. The Company will implement iEnergy's new Public User Experience (PUX) in 2022 to enhance the online application process for customers to coincide with the transition to a new Trade Ally Software platform in 2021. The evaluation Measurement and Verification (eM&V) program within iEnergy is available for the Company's use which enables Cascade to perform more internal eM&V. This allows the Company to analyze actual program participation savings compared to deemed savings. With this tool in place the Company has a significant dataset to work from and will engage with its CAG on next steps for ongoing third-party EM&V starting in 2022.



3.2.6 Custom Residential Program Kick-off

In 2021 Cascade started to explore a form of customized incentive support through the residential programs. Historically custom offerings have been supported only through the C/I program based on the administrative burden associated with customizing calculations and savings. As there are significantly more residential participants it has been prudent to minimize admin burden and follow industry prescriptive practices through deemed savings offerings. While this model simplifies program delivery it risks leaving savings on the table for residential projects and prohibits some customers from having access to cost-saving options for efficiency upgrades as they don't fit into specific criteria set to accommodate the majority of residential customer situations. This results in a lost opportunity to save customers significant therms through proven technology upgrades (residential roof insulation for example). The Company will continue to research software available for residential project cost/benefit calculations, similar to the Department of Commerce software used for the Low-Income program as well as that used by its C/I vendor to run analyses. Cascade will coordinate with the CAG to review logistics including tariff requirements, staffing needs and clarification on when a custom residential offering could be provided. One item to note, this effort will likely require a dedicated engineering resource for building assessments and compliance to support a custom residential element which was a barrier to implementing a custom residential program in 2021.

3.2.7 Expanded TA Network

The Company also has two potential improvements to its offerings to the TA network in 2022/2023: establishing an efficient window TA network to expand and ease the customer experience away from complicated window documentation and designing a TA-specific application to reduce missing information issues to improve customer satisfaction and processing time.

3.2.8 Improving Public Participation Rates

The company is also committed to improving public access to EE planning processes including posting CAG agendas and meetings on its website as well as posting the BCP and CPA once approved. The Company is also exploring ways to encourage more members of the public to participate in its Advisory Group discussions. Additionally, Cascade is working on improvements to public access by including an online company-wide EE Energy Audit Calculator to provide a rough estimate of residential savings as customers explore upgrade options.

3.2.9 Point of Sale Rebates

In 2019, Cascade started a Point of Sale (POS) pilot to offer instant rebates to customers

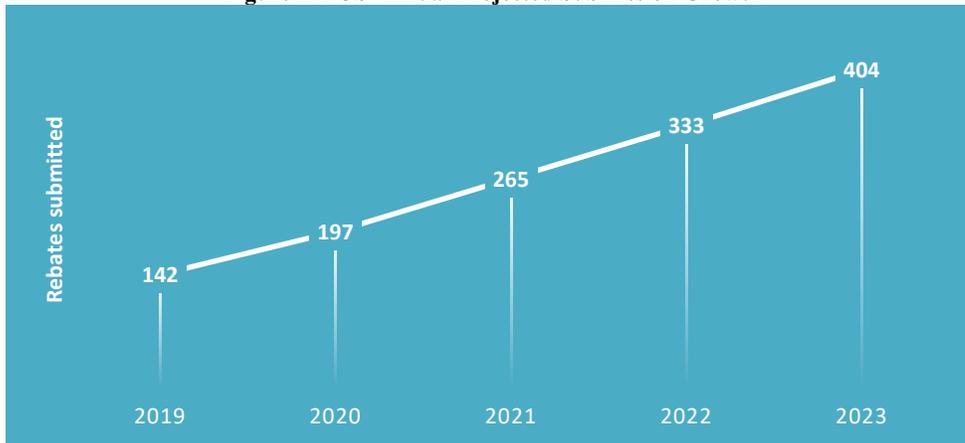


through partnership with a select set of TA contractors. The instant rebates are intended to benefit everyone involved in the application process. In 2020, the POS instant rebate process successfully moved out of the pilot phase and into a standard offering for TA contractors.

As of 2021, fifteen contractors across the service territory have committed to offer POS, with TAs available in each climate zone, although, the majority of participants are still located in Zone 1. The program growth was hampered by COVID-19 restrictions in 2021, however TA recruiting will resume in 2022 with more shop visits and contractor engagement as well as networking during trade events. Cascade will prioritize Zone 2 and 3 recruitment as well to offer customers more options. EE will also collaborate with the Energy Services department to create more TA awareness of POS program benefits.

Due to COVID-19 limitations, the program experienced a slowdown for a few months in application submittals, but residential contractors have rebounded from that initial interruption to workflow. The program experienced an average 35% growth each year and the Company expects 2022 and 2023 to continue this trend, see Figure 2 for submission growth and POS forecast for the biennium

Figure 2: POS Annual Projected Submission Growth

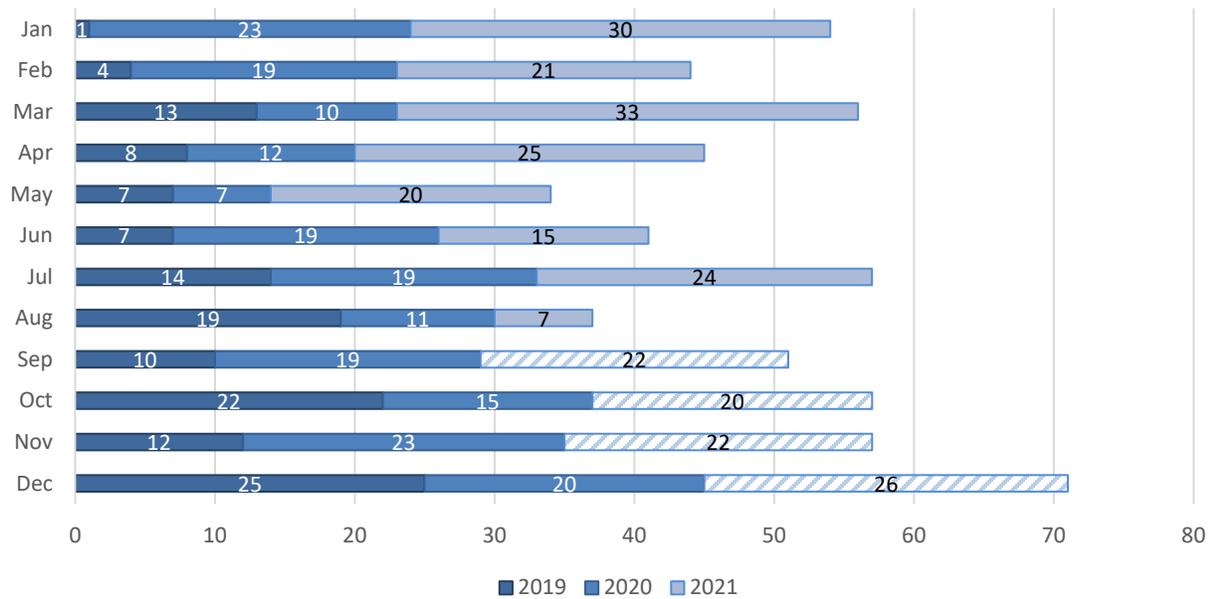


As Figure 3 shows, 2021 submissions remained steady and Q4 is projected to continue growing based on the previous 2-year average¹¹.

Figure 3: POS Rebate Submission

¹¹ Applications accurate as of 9/15/21





Cascade previously relied on in-person or phone communication with these contractors, but a remote work environment has in some ways made it easier to communicate with contractors in the Company’s harder to reach service zones. For instance, Zone 3 continues to have the fewest participating contractors; therefore in 2022 Cascade will work to increase participants in eastern Washington (Zone 3).

TAs remain the first level of contact customers have in communicating energy savings opportunities and this becomes more important as Cascade’s therm goals grow. Increasing the number of contractors offering instant rebates will help achieve larger goals so actively recruiting TAs to offer Point of Sale rebates is included in the 2022-2023 Trade Ally engagement plan. Other elements of the TA engagement plan include updated TA benefits, bonus coupons, inspections, cooperative outreach and time sensitive promos.

The Company will also review whether a POS for new home builders is viable as it could reduce administrative barriers for submitting and promoting high-efficiency gas measure installations in new construction.

3.2.10 Review of Program Non-Energy Impacts

As part of the previous Assessment AEG estimated TRC potential, with a focus of fully balancing non-energy impacts and non-gas fuel impacts like electric cooling or wood secondary heating consistent with the methodology within the Seventh Power Plan from the NWPCC. Even with this focus AEG noted the UCT was a more realistic valuation of program cost-effectiveness because of the difficulty in fully monetizing and quantifying these NEIs. The Company revisited the NEI assumptions within the 2020 CPA with its



CAG and again for the BCP measure review to establish program recommendations for the biennium. See Table 6 for NEIs reviewed as part of the 2020 CPA.

Table 6: Non-Utility RVT Impacts Considered for the 2020 Cascade CPA

NSPM Section	Non-Utility Impact	Recommendation	Description
3.3.2	Participant Impacts	Consider in Future	The more tangible benefits are already captured in the sections below. May include intangibles such as comfort and productivity if the Commission provides a recommendation.
3.3.3	Impacts on Low-Income Customers	Include Low-Income Measures in Model	The benefits of low-income energy efficiency programs are well-recognized and have been included in other jurisdictions around the country. We recommend including a tailored set of low-income measures in LoadMAP and applying a benefit-to-cost ratio adder to these measures, which may allow them to pass with an RVT ratio of less than one.
3.3.4	Other Fuel Impacts	Include	AEG recommends capturing the benefits from secondary fuels for measures where natural gas measures may have an impact. For weatherization measures, this would include a reduction in wood fuel use and/or the impact on electric cooling in the summertime.
3.3.5	Water Impacts	Include	Water impacts are already monetized for RTF and Seventh Plan measures. AEG recommends including these and expanding to non-RTF measures if appropriate.
3.3.6	Environmental Impacts	Carbon already included in Utility Avoided Costs	A carbon credit is already included in the avoided cost of energy used for this analysis.
3.3.7	Public Health Impacts	Exclude	Due to the potentially large impacts and variance in existing estimates, AEG believes that this category should be quantified at a regional level for use by all investor-owned utilities. AEG will add a placeholder within the LoadMAP model to be updated in should the Commission provide a recommended value for this category.
3.3.8	Economic Development and Jobs	Include	These impacts include both the use of conservation as a vehicle for job growth/job retention and an increase in a customer's disposable income and are of interest to both Cascade and the Commission.
3.3.9	Energy Security	Risk is already included in Utility Avoided Costs	Reliance on volatile energy markets is already reflected in the avoided energy costs as a risk premium adder.

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Once the CPA was finalized the Company once more met with AEG to review the savings reporting structure of its annual report program worksheets where NEIs were previously incorporated into both the Avoided Cost calculations at the portfolio level and measure

¹² Pulled from 2020 Cascade Natural Gas Conservation Potential Assessment Phase 2 Final Report – Applied Energy Group Appendix pg. C-2



level in the form of Societal and Participant adders. The programs were using two basic types of NEIs, namely Societal and Participant benefits in its TRC Benefit Cost calculation. No utility side benefits were included in the calculation as are sometimes included in these analyses. Upon review with AEG and the Company's third-party C/I program implementor TRC Companies, the calculations were updated. A synopsis is included in Table 7, additional context around the NEI updates is also available in the Appendix and will be reviewed further with the CAG as part of the annual reporting process in Q1/Q2 2022. NEI calculations are also available for reference in the work papers for the BCP.

Table 7: NEI Updates to Program Reporting

Cascade NEIs Updates	Action Taken	Measure level	Portfolio level	Avoided Costs	Notes
Societal NEIs					
Economic Impacts to the Community	Removed	x			AEG recommended removal of all societal NEIs at the measure level as they are accounted for within the Avoided Costs through the 2.5% SCC
Carbon Offsets	Removed	x			
Social Cost of Carbon	Added			x	
Participant NEIs					
Property Value Benefit	Removed	x			Removed in lieu of the Non-Quantifiable NEI 10% adder
Reduced Maintenance Cost	Maintain	x			Maintained as they align with industry best practices
Water/Sewer Cost Reductions	Revised				Revised - confirmed inclusion dishwashers, motion faucets and Savings Kits
Non-Quantifiable NEIs	Revised		x		AEG recommended updating to a base 10% adder in alignment with industry practices to capture these impacts

3.2.11 Intake and Missing Information (MI)

The Company performs consistent Intake and MI analysis which drives improvements in automated processing. Cascade's EE team continues to see steady growth to the residential rebate program application submission rates. In 2020 the residential program received 3,551 applications via direct mail, faxes, emails, POS, and applications

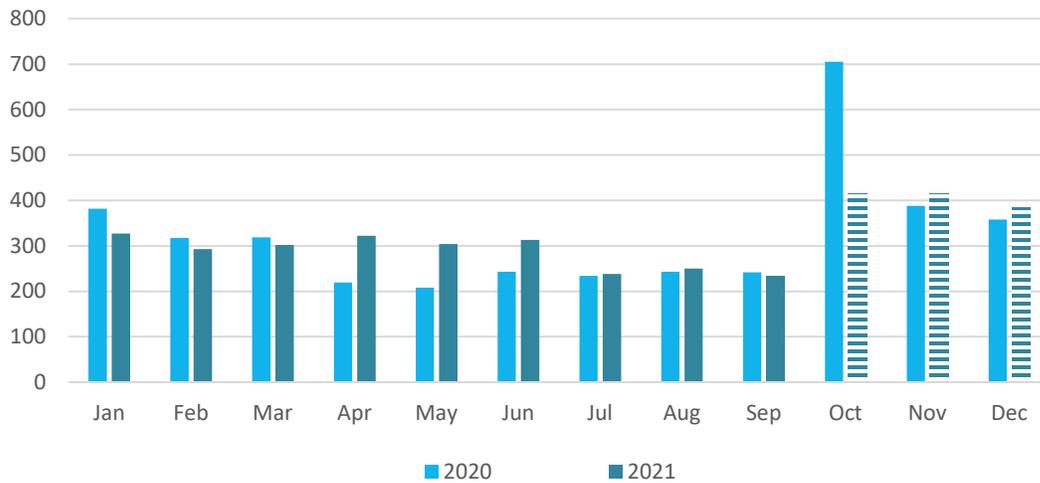


submitted through the Cascade online Public User interface.

The 2021 year started off almost as strong as 2020 receiving 328 applications in the month of January. The program historically experiences a slowdown in February and then picks up again in the spring. During the summer months the program experiences a second slow down and picks up again during fall and winter.

In the first quarter of 2021, the residential program received almost as many applications as in 2020, prior to the pandemic and the second quarter continued to receive more than 300 applications per month. While the third quarter slowed, the program continues to meet or exceed 2020 levels. Although the new home program may see a decrease in applications due to WSEC, Cascade is still receiving builder submittals as of Q4 2021 and expects this to continue into 2022, see Figure 4 and 5.

Figure 4: Received Applications 2020 - 2021



Applications submitted via traditional mail, fax, email, POS, PUI and walk in



Figure 5: Monthly Intake Plus 2021 Q4 Forecast



To reduce the burden of MI projects Cascade plans on working on an invoice template for Trade Allies to use, with specific space for the TA to list the required information for the rebate program and aid rapid processing. This includes designated inputs for model numbers, serial numbers and pre and post install R-values for insulation or U-values for windows.

Continued tracking of incomplete projects presents opportunities for improvements to the program in real time, updates to improve understanding and reduce customer dissatisfaction with the application and promotes messaging that further alleviates the amount of MI projects submitted to increase program efficiencies.

3.2.12 Quality Inspections/ Quality Verifications

The Company adapted to the revised remote environment introduced through COVID-19 by adopting a new structure for reviewing work completed by contractors:

Quality Verifications (QV)

These verifications can be completed virtually, utilizing a software subscription purchased in 2021. Through this software the Company targets eight to 10 QVs per month. Cascade staff verify equipment measures including natural gas furnace, tankless water heaters, fireplaces, boilers, windows, entry doors and combination space and water heat systems. This process allows the Company to check equipment location, proper venting, model numbers and serial numbers. This process is ideal for viewing projects in-progress and coordinating with TA's.

Quality Inspections (QI)

In-person, onsite QIs are performed for insulation measures, random selection, red flags



and for projects receiving a residential rebate of \$5,000 or more (health and safety considerations allowing). While many of the program's measures allow for QV, insulation measures require on-site inspection due to the location and accessibility. For example, when floor insulation is installed, it is fastened to the floor from below in the crawlspace, thus the QI requires the insulation (attic, floor, wall, duct insulation and duct sealing) be viewed from below with the inspector checking for depth of insulation and ensuring substantial contact with the subfloor. Frequency of in-person on-site QIs depends on the number of insulation measures completed, disbursement of rebates over \$5,000 and other randomized projects or those with apparent anomalies.

The Company made the QV software available to both third-party contractors who support verification and inspection on behalf of Cascade. Sustainable Living Center (SLC), the contractor providing review of Residential work completed in Zone 3, has access to the software. Although SLC has yet to perform QV using the software, EE staff will support use of the software in 2022. TRC Companies the C/I program implementation vendor performs verification and inspection of projects in all three Cascade Climate Zones and, although in-person QIs are more common, QV is also available.

Residential Inspection Criteria

- All residential incentives in excess of \$5,000 are inspected
- New TAs are selected for inspections so EE staff can assist with adherence to program requirements
- Customer complaints or concerns
- Staff can inspect projects based on complexity or anomalies
 - Staff will select projects for inspection randomly with project eligibility confirmed prior to the inspection

C/I Inspection Criteria

- Radiant Heating, Condensing Boilers, Domestic Hot Water Tankless and Insulation measures incentives of \$10,000 or more
- All other industrial incentives of \$5,000 or more
- Custom projects receiving a rebate of \$5,000 or more
- New TAs are targeted for inspections until they establish a precedent
- All insulation installed by facility staff vs insulation contractors
- Staff will select projects randomly

Cascade is also looking to leverage the QV tool as a means to offer walkthrough energy



auditing. Energy audits can provide a pathway for business and homeowners to understand how and where they use energy and are a service Cascade has yet to offer its customers due to upfront costs and resource requirements. Energy audits can be categorized into 3 broad types:

Walkthrough Audit – Inspection of a building to identify maintenance, operational or deficient equipment issues and to evaluate areas that need further review. The results of a walkthrough audit include identification of EE opportunities, a qualitative analysis of energy saving measures and an estimate of savings potential. Project feasibility is included.

Energy Diagnosis – Economic calculations to identify actual energy consumption and losses. The results of Energy Diagnosis include energy use breakdowns and financial analysis for each measure to categorize and prioritize implementation of the measures.

Investment-Grade Audit – Analysis of capital-intensive improvement using rigorous engineering analysis. This type of audit is a qualitative study of implementation with detailed investments, operational and maintenance costs. The results of an Investment Grade Audit include real energy demand and energy use breakdown. This audit supplies a financing plan as well as implementation and savings verification plans.

Cascade was delayed in 2021 due to COVID-19 but would like to provide walkthrough audits and possibly energy diagnosis audits in the new year.

3.2.13 Commercial/Industrial Updates

The Cascade C/I program foresees several opportunities for pilots and regional partnerships in the biennium.

The Company plans on exploring efficiency opportunities as a means to improve air quality in buildings, specifically C/I buildings through radiant heaters (possibly in conjunction with insulation), air curtains and high-efficiency particulate air (filter) purifiers to reduce outside air requirements.

With the recent change to appliance code standards resulting in the removal of a natural gas fryer rebate, Cascade is now exploring offering an inefficient fryer buyback program. This offer would be similar to the refrigerator recycle programs offered through regional electric utilities and would focus on discouraging resale of second-hand, less efficient fryer models. Program offerings need further clarification; however, it does provide an opportunity to work through local food service vendors to remove and recycle the



equipment.

Cascade is also reviewing its third-party implementation model for the C/I program and will discuss options for revising it with the CAG for the 2023 program year, either through a Request for Proposal from multiple implementors or expanding internal delivery services.

Midstream Tankless Program - The midstream program should continue through 2022, with permanent adoption likely in 2023. Launching in August 2020, mid-pandemic, uptake on the program was slow. Although four distributors enrolled in the program, the supply shutdown has slowed delivery of this equipment likely until 2022. Continuing the program through 2022 should provide a foundation for the Midstream tankless program to move from pilot status to program staple capturing a step in the distribution process frequently missed in the supply chain for Cascade's C/I customer base.

Radiant Heating/Insulation Bundle – While both measures continue to grow individually, many C/I buildings could benefit from an increased, combined incentive. While not a traditional “pilot”, like the Re-COV-ery incentive in 2021 (see **6.5 Commercial Focus**) this could be used as an adaptive management strategy to temporarily increase uptake in 2022.

3.2.14 C/I Regional Partnerships and Market Approaches

Foodservice - The C/I program continues to build bridges with other utilities, though with changes in other programs and measures being offered, this sector will look different in 2022 and 2023. The partnership with six other utilities (Puget Sound Energy, Seattle City Light, Tacoma Public Utilities, Snohomish County PUD, Seattle Water and Tacoma Water) on a joint application for kitchen equipment will cease in 2022. The C/I Program is well positioned to adjust to this change, as it has established relationships with all vendors who have completed applications in the past year. Despite the change, the C/I program will continue to coordinate with these utilities on joint walkthroughs and partnering on projects in 2022 and 2023.

Pacific Power – While contractor trainings were canceled in 2021 due to COVID-19, the C/I program plans to continue to partner in contractor trainings in Yakima and Walla Walla with Pacific Power. These trainings traditionally focus on program updates, new opportunities, and program review, but have more recently included trending technologies where customers can take advantage of incentives from both programs.

Joint Utility Advanced Rooftop Control (JUARC) - The C/I program is currently participating in the JUARC offerings with Puget Sound Energy, Seattle City Light, Tacoma Public Utilities, and Snohomish County PUD who all incentivize rooftop HVAC



equipment. The C/I team leverages the demand control ventilation (DCV) controllers offered through this program whose prequalifying conditions are met by the JUARC technical specifications allowing these regional utilities to align. Most of Cascade's DCV control projects have come from customers already participating with the electric utilities in the JUARC program and offer significant room for increased uptake.

Walkthroughs - While walkthroughs have been nearly non-existent since February 2020, they are expected to return in 2022 and 2023. The C/I program will focus on these opportunities to partner with electric utilities on future walkthroughs.

SEM – This was identified by AEG in the 2020 CPA as a measure with C/I savings potential. Developing and launching a successful SEM program will take coordination with the other utilities in Cascade's territory. Though SEM is less frequent with gas-only utilities, it is popular with electric utilities. The C/I program has already begun exploration of beginning an SEM program and expects to start by coordinating with Puget Sound Energy on cohorts in early 2022. Through these cohorts and continued exploration with customers, the C/I Program will determine how best to launch a full-fledged SEM program.

Architects - The C/I team has been developing relationships with architects to get out in front of proposed new construction and retrofit projects. This approach offers the opportunity to influence equipment decisions at an early stage of construction. This strategy is critical to achieve increased goals and adapt to the changing marketplace

3.3 Usage Benchmarking

In preparation for the WA Clean Buildings Law's mandatory energy benchmarking for commercial buildings in 2021, Cascade closely standardized its customer experience and data sharing for energy usage benchmarking with overlapping service territory utilities. Through collaboration with designers and feedback from ENERGY STAR, the Company updated its process to match its industry peers. As more customers reach out to Cascade for benchmarking data, the EEIP intends to make the requirements and experience consistent for customers as they work with others to track building data.

The EEIP currently offers monthly energy usage requests for inquiries related to energy efficiency projects, energy audits, and carryover usage requests from previous benchmarking programs. Standardizing the method for usage requests across the company ensures customers get the information they need in the correct format and educates internal staff about the EEIP. The Company is constantly striving to improve and streamline usage requests, especially as they become more common due to increases in ENERGY STAR certifications, local law requirements or the addition of an Energy Manager to a company's portfolio.



Updates to Cascade’s website and support documents provide clear instructions for customers to learn more about the state requirements as well as other available efficiency steps.

The Company expects an increase in usage requests in the next five to seven years as commercial building owners are informed that they will need to monitor, report, and reduce their energy consumption. Cascade is dedicating resources to improve the process with room to grow, and planning for collaboration across departments and utilities to better serve the customer needs.

Cascade will take the opportunity from these benchmarking requests to educate and encourage participation in its other efficiency incentive programs. As building efficiency becomes more of a front and center concern for owners, Cascade will leverage those opportunities to learn what other incentives are needed based on existing conditions, planned retrofit projects, and upgraded measure requests. Piggy backing on other WA marketing campaigns will aid in efficient behavior change and result in more uptake in efficiency participation.

Cascade has laid the groundwork for its sister utilities to utilize the tool as it led the integration of ENERGY STAR’s Portfolio Manager platform with Company information services offerings. Intermountain Gas, Montana-Dakota Utilities and others now have the internal integration guidelines to offer similar benchmarking and usage tracking services to their customers, thus standardizing processes across neighboring regions and utilities.

The Company also intends on extending its use of Portfolio Manager tools to regional compliance reports, GHG emissions intensity reports, and historic usage information for EEIP opportunities with customers. Integrating different departments or creating new staffing roles to take advantage of the data provided by customer benchmarking offers opportunities to help commercial outreach staff create focused marketing campaigns or recommend incentive opportunities to specific customers.

The Company’s incentive plan development, specifically to participation in the WA Clean Buildings Early Adopter Incentive Program, will occur in the latter half of 2022 and early 2023 as customers begin to submit their efficiency plans to participate in the Department of Commerce Incentive Program. Since customers are able to take advantage of Cascade’s C/I EE incentives as well as the Clean Buildings funds for qualifying improvements, the Company can market to other smaller commercial customers that are



not mandated to comply but are now aware of efficiency retrofits.

Collaboration between departments and utility branches for the success of the incentive program will open opportunities for other collaborative projects that may not have previously been obvious – such as between EEIP and fiscal, or business development.

3.4 Planning and Evaluation, Measurement & Verification (EM&V)

Cascade’s CAG recommended the Company conduct internal, transparent eM&V of its EE program in between third-party EM&V studies. Cascade and Nexant developed an internal, ongoing eM&V for a predefined sample of Washington Cascade residential customers who have participated in the EE rebate program and have one year of pre- and post-installation energy usage history. Due to the narrow scope and expected small sample size, a lower case “e” is used to differentiate this analysis from the more comprehensive, third party evaluation planned throughout 2022 and 2023.

Process evaluation plays an important role in the overall context of a program evaluation. The primary purpose of the eM&V is to develop accountable recommendations for program design and operational changes that can cost-effectively improve program delivery.

After the pilot implementation of the customer survey was deployed in 2020, an updated process was created to contact customers with incentives received in 2019 via phone and email. Through early trials, different times and days of the week were tried for best customer reception of a 5-minute conversation, and end of the day, as well as end of the week yielded the best results. For customers who did not answer the phone, a voicemail and email link were sent for them to fill out an online survey form of the same 15 questions offered by phone.

EE worked closely with Nexant to revise and standardize the terminology and statistical analysis, resulting in a clearly documented t-Statistic methodology for pre- and post-installation usage hypothesis testing. The aim is to have a fully functioning, accurate, timely, and useful eM&V platform by Q1Y22.

Based on available resources, the Company strives to hit 75 customer results by the end of 2021 providing analysis testing for early 2022. Assuming working program tools, 2022 will strive for 100-200 results for a more thorough program view. EE would prefer a larger sample size from the primary data, approximately 3,000 customers annually, but there are multiple factors which will cause a project to be ineligible, either through the project specifications or the customer survey results. These include, but are not limited to:

- Less than twelve months' pre- and post- installation usage



- Interactive measures installed at the same time precludes attribution of the savings to individual measures
- Customer moved
- Customer residence was renovated
- Customer occupancy changed

There have been several system hurdles that are expected to be rectified by early 2022: accurate and complete 12-month usage records, project profile data, and a statistical confidence calculation. Due to software corrections and delays in activation of the survey, just over 30 customers beyond the initial 20 pilot results were contacted by Q3 CY 2021. The company has achieved just over a 50% survey completion¹³ rate in the short trial in 2021 indicating a higher-than-average survey success rate leading into 2022. The process schedule was solidified in the latter part of 2021 and based on available resources, customer surveys via phone and email will begin in earnest in 2022.

Preliminary data indicates all participants surveyed were satisfied with their rebate experience with 76% ranking extreme satisfaction or higher, 70% confirming the rebate amounts are appropriate, and 63% confirming the availability of the incentive contributed to their decision to install high efficiency equipment.

A third-party EM&V assessment would ideally occur in an alternate year between the BCP, and the EM&V timeline is under review by the Company. To this end the BCP budget has a placeholder in place for EM&V in later 2022 or early 2023.

In the meantime, CNGC's internal eM&V will provide context for specific focus areas to assess during the third-party EM&V. Residential customer profiles and behavioral insights gleaned from eM&V survey results will be used as a basis to synchronize EM&V objectives with EE programmatic goals. During 2022 and 2023, management will develop the EM&V strategy and scope and consider an integrated approach to leverage EM&V activities for similar programs/subjects on a regional basis, minimizing rate-payer costs.

3.5 Washington Low Income Program

Cascade partners with Washington's low-income weatherization providers to deliver the Low-Income Weatherization Incentive Program (WIP). The WIP provides rebates to low-income agencies delivering home energy improvements to eligible Cascade customers. The traditional WIP covers the installation of certain energy-efficiency measures

¹³ 53% survey answer by 8/31/21. Of those answered, 71% by phone, 29% online.



following the completion of a home energy evaluation performed by a qualifying Community Action Agency or Low-Income Agency. Calculations for rebates are based on the projected annual therm savings of the measure(s) x 100% of the Avoided Cost per therm. As of July 22, 2020, Cascade clarified the language in Tariff 301 indicating the Avoided Cost per therm is based on the Company's most recently acknowledged IRP, consistent with WIP rules and Company practice.

The WIP is supplemented by the Enhanced Low-Income Weatherization Incentive Program (EWIP) which took effect on February 1, 2017. The WIP provides funds to agencies based on the Avoided Cost of tariff-eligible weatherization measures installed in a customer's home. Under EWIP, participating Agencies are also eligible to receive a rebate designed to bridge the gap between the Avoided Cost payment and the total installed cost of the approved weatherization measure. Installed cost includes incidental repair work necessary to the installation of a qualified measure. A memorandum of understanding with an estimated number of annual projects is required for each Agency interested in participating in EWIP.

On August 1, 2018, revisions to the WIP/EWIP program took effect, eliminating the previous cap of \$10,000 per-project and adding a project coordination payment representing "a maximum program average of 15% of the total project cost as billed to the Company." An additional agency indirect rate in the amount of 10% of the total project cost as billed to the Company was also added per the terms of the Company's rate case settlement agreement¹⁴. The Company historically adjusts its offerings via Tariff 301. In 2022 the Company will transition program updates to Exhibit 1 of the BCP allowing for real time updates in consultation with its Advisory group.

Overall, the WIP/EWIP program is operating as intended, with increased engagement by the agencies that deliver weatherization services in Cascade's service territory. However, participation has slowed in the wake of COVID-19. Temporary restrictions on gatherings and business operations were put in place by the Governor during the first half of 2020, and agencies took precautions to protect their clients and staff. Agencies have further adapted to COVID-19 requirements throughout 2021 and are doing their best to maintain momentum as they serve low-income households.

Even with vaccinations available for individuals over the age of 12, COVID-19 variants

¹⁴ Washington Utilities and Transportation Commission Docket U-152286; General rate case on behalf of Cascade Natural Gas Corporation



and breakthrough infections have resulted in evolving restrictions and mandates. In light of COVID-19's presence as an erratic variable, the volume of homes served will be more difficult to quantify.

3.5.1 AEG Low-Income and Housing Stock Study

However, the Company did contract with AEG in the summer of 2020 to update its 2018 CPA and sought a Residential Income Group Analysis to better understand how saving potential and energy usage vary by household income¹⁵.

In the previous CPA performed for Cascade, AEG estimated energy efficiency potential based on average customer profiles without differentiation by household income. Previous CPAs have instead captured energy efficiency potential in low-income homes as part of all residential potential by default. AEG's expanded analysis has provided additional granularity to overall residential potential and allowed a deeper understanding of the ways energy usage and housing stock varies by income in Cascade's service area.

To protect customer privacy, data on Cascade's specific customers were limited to anonymized street addresses and household natural gas use. AEG estimated the number of customers in each income group by mapping address data or Cascade residential accounts back to corresponding geographic "blocks" in the census data. Each of these blocks was then processed to analyze average household size and income, producing a distribution of households into income buckets for places where Cascade customers reside. These distributions by housing type and income level serve to split apart the housing types from the original 2019 market profile.

Income groups examined for the purposes of understanding conservation potential within Cascade's WIP/EWIP programs were divided into Low- and Moderate-Income designations as shown in Table 8.

¹⁵ 2020 Cascade Natural Gas Conservation Potential Assessment Phase 2 Final Report – Volume 1 Applied Energy Group, pg. 28-31



Table 8: Definitions of Income Groups by Household Size (up to)

HH Size (persons)	Low Income	Moderate Income
1	\$25,520	\$28,931
2	\$34,480	\$57,863
3	\$43,440	\$86,794
4	\$52,400	\$115,725
5	\$61,360	\$144,657
6	\$70,320	\$173,588
7	\$79,280	\$202,520
8	\$88,240	\$231,451

The low-income threshold corresponds with 200% of the Federal Poverty Level, which is also the eligibility cutoff for the Washington Low-Income weatherization assistance program. The moderate-income group was defined as being above the 200% Federal Poverty Level but below the Washington state median income by household size. This is an important distinction, since “moderate” in this case is a specific term developed for the purposes of AEG’s analysis, and should not suggest this income group is experiencing economic security. Unexpected economic shocks (like those resulting from continued impacts of COVID-19 such as impacts to livelihood and increased economic burden associated with medical expenses) can result in migration from moderate income to low income in a relatively short period of time. It is therefore important to ensure services are considered for both low- and moderate-income customers.

Indeed, nearly 60% of Cascade’s Washington customers fall into either the low- or moderate-income grouping, with the majority of these in the moderate (below median income, but currently not qualified for weatherization services) income range. In fact, the moderate-income group is the largest group of customers overall, with nearly half of Cascade’s customers falling into this designation, followed by 41% of customers above the median income for the state of Washington (see Table 9).



Table 9: Customer Distribution by Income Groupings and Housing Type (% of households)

Overall Housing Type	by Above Median	Moderate	Low Income	Low/Moderate Combined
Single Family	42%	47%	11%	58%
Multifamily	35%	51%	14%	65%
Total	41%	47%	11%	59%

AEG compared natural gas usage per household across income and residence size across Cascade’s service area to better understand how low- and moderate-income households utilized this energy in their homes. The study concluded that:

- Low-income customers have a lower presence of gas water heat, but a greater presence of gas space heat compared to moderate or above median income customers.
- Low- and moderate-income homes are smaller than above median income homes. However, use per square foot of the home is similar across all three categories, despite lower estimated insulation values. This suggests that while the home size is a factor in reduced consumption, it is not the sole explanation.
- Income level does not appear to correlate with the age of the home.

The study has also yielded a map of income analysis data points that provides a clearer picture of where low and near-low income are located so that they can be better served by weatherization agencies.

As of the period the AEG analysis was performed, 16,583 customers within Cascade’s service area were estimated to fit the “low” income category, and 101,095 were estimated within the “moderate” (below median income) category. Approximately 95,150 customers remained outside either category, meaning they were at or above median income.

Additional findings are detailed in the full potential assessment filed with the Commission under [Docket U-210450](#). A copy of the study and its findings have been provided to the Company’s weatherization agencies to support a deeper understanding of overall weatherization potential within the WIP/EWIP program, and the potential opportunity and need for additional services.

In the meantime, Cascade continues to actively engage with the agencies delivering the WIP/EWIP program and intends to host a virtual meeting within Q4 2021/Q1 2022 to walk through AEG’s findings and to further refine overall weatherization program



potential. The Company remains committed to supporting the agencies in serving as many homes as possible and providing timely reimbursements for qualified weatherization projects.

Participation for each program year can be found in Table 10. The Company included the Avoided Costs used for 30-year measures in each program year, the total funds paid out to the Agencies per year, and the average rebate per home. Note in 2020 the Avoided Cost of gas was listed as \$30.98 from January 1 to September 30 and updated to \$24.85 beginning on October 1, 2020.

Table 10: Weatherization Incentive Program Participation Levels & Savings by Year

Year	Number of Homes Served	Therm Savings	Total Funds Paid Out to Agencies	Average Rebate Per Home	Avoided Cost Per Therm Paid for 30-Year Measures
2008	46	13,985	\$101,631	\$2,209	\$13.06
2009	55	14,733	\$168,378	\$3,061	\$13.06
2010	112	30,809	\$358,316	\$3,199	\$13.06
2011	85	24,130	\$251,248	\$2,991	\$11.66
2012	64	21,824	\$233,162	\$3,643	\$11.66
2013	38	14,960	\$132,882	\$3,497	\$8.09
2014	21	7,338	\$54,374	\$2,589	\$8.09
2015	19	11,724	\$89,508	\$4,711	\$8.09
2016	24	11,743	\$87,065	\$3,628	\$8.09
2017	27	5,564	\$165,935	\$6,146	\$8.09
2018	28	5,181	\$234,667	\$8,381	\$18.77
2019	66	13,416	\$910,314	\$13,793	\$30.98
2020*	38	8,125	\$552,684	\$14,544	\$30.98
2020*	5	1,088	\$86,785	\$17,357	\$24.85

*Avoided Costs were updated in 2020 to align with a tariff update so the program year is broken out into 2 rows demonstrating program participation under each Avoided cost.

Preliminary findings for the 2021 Program year are as follows:

Approximately 30 projects were submitted as of September 1, 2021, representing a preliminary estimate of 6,603 therms saved and \$546,879 paid out to agencies through combined WIP and EWIP monies. Approximately \$18,229 per project was provided on average this year. Although total project count to date represents 10 less than the September 2020 YTD achievement Cascade recognizes the continued challenges that remain in light of emerging COVID variants and a slowed economy. Cascade anticipates as agencies and communities adapt to evolving circumstances, the Company will



continue to see upward momentum through the program.

As noted, per-project spending continues to increase. Cascade will monitor this trajectory and will work with its agencies and program advocates to determine if further review and discussion is necessary.

Cascade anticipates a total savings potential of approximately 17,859 therms for 2022, and 19,665 for 2023. This is based on the 2018-2020 savings average of 201 therms per-project. This number was then multiplied by an estimate of 89 homes served in 2022 and 98 in 2023. Projected homes served were identified by the weatherization agencies in Cascade’s service area with individual estimates offered by each agency based on the agency’s capacity and limitations to reach Cascade customers.

Figure 6 shows the cumulative Residential Potential for the Low-Income sector pulled from the 2020 CPA and Figure 7 represents the same potential broken out by Cascade Climate Zone.

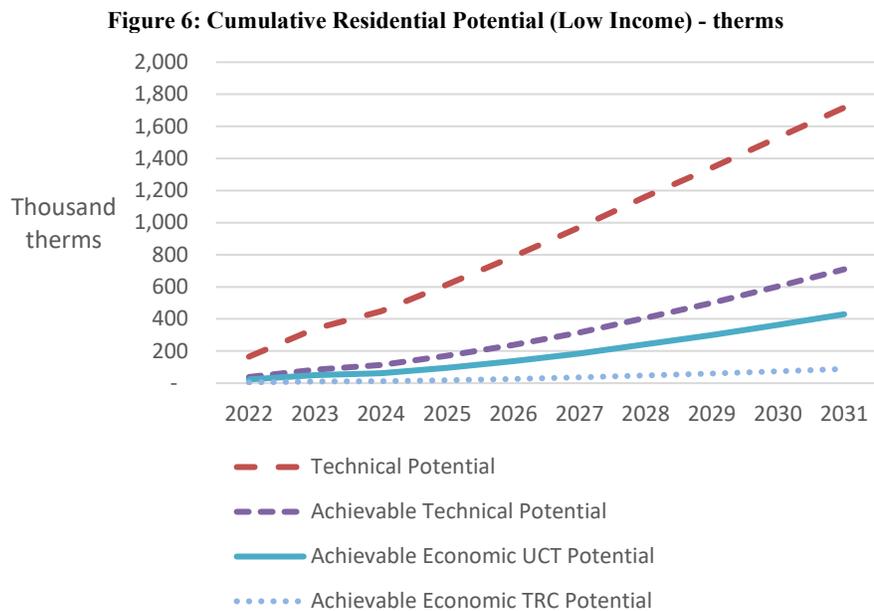
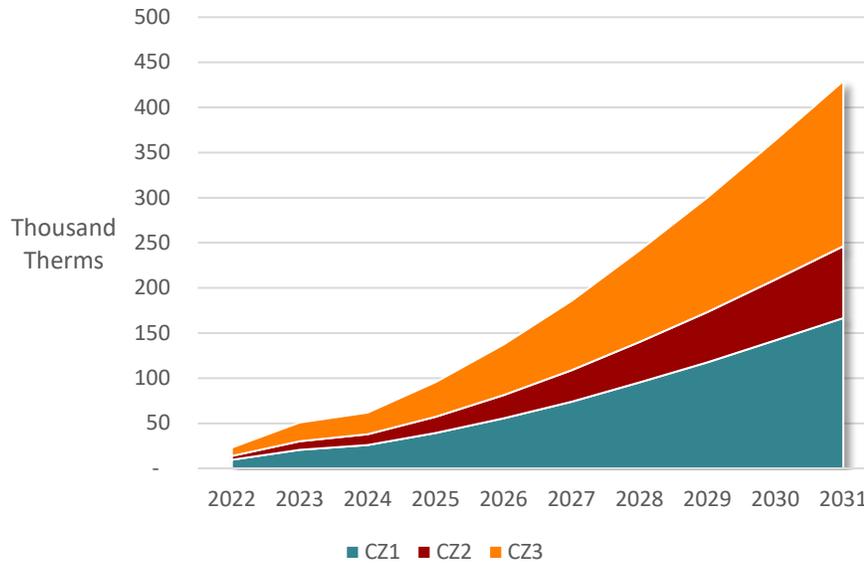


Figure 7: Cumulative Residential UCT Potential (Low Income) by Climate Zone- therms



It should be noted, low-income projected therm savings set by Cascade differ from the AEG potential assessment, which projects 23,182 therms in 2022, and 28,194 therms in 2023. Cascade will continue to explore the variance in LoadMAP potential compared to agency estimates, however the Company believes the variance reflects several factors, including the continued volatility associated with COVID-19 and evolving variants. Cascade also intends to review its current individual therm savings estimates for each allowed weatherization measure in the WIP/EWIP program and make updates as appropriate based on AEG’s most recent modeling. This true-up will help better ensure deemed numbers are drawn from the most current building stock, baseline usage, and incremental savings estimates available. Note, while Cascade utilizes deemed therm savings numbers in its reporting, the Agencies delivering the program base all modeling and cost-effectiveness calculations through TREAT as custom savings determined on a premise-by-premise basis.

Cascade intends to meet with all weatherization agencies virtually by the end of CY 2021/start of CY 2022 to determine how to best leverage the findings from AEG ‘s 2020 CPA to serve more low-income households.

As always, the Company appreciates its weatherization partners and is committed to work with the agencies and the Energy Project to ensure weatherization services are available to those who qualify.



4. Targets Developed through LoadMAP™

Cascade is providing targets for its conservation potential based on the inputs from the 2020 IRP and updated in Phase 2 of the 2020 CPA. The administrative costs have been updated based on 2022 and 2023's estimated budgets and expected contracts. These targets were pulled from the CPA filed with the WUTC on June 15, 2021.

Projected achievements, or targets, are based on the Company's best estimates of its UCT Achievable Economic potential. Performance deviations from projections are subject to evolving efficiency technologies, economic impacts, customer interest and program participation levels, as well as external influences from regional and regulatory bodies.

4.1 Biennial Targets

The Company continues to explore the cost-effectiveness of measures included in the AEG review for both those measures that are and are not currently offered in its portfolio. A joint review of the CPA compared to current program portfolios is reflected in Exhibit 1 and represents recommended program updates including addition of measures, reduction and increase to rebates and removal of offerings that have become code. While the Company would like to offer all measures identified through the CPA some are excluded from the current portfolio as they may not currently be available to the local marketplace, administrative costs may be too high to implement, or other elements may affect availability including fluctuations in Avoided Costs.

Cascade is aware it is important to aim for a level of savings that could be achieved should the full breadth of offerings be included in the program portfolio throughout the plan horizon. Adjustments to the portfolio continue throughout the near horizon, specifically in 2021 as a reflection of the 2020 IRP input updates and the 2020 CPA to position the Company to adapt to building code changes, legislative requirements and emerging technology opportunities.

The conservation potential for this Plan calculated through the AEG LoadMAP model is separated into three customer classes for individual savings assumptions, market segmentations, and end uses (heat-sensitive resources have different savings potential by Climate Zone and income level for the Residential section).

LoadMAP generated targets are acknowledged in the BCP and the Company will aggressively strive towards these targets. Regardless of goal achievement, the programs are built to ensure cost-effectiveness can be maintained, even if participation levels fall short, or admin costs run higher than calculated.



Note the CPA identified not only the program potential for the next 20 years but considered the landscape of EE for natural gas over the coming years. It's important to keep the following elements in mind when considering the Company's ability to meet the identified potential¹⁶:

- **Legislative Environment.** Because no new laws explicitly affecting the future consumption of natural gas have currently been passed, potential impacts of this type of legislation have not been considered in the baseline projection or the energy efficiency estimates provided in this report. In future studies, it will be essential to review the legislative landscape to determine whether adjustments to the baseline or applicability of energy efficiency measures are required. (Especially as cap and trade is likely to have a significant effect)
- **Building Code Impacts.** Through conversations with NEEA, Cascade, and via AEG's other work in the WA region, AEG developed a set of assumptions regarding how builders were likely to modify their choices. The adjustments to new construction equipment saturation relative to existing homes are documented in Section 4 (of the CPA)
- **Considering Transport Customers.** Though there have been regional conversations surrounding potential for transport customers, there are additional data needs in estimating this potential and challenges in acquiring it. Assessing the cost-effective potential for transport customers would require different avoided costs, more visibility into the kinds of customers on these rates and their end uses, and an understanding of how these customers view energy savings and might participate in future programs since there is no history on which to draw. In addition, the incentive mechanism for these customers would need to be determined, as they do not currently pay into the tariff that supports the rebates and incentives to core customers.
- **Opportunities have been reduced in new residential buildings due to code impacts, however residential furnaces, commercial boilers, water heaters and weatherization remain viable.**

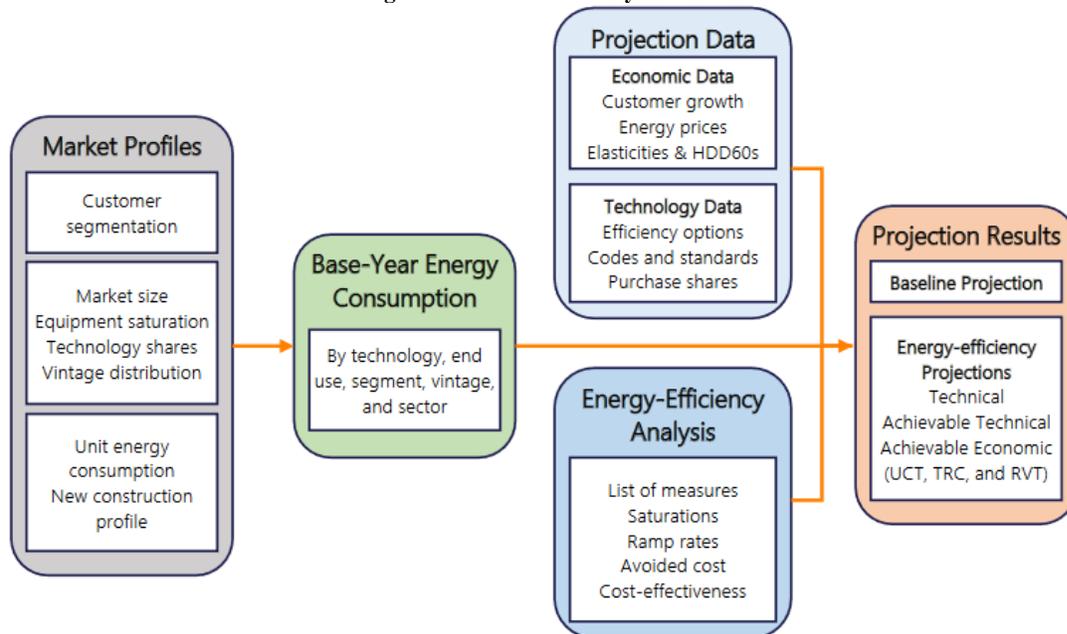
For this analysis, AEG used LoadMAP version 5.0 to develop both the baseline projection and the estimates of potential. AEG developed LoadMAP in 2007 and has enhanced it over time, using it for the Electric Power Research Institute (EPRI) National Potential Study and numerous utility-specific forecasting and potential

¹⁶ 2020 Cascade Natural Gas Conservation Potential Assessment Phase 2 Final Report – Applied Energy Group Volume 1 pg. i



studies since. The LoadMAP framework is built in Microsoft Excel and is broken out consistent with the segmentation scheme and the market profiles described in Figure 8. The LoadMAP model provides projections of baseline energy use by sector, segment, end use, and technology for existing and new buildings. It also provides forecasts of total energy use and energy-efficiency savings associated with the various types of potential.¹⁷

Figure 8: LoadMAP Analysis Framework



This modeling tool was built on a platform that provides the ability to run multiple scenarios and re-calculate potential savings based on variable inputs. Inputs include customer and demand forecasts, IRP long term discount rate, transmission loss rate and Avoided Costs as well as 2020 annual program performance and measure data collected through energy efficiency applications to establish incremental costs reflective of service territory. This model provides transparent assumptions and calculations for estimating market potential.

While Technical and Achievable Technical potential are both theoretical limits to efficiency savings, Achievable Economic potential embodies a set of assumptions about the decision’s consumers make regarding the efficiency of the equipment they purchase. Cascade’s EE program adopted the Achievable Economic UCT potential to set goals

¹⁷ 2020 Cascade Natural Gas Conservation Potential Assessment Phase 2 Final Report – Applied Energy Group Volume pg. 8-9.



under an array of possible future conditions.

The methods used by the LoadMAP model to develop the three levels of potential for the programs are explained in the 2020 Cascade CPA Phase 2. Industry standard cost-effectiveness tests were performed to gauge the economic merits of the portfolio. Each test compared the benefits of the energy-efficiency metric to their costs defined in terms of net present value of future cash flows.

LoadMAP provides the Company with a nuanced and manageable method to developing its portfolio, although it's important to note not all variables are incorporated into the model (full economic impacts of the present pandemic as a prime example).

LoadMAP requires administrative cost entry as a percent of the incremental costs in the Equipment and Non-Equipment models. This allows for input of administrative costs at a granular level, by each measure, rather than by grouping of measures by end-use.

The CPA also provided guidance and best practices on how market adoption rates (or ramp rates) are calculated at a regional level in alignment with Northwest Power and Conservation Council's 2021 Plan which were adapted to develop achievability factors for each measure in Cascade's CPA. Additional details on ramp rates are available in Appendix A Volume 2 of the 2020 CPA.

See Appendix A of this BCP for further information on the forecast methodology around the Market Segmentation & End Use information from the recent CPA.

4.2 Target Development

LoadMAP generated targets will be acknowledged in this Plan and Cascade will aggressively strive toward them throughout the year. Nonetheless, the programs will be built in a way to ensure cost-effectiveness can be maintained independent of target completion.

4.3 Assumptions and Inputs

The unique inputs used for Climate Zone market segmentations in the Residential forecast were customer count, demand forecasts, and budget amounts. All other factors were held constant across each Climate Zone's scenario, such as the inflation rate, long-term discount rate, load profile, transmission loss rate, cost-effectiveness threshold, and ramp rates.

When running the model both the Residential and the C/I program used all technologically available measures. This captures the savings available to the custom project sector in addition to the prescriptive measure offerings. On the Residential side, this allows for a full



review of the cost-effective measures available in the library to consider for future portfolio updates. As noted in the Washington Low-Income section of the BCP AEG customer segmentation was performed by income group through a residential income group analysis.

Below is a summary of the other model inputs, within the 2020 IRP used in the CPA:

- Inflation rate at 2.00%
- Transmission Loss rate at 0.2479%
- Long-term discount rate at 3.4%, tied to the average 30-year mortgage rate. The lower the long-term discount rate, the higher the therm savings potential because future years' therm savings' Avoided Cost values are discounted less, and thus more of the Avoided Costs can be included, thereby allowing the benefit-cost ratios for measures to pass the 0.90 cost-effectiveness threshold.

Note Cascade traditionally uses a .90 threshold to support portfolio level cost effectiveness and offer as inclusive a portfolio as viable to maximize customer participation. In the recent CPA AEG notes "If the benefits outweigh the costs, a given measure is included in the economic potential. Note that we set the measure-level cost-effectiveness threshold at 0.9 for this analysis since Cascade may include non-cost-effective measures as long as the entire portfolio is cost-effective. This is important because a portfolio considers more than just energy savings. Cascade may include popular measures that are on the cusp of cost-effectiveness, accommodate variance between climate zones, maintain a robust portfolio, or include a measure that improves customer outreach and communication. It also supports the inclusion of borderline cost-effective measures, increasing overall savings through energy efficiency offerings."¹⁸

- Avoided Costs were updated per the IRP's Appendix H, Avoided Cost Calculations, and divided by Climate Zone for the residential portion as well as into baseline and end use for peak shaving measures. In addition, alternative carbon pricing scenarios were provided and run through the model to determine their impact on DSM. The higher the Avoided Costs, the higher the therm savings potential because Avoided Costs under the UCT increase the benefit-cost ratio to allow more measures as cost effective. This increase from addition of the SCC supports updates to incentive levels

¹⁸ 2020 Cascade Natural Gas Conservation Potential Assessment Phase 2 Final Report – Applied Energy Group Volume pg. 10



as indicated in Exhibit 1. Conversely, the lower the Avoided Costs, the lower the therm savings potential forecasted.

- Administrative Costs increased to meet the Residential program’s higher processing needs to reach performance levels and future targets. It also allowed expansion of C/I EEIP outreach. Budget figures and discussion are provided in the [Program Goals & Budgets](#) section. Note, while this has an impact on the benefit-cost ratios for each measure and raises the costs needed to acquire therm savings, it is necessary to accommodate higher therm savings goals by increasing processing and expanding outreach efforts to meet performance goals
- Load Profile, Customers and Volume Forecasts, by Climate Zone, were updated to 2020 baselines.

4.4 Sector Scenarios

LoadMAP provides the Company with sector specific Technical, Achievable, Achievable Economic UCT and Achievable Economic TRC potential.

4.4.1 Residential Scenarios

The model was run by Climate Zone for the Residential customer class as well as by income level and housing type in the segment-level potential results in Appendix D Volume 2 of the CPA. Figure 9 provides the 10-year horizon of Residential cumulative potential but excludes Low Income potential which is noted in Section 3 [Washington Low Income](#). Outcomes by Climate Zone are reflected in Figure 10.

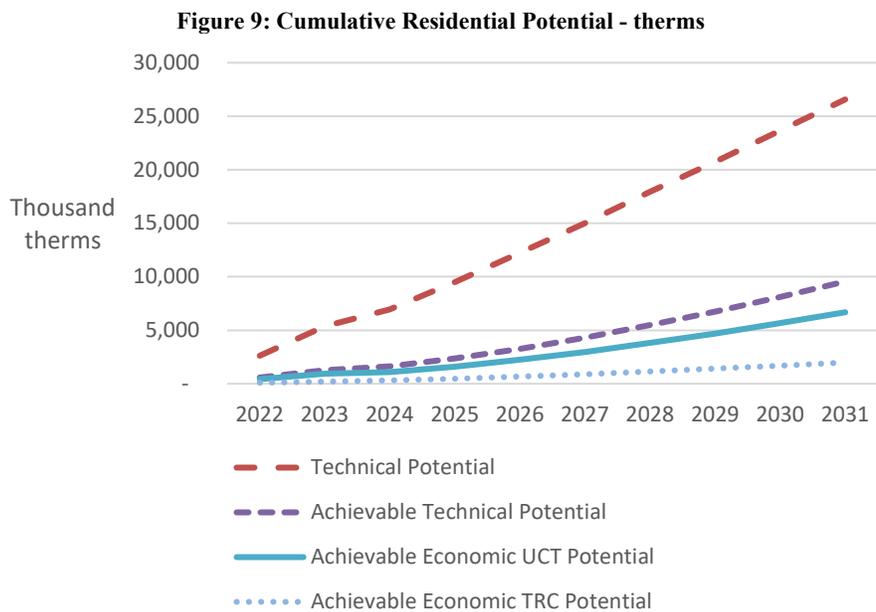
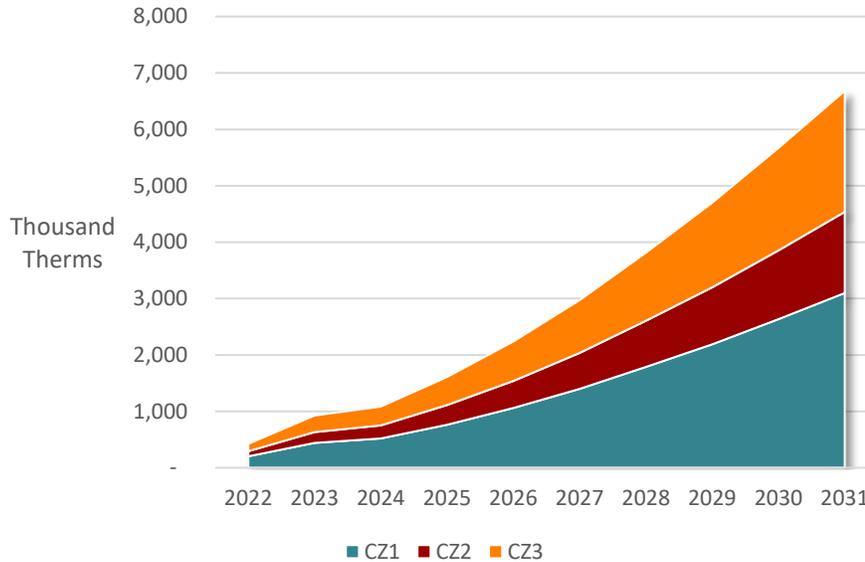


Figure 10 shows the Residential portion of the DSM forecast, split by Climate Zone.

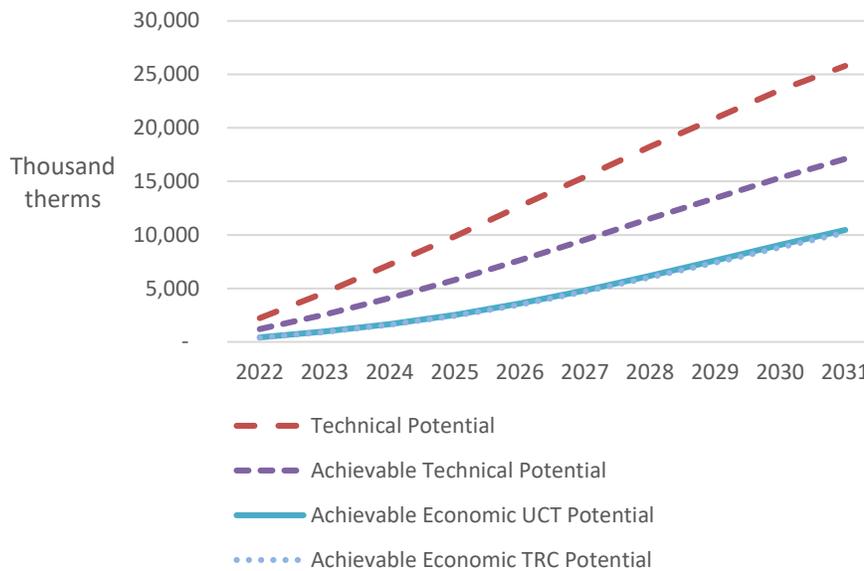
Figure 10: Residential Cumulative Achievable Economic UCT by Climate Zone in Therms (excludes LI)



4.4.2 C/I Scenarios

Figure 11 shows the cumulative DSM forecast for the C/I sector by Technical, Achievable Technical and both Achievable Economic UCT/TRC Potentials.

Figure 11: Cumulative Potential Forecasts for C/I - therms



It is important to note the screen conducted with the LoadMAP tool and internal valuation mechanisms for the C/I sector was performed to assess both viable prescriptive and



custom measures' potential, thus reflecting inclusion of all available measures from the libraries. For reference, program experience has historically demonstrated the prescriptive portion of savings from the program is fairly consistent, with an average of around two-thirds of therm savings coming from custom projects.

4.4.3 Combined Residential and C/I Portfolio Potential

Figure 12 shows the cumulative DSM forecast by Technical, Achievable Technical and both UCT/TRC Achievable Economic Potentials.

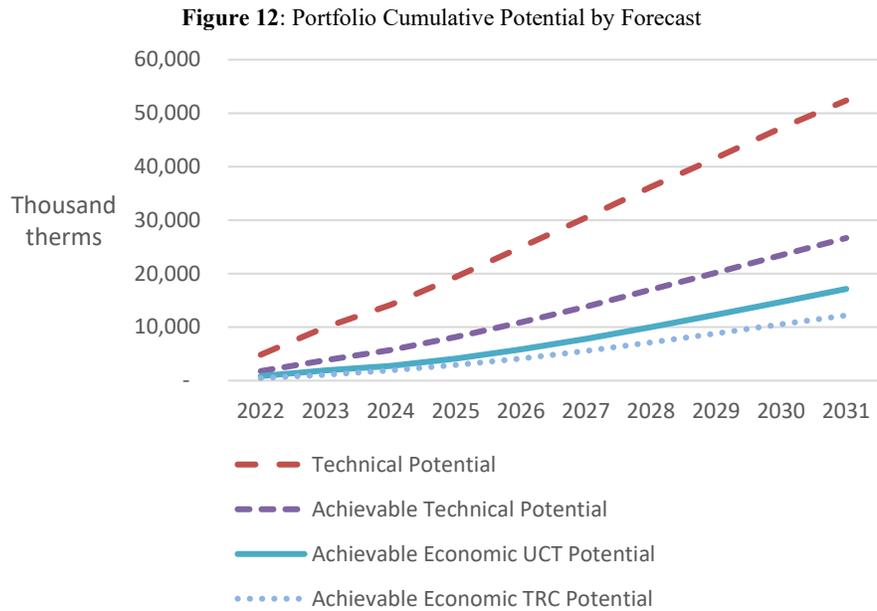
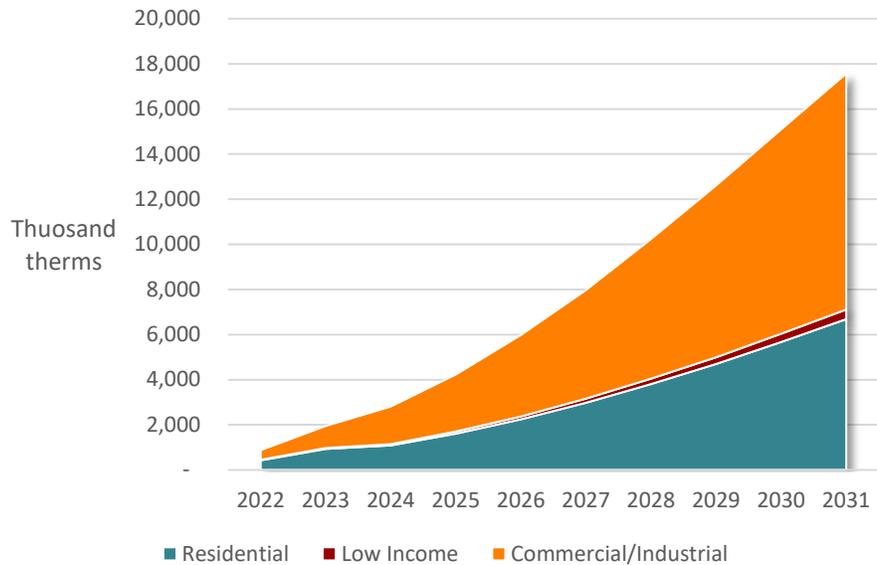


Figure 13 provides cumulative Residential, LI and C/I Achievable Economic Potential UCT.



Figure 13: Cumulative Achievable Economic UCT Potential by Program



4.4.4 Forecasts

A summary of the forecast results is located in Table 11 &12, demonstrating the UCT and TRC incremental and cumulative forecasts for Residential, Combined C/I portfolio totals followed by the Residential by income sector. As mentioned in Section 3 the Low-income program goals set by the Company are linked to what the LI Agencies have advised they are able to achieve rather than the LI potential as identified through the CPA.



Table 11: CPA 10-Year Technical Achievable Forecast Comparison*

Y E A R	Total Technical Achievable Forecast Comparison											
	UCT				TRC				Total UCT Incremental	Total TRC Incremental	Total UCT Cumulative	Total TRC Cumulative
	Incremental		Cumulative		Incremental		Cumulative					
	Residential	Commercial/ Industrial	Residential	Commercial/ Industrial	Residential	Commercial/ Industrial	Residential	Commercial/ Industrial				
2022	429,213	419,461	429,213	419,461	91,094	389,989	91,094	389,989	848,674	481,083	848,674	481,083
2023	507,695	537,858	927,221	967,165	107,362	512,504	195,552	911,603	1,045,553	619,866	1,894,386	1,107,155
2024	446,997	690,197	1,082,401	1,671,884	129,181	669,383	317,565	1,592,754	1,137,193	798,564	2,754,284	1,910,319
2025	538,884	868,795	1,608,335	2,533,596	157,986	851,792	471,464	2,436,105	1,407,679	1,009,779	4,141,931	2,907,569
2026	641,269	1,071,068	2,240,169	3,600,492	191,654	1,052,293	659,922	3,483,100	1,712,337	1,243,946	5,840,661	4,143,022
2027	745,657	1,243,414	2,971,951	4,817,700	226,146	1,224,289	881,615	4,680,025	1,989,071	1,450,435	7,789,651	5,561,640
2028	849,243	1,394,029	3,815,489	6,189,163	258,499	1,366,544	1,138,195	6,021,815	2,243,273	1,625,044	10,004,652	7,160,010
2029	931,779	1,493,211	4,699,720	7,604,399	281,769	1,465,353	1,407,143	7,409,675	2,424,990	1,747,122	12,304,119	8,816,819
2030	1,003,604	1,545,870	5,670,094	9,064,754	296,794	1,518,263	1,694,801	8,839,925	2,549,475	1,815,057	14,734,848	10,534,726
2031	1,052,972	1,535,293	6,681,489	10,458,266	301,447	1,507,973	1,985,509	10,203,168	2,588,264	1,809,420	17,139,756	12,188,677

*Note: The Low-Income potential has been removed from the portfolio level table but is included in the full Residential Forecast comparison

Table 12: CPA 10-Year Technical Achievable Forecast Comparison

Y E A R	Residential Technical Achievable Forecast Comparison															
	UCT						TRC						Total UCT Incremental	Total TRC Incremental	Total UCT Cumulative	Total TRC Cumulative
	Incremental			Cumulative			Incremental			Cumulative						
	Low Income	Moderate Income	Regular Income	Low Income	Moderate Income	Regular Income	Low Income	Moderate Income	Regular Income	Low Income	Moderate Income	Regular Income				
2022	23,182	205,957	223,256	23,182	205,957	223,256	4,503	44,523	46,571	4,503	44,523	46,571	452,395	95,597	452,395	95,597
2023	28,194	243,639	264,056	50,852	444,912	482,309	5,302	51,902	55,461	9,684	95,002	100,550	535,889	112,664	978,072	205,236
2024	28,078	216,886	230,111	61,837	525,148	557,252	5,525	61,611	67,570	12,032	152,794	164,771	475,075	134,706	1,144,237	329,597
2025	34,719	261,432	277,452	95,813	780,313	828,022	6,790	74,568	83,418	18,680	225,401	246,063	573,603	164,777	1,704,148	490,144
2026	41,926	310,962	330,306	137,182	1,086,701	1,153,468	8,305	89,756	101,897	26,886	313,645	346,277	683,195	199,959	2,377,351	686,808
2027	49,283	361,149	384,508	185,612	1,441,121	1,530,830	9,935	105,402	120,744	36,679	416,954	464,661	794,940	236,081	3,157,563	918,294
2028	56,303	410,603	438,640	241,525	1,848,943	1,966,547	11,520	120,244	138,256	48,175	536,328	601,867	905,546	270,019	4,057,014	1,186,369
2029	61,662	449,512	482,267	300,121	2,275,367	2,424,352	12,873	131,129	150,640	60,568	661,449	745,695	993,441	294,642	4,999,841	1,467,711
2030	65,873	483,237	520,367	363,805	2,742,486	2,927,608	13,943	138,469	158,325	74,198	795,670	899,131	1,069,477	310,737	6,033,899	1,768,999
2031	68,255	505,885	547,086	429,323	3,228,226	3,453,264	14,565	141,215	160,232	88,388	931,899	1,053,610	1,121,226	316,011	7,110,812	2,073,897



4.5 Long Term Conservation Potential

Note, short-term goals are more realistic when viewed in two-year increments since they allow flexibility in addressing current legislative, building code and budgeting criteria.

The program Potential, that which is based from actual implementation design, delivery, and market conditions, reflects some variance in savings, costs, and overall achievements. Customer participation in a program is heavily influenced by the level of incentive paid by the utility versus the cost to the customer.

External infrastructure considerations must also be addressed, such as product availability to utility customers and an adequate network of contractors, retailers, and TAs to support a program. As new measures or expanded programs are developed and added to the current program mix, internal and external resources and capabilities need to grow accordingly and progress through a “learning curve.” Additionally, revised projections regarding the cost of natural gas and other external factors will lead to revisions to the Company’s programs and will result in additional impacts on the company’s projected participation levels.

Specifically, building codes play a significant role in Residential therm savings potential (see section [Emerging Technologies standards codes](#)). The overall potential for new construction was reviewed and researched during the CPA process and has resulted in a reduction to savings potential in the CPA based on 2018 WSEC. These assumptions will need to be updated as impact to the builders becomes more apparent as time progresses. The Company will seek ways to make up the gap in savings from this potential transition away from high-efficiency natural gas new homes. As new homes trend away from using natural gas this reduces the total potential available for the Company to incentivize. It is also important to recognize the CPA was developed under a “Business as Usual” projection, meaning the baseline projections in the document do not assume electrification scenarios that have been proposed in legislation and at the municipal level. Should these efforts proceed the potential will need to be reevaluated based on the changing dynamic and available natural gas savings potential. Other opportunities for emerging technologies may be found through the Company’s engagement with NEEA as well as regional level insights into code impacts.



5. Regional Collaboration

Cascade engages with partners throughout the Pacific Northwest to increase availability of energy efficient appliances, develop industry accepted guidelines for program delivery and leverage efforts to maximize ratepayer value. These efforts currently involve membership in NEEA, the RTF and joint utility program efforts and messaging.

5.1 Regional Technical Forum (RTF)

The RTF is a technical advisory committee established in 1999 to develop standards to verify and evaluate energy efficiency savings. Cascade’s Washington participation in the RTF moves into its third year of membership with a funding share mirroring it’s NEEA apportionment at 3.11% of \$1.8M prorated over five years. The budget allows funding to roll over from year-to-year with a true-up at the end of the five-year period, with fund tracking reported annually to funders.

RTF develops a [work plan](#) for the year that lays out the generalities based on anticipated needs, but as discussed in RTF Policy Advisory Committees there is flexibility built in to shift work around to meet regional needs. The RTF developed four gas only measures ahead of the 2021 work plan including residential gas water heaters, residential gas furnaces, rack ovens and residential boilers for commercial applications. In addition, they updated six dual fuel measures and one new dual fuel measures with an additional nine planned for the year. The DRAFT 2022 Work Plan notes four dual fuel measures sunsetting in 2022 including new homes, manufactured home replacement, single family weatherization and manufactured home weatherization. Existing measure work for the RTF is based on sunset dates, which are changeable. They are slightly ahead of gas spending estimates for the five-year cycle due to the acceleration of work on gas only measures. They will work with the Gas Subcommittee to prioritize efforts.

5.2 NEEA Natural Gas Regional Market Transformation

Market Transformation efforts are a key element to increasing accessibility of new technologies to the region’s natural gas consumers. NEEA’s purpose, per their Strategic Plan for 2020-2024 states:

“NEEA is an alliance of utilities that pool resources and share risks to transform the market for energy efficiency to the benefit of consumers in the Northwest.”

As mentioned, the Company’s participation in the alliance has proven beneficial in a number of ways, not the least of which is increasing Company familiarity with its regional counterparts and their EE efforts through “long-term value-creating relationships including access to knowledge, new ideas, expertise, improved market power, shared expenses and



shared risk.”¹⁹ Additionally, NEEA serves an integral role in evaluating feasibility and accessibility to a number of natural gas products that seemed more viable than is currently available in the market. While proving a negative seems counterproductive, these discoveries from the alliance help steer efforts towards the more practicable opportunities for improvement and expansion.

NEEA’s natural gas funders meet on a regular basis to discuss results and next steps of its efforts to move toward these goals. It is important to recognize savings from market transformation efforts are not realized immediately. Deemed savings are achieved in future years once the market can support the higher-efficiency options and that increased customer demand results in more advanced technological improvements. Cascade is committed to the alliance partnership throughout Cycle 6 and will evaluate Cycle 7 possibilities in late CY 2022 and into CY 2023.

NEEA’s current portfolio includes the following:

- RTUs – The program aims to increase the efficiency of rooftop units prevalent in low-rise commercial buildings in the Northwest. This program has evolved from focusing just on condensing RTUs to include other efficient RTU opportunities. This program is currently in the Program Development phase of NEEA’s initiative lifecycle. The alliance plans to move it into the Market Development phase of the lifecycle in 2022.
- Efficient Gas Water Heaters – The program will work to develop the market for efficient gas water heating products and bring a gas heat pump water heater to market. This program is in the Concept Assessment phase of NEEA’s initiative lifecycle and is projected to move into the Program Development phase in late 2022 or 2023 (once there is a confirmed launch date for the GHPWH product).
- Gas Combination Space and Water Heating (Combi) Systems – The alliance will continue scanning activities in 2022-23, with several technologies and systems tested. The learnings will also inform much of the work happening in the Efficient Gas Water Heaters program.
- Thin Triple Pane Windows– The program aims to accelerate the adoption of high performing windows that reach 0.20 U value or lower. This dual fuel program was just advanced by the alliance to the Program Development stage and will offer both gas and electric efficiency savings for the region.

¹⁹ NEEA Strategic Plan 2020-24, pg. 2



- Codes, Standards and New Construction – The alliance will provide research, data and draft proposals in support of advancing energy codes and standards rulemakings. In addition, the alliance will continue to provide training, education, resources with homebuilders and home energy raters (through the BetterBuiltNW platform) and continue to coordinate with home certification programs and utility programs to advance above-code home building and help builders implement new codes. This above-code work was previously a stand-alone program; beginning in 2022 NEEA will integrate this work with the code development and implementation activities to more efficiently address developments in different states.
- Emerging Technology Scanning – The alliance will scan for new technologies, pursue work to develop those technologies into products or measures that meet the region’s goals, and track regional emerging technology activities. Some of the technologies included in this work include: Commercial High Efficiency Dedicated Outdoor Air Systems, Residential Combination HVAC/Water Heating, Residential Hybrid HVAC.

The Company’s involvement and partnership with NEEA opens the door to additional opportunities to evaluate GHG reduction potential outside of standard EE opportunities. For instance, the Board recently approved a scoping study for hydrogen ready high-efficiency natural gas appliance standards as a specially funded project. Additionally, Cascade would like to work with NEEA to evaluate Gas Heat Pump cooling potential to shave peak summer electric demand.

Cascade continues to find value in the membership and looks forward to the efforts planned for the remainder of Cycle 6 as a member of the NEEA Board of Directors. Cascade’s participation on the Board of Directors allows for an inclusive approach to market transformation from electric only, gas only and dual fuel funders actively engaging alongside representatives from public interest groups, energy service professionals and regulators.

5.2.1 Funding & Cost Effectiveness

Cascade’s funding for the NEEA collaborative was initially calculated for the five-year pilot at a total of **\$1,705,130**. In the event all the funds were not used within the cycle NEEA would return the Company’s portion of the funding that had not been expended. The reimbursement from Cycle 5 totaled \$442,490 and is credited to the Company on a quarterly basis through Q3 2022 at \$55,311.25 per quarter. CNGC lists NEEA participation in the Annual Conservation Report and will represent the program’s cost-effectiveness primarily without the NEEA efforts, due to the absence of significant initial therm savings inherent in market transformation. The Company will also calculate its



cost-effectiveness with the NEEA membership dues included in the analysis to demonstrate its effect on portfolio cost-effectiveness. Table 13 shows the pilot's first 5-year cost allocation for Cascade's participation and Cycle 6 (2020-2024's) allocations.

Table 13: NEEA Annual Cost Commitment

Year	CNGC Washington Commitment at 9.22% for Cycle 6
2015	\$145,872
2016	\$244,996
2017	\$313,174
2018	\$452,285
2019	\$548,804
Cycle 5 Total	\$1,705,130
2020	\$348,908*
2021	\$348,908*
2022	\$348,908*
2023	\$348,908
2024	\$348,908
Cycle 6 Total	\$1,744,542

*Note Cascade pays quarterly - Q4 2020 through Q3 2022 are at reduced rates due to Cycle 5 credit

Cascade's participation with the Alliance will continue, with efforts specifically centered on the Natural Gas Advisory Committee (NGAC), the Natural Gas Committee of the Board and the Board of Directors workshops and quarterly meetings. Cascade staff will also engage as needed in subcommittee discussions to leverage the membership.

5.2.2 NEEA savings assumptions

CY 2020 represented the first reportable savings to the Alliance's natural gas funders. NEEA provided a report to Cascade in April 2021 with calculated savings from 2020 and will do the same in 2022 for the 2021 savings. While Cascade noted these savings in the 2020 Annual Report the Company did not count the savings toward its acquisition targets for 2020. NEEA savings assumptions are significant for the remainder of Cycle 6 and the Company will work with its CAG to determine the best way to report these savings, and when to re-evaluate the Alliance membership cost treatment in the annual cost-effectiveness calculations. Note NEEA is expecting a savings analysis on commercial code items in December and is likely to update these assumptions, see Table 14 for current estimates.



Table 14: NEEA Cycle 6 Cascade Natural Gas Savings Forecast (Therms)

	(Annual Therms)						Updates
	2020	2021	2022	2023	2024	Total	
Total	14,654	155,195	439,614	451,754	460,731	1,521,947	
Residential Codes	-	155,195	439,614	451,565	460,544	1,506,917	NEEA provides technical expertise and data to support adoption of codes and will start reporting WSEC 2018 code savings in 2021. Savings analysis comes from: Ecotope Inc. 2021. 2018 Washington Residential Code Energy Savings Analysis. https://neea.org/resources/2018-washington-residential-code-energy-savings-analysis
Commercial Codes	-	TBD	TBD	TBD	TBD	TBD	NEEA provides technical expertise and data to support adoption of codes. 2018 WSEC is effective February 2021. The share of new construction floor area permitted under the code begins to ramp up in 2021. Savings analysis is in progress is expected December 2021.
Efficient Rooftop Units	-	-	TBD	TBD	TBD	TBD	Efficient Rooftop Unit program is in Program Development and may advance into Market Development in the first half of 2022. Savings are likely to begin in 2022-2023. NEEA will add a forecast as program develops and data is acquired.
Efficient Gas Water Heaters	-	-	-	TBD	TBD	TBD	The program is in early development. A forecast could be available in late 2022.
Next Step Homes/ Residential New Construction	14,654	-	-	-	-	14,654	NEEA is redirecting its efforts of the new RNC program to focus on code development. The code program establishes a long-term vision to achieve ZER energy code for single-family new construction homes by the year 2030. To help achieve this goal, NEEA will build on established relationships with the voluntary home certification programs and other new construction market actors to implement activities that increase adoption of technologies and practices outlined in its code roadmaps. As a result, NEEA will not be reporting savings from above-code home certification building starting in 2021.
Thin Triple Pane Windows	-	-	TBD	TBD	TBD	TBD	The program goal is to stimulate national builder and consumer demand for thin triple pane windows, and manufacturers meeting that demand with scaled production. NEEA will influence ENERGY STAR specification to set increased performance levels and include in codes as the primary vehicles for rapid market diffusion to reach the long-term goal 50%+ of windows sold in the NW at ≤0.20 U-value. NEEA is aiming for Market Development in 2022 or 2023. Forecast could be available in late 2022 or 2023, for above reason.
Standards	-	-	-	189	187	376	The Commercial Packaged Boilers standard was published in 2020 and goes into effect in 2023. An evaluation of NEEA's work on this standard will be available in Q2 2022. The savings here represent Co-Created Savings, or savings above the natural market baseline adoption.

The 2020-2024 NEEA Business Plan for Natural Gas planned program activities in the next two to four years is available in the Appendix.

5.2.3 Housing Stock Assessment Review from NEEA

Cascade continues to participate with NEEA on Regional Building Stock Assessment



reports. These assessments characterize the existing building stock to account for regional differences such as climate, building practices and fuel choices and are frequently referenced in CPAs. The NEEA 2020 – 2024 Business Plan is the first cycle where gas funding is supporting these regional stock assessments.

Cascade will next contribute to the Commercial Building Stock Assessment (CBSA) for the 2024 publishing and is actively working with NEEA members in the execution of the 2022 Residential Building Stock Assessment (RBSA 2022).

The RBSA 2022 will assess the energy use and building features of single and multi-family residences in the northwest region with a focus on multi-family units and Heating Zone 2 (US Climate Zone 5) building stock. This version intends on focusing more on rural locations as Western urban areas have been the focus in previous reports. However, with the continuation of the COVID-19 pandemic, certain planned rural areas may be revised as accessibility is determined.

NEEA will begin customer surveys and site inspections in late 2021 pertaining to building envelope, home and water heating fuel source, heating and cooling equipment, appliances, plug load, and lighting to determine existing conditions, potential trends, and market transformation opportunities. Analyses of collected data will contribute to Cascade's CPA, IRP, program activity planning and load forecasting.

With the continuation of COVID-19 and its variants, the RBSA workgroup is constantly revising the timeline and deliverable dates as restrictions fluctuate. The majority of survey collection will happen in late 2021 and 2022, with many data points getting answered during initial interviews either digitally or by phone. In person visits will still occur in 2022 conducted by Evergreen Economics, a northwest based energy research firm.

When in person visits occur, the survey will need to account for participation bias if certain demographics are more willing or less willing to participate due to the pandemic. A quota threshold for expected findings from technical data will be established to ensure adequate population and demographic reporting is met. If not met a resurvey of the area will be needed. NEEA will monitor for bias based on the potential of a correlation between certain demographics willingness to participate and the type of equipment they have, or the degree of efficiency in that equipment.

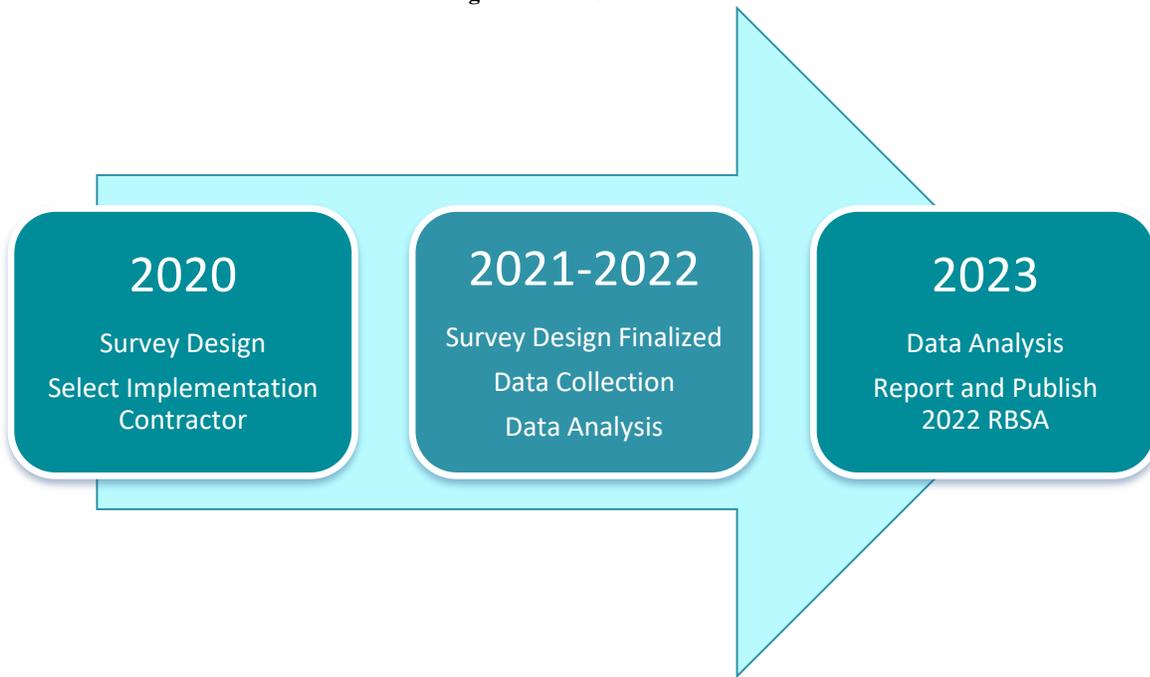
The contractor performing the work is planning for potential disruptions such as the inability to physically visit sites, delaying or prioritizing regional areas based on COVID-19 surges, weather and fire anomalies, or resident nonparticipation due to pandemic unease as these will continue to impact survey scheduling. Depending on the severity



and length of the pandemic, postponing the interactive survey implementation is not planned but is a possibility for CY 2022 and CY 2023. The survey timeline is slightly delayed with a final report intended for 2023.

The survey data analysis is currently slated to finish in 2022 with the final report published late 2022 or early 2023, as demonstrated in Figure 14.

Figure 14: RBSA 2022 Timeline



6. Outreach & Messaging Campaigns

The Company frequently reaches out to the public to notify rate payers of available incentives to drive uptake of the EEIP. Cascade approaches its customer-facing energy-efficiency messaging through an integrated communication strategy and ideally multiple outreach methods and avenues are used to deliver a cohesive message to the consumer.

Cascade recognizes the power of graphics in telling its story and will continue to develop the expertise to design Infographics for customer and stakeholder communication.

This method utilizes a consistent, frequently reinforced message to increase brand awareness of the EEIP to Cascade customers. In addition to the integrated outreach approach, the Company also employs a cross channel practice where the customer chooses their medium and can use their preferred method to interact with Cascade's programs. Cascade focuses on communication channels that take advantage of messaging venues and synergies with those traditionally employed by leveraging existing partnerships and channels and adding new opportunities as they arise. Ultimately, Cascade tries to keep its energy efficiency message useful and impactful to its audience. For instance, the Company provides messaging about rebate changes through bill inserts, through magazine and radio advertisements, and features on the Company's main website.

Cascade will continue to use traditional, and increasingly, social media and streaming sources to communicate with the public. Working with its corporate customer communication department, the EE Department informs customers of upcoming events and accomplishments in real time increasing the breath and relevance of the message to the viewer.

Customers regularly obtain information and interact with the program through the program's website, www.cngc.com/energy-efficiency, and the Department's dedicated customer service phone line. Other sources of information come from local TA contactors, staff attended outreach events, social media posts, and its third-party program implementation contractor for the C/I program. Electronic residential rebate submission and interaction is primarily through the Public User interface (PUI) online application portal which will change to an updated version, PUX, in 2022 and through email, mail, or fax.



The Company delivers program messaging using bill inserts, radio ads, events, community engagement and program material placement in external publications. Cascade recognizes legislative requirements and increasing savings goals require more outreach to targeted audiences which requires additional funding commitment and a creative approach to outreach.

Messaging campaigns include consistent brand specific elements that focus on the EEIP's rebates, the direct benefit to customers of working with TAs familiar with program requirements and low-cost no-cost options for energy use reduction. The Company wants to assist customers by reducing the perceived, and actual barriers to purchasing higher-performance appliances and weatherization measures by offsetting costs, improving accessibility and providing in-house expertise and recommendations on efficiency choices.

It's important for Cascade to consistently tailor its outreach and message to its intended audience, whether that's a residential customer, commercial business, contractor network, home builder or real-estate professional. Outreach to areas of low participation require a more local or specific feel to make the message more impactful to that demographic. Conversely, a message about a general upgrade appropriate for residential or commercial placement can be widespread. This is readily apparent when the Company evaluates which print media to use, when to place messages and what specific message to convey.

6.1 Community Engagement

Year over year, program recognition and participation increase due to community engagement and outreach efforts. As the efficiency climate of the Northwest develops further, it's becoming more important to locally engage with customers and unify efforts with other energy programs and utilities.

Focusing on hard to reach and more rural districts in 2022 and 2023 will encourage Cascade staff to use methods beyond the traditional radio, print and digital formats previously used. Focused local collaborations, building new partnerships, and district visits to directly spread the message in a familiar format will improve engagement with customers of different economic, social or regional backgrounds.

6.1.1 Utility and Local Collaborations

The Company will expand utility collaborations and shared sponsorship opportunities with other utilities in the territory, both internally and externally, as the carbon debate continues in the Northwest Region. Presenting a unified presence and reiterating that



the customers come first will become increasingly important. In addition, internal leveraging and collaborations with Intermountain Gas Company staff will provide additional perspectives by framing a cohesive message receptive to both southern and eastern Washington residents as well as those in Cascade’s sister company’s territory in Idaho. As COVID-19 restrictions begin to lift, messaging hurdles to the more urban areas of the service territory earlier in 2022 will ease as these territories tend to be more engaged and aware of efficiency upgrades.

The company continues localized efficiency outreach at service area sporting events such as baseball games in Yakima, Walla Walla, Longview, and Bellingham. Partnered outreach messaging on social media, websites, and digital platforms continues into 2022 and 2023. With banner signage, commercials, sponsored giveaways, and tabling to answer customer questions in person, in this way Cascade expands the local “we’re in the community” message and interacts in a more personalized way.

Cooperating with local organizations such as Community Energy Efficiency Programs (CEEP) funded programs, city level programs like Chambers of Commerce, universities and schools, and community groups such as trade, sport or demographic clubs help expand the Company’s reach and in the next two years will increase when viable to circulate the Company’s efficiency message from a local platform. Washington’s diverse populations and values mean Cascade cannot use a one size fits all platform for engagement but rather needs to cater to local ideals, concerns, and climates. Whether speaking to university students in Bellingham or staff at an HVAC installer in Walla Walla, the message needs to feel relevant to them. For example, providing messages and advice from a trusted neighbor tends to lend more credence to the message than a general communication from an outside source.

6.1.2 CEEP

Cascade continues to regularly collaborate with the community energy programs like the SLC in Walla Walla. CEEP Programs leverage funds to assist with delivery of EE program information and pave the way for customers to apply for rebates while working through local energy auditors.

These CEEP funded organizations have been creative in the methods used to help customers reduce usage – ranging from performing energy audits, suggesting energy-saving efforts, leveraging utility rebates, offering expert advice, and providing additional rebates on top of the existing utility sponsored rebates. In each of these situations, the CEEP group is integral in providing personal interactions with community members to help them qualify and apply for rebates.



6.1.3 District Visits

District office visits and travel to attend outreach events such as sporting events or energy fairs across the state will resume in 2022 and 2023 as safety allows. Sending outreach staff to see the diversity of Cascade's territory and interact in person with customers, contractors, and company staff helps develop an understanding for localized campaigns and the concerns and values of those regions. Word of mouth communication is still one of the most effective methods for program participation.

Communicating and educating staff and contractors about the EEIP allows those workers who directly engage with customers to inform residents about efficient options and incentive opportunities. Trade Ally interactions at their offices has proven to increase program engagement as the contractor is able to ask questions and connect more meaningfully with program staff and thus, with the EE program. Contractor awareness of non-English or additional financial resources that the Company can offer customers is easily discussed in these less formal settings.

6.1.4 Radio Engagement

Besides in person interaction, Trade Ally partnered radio ads continue to be successful and desired by contractors. The Company is continuing to offer this outreach as a cooperative marketing tool and will examine similar campaigns in streaming or video format to further promote Trade Ally contractors that install high efficiency equipment in 2022. Trade Allies are given annual training and marketing funds from the Company to improve customer interest, and through this opportunity they have the option to participate in a series of radio ads jointly promoting the EE programs and the Trade Ally's services. EE recognizes the value of having trusted TAs delivering just in time guidance to Cascade's customers about energy-efficient upgrades.

Based on rebate applications, participation from the Spanish speaking populations within Cascade's service territory has remained low through 2020 and 2021. To improve outreach, the Commercial program ran a Spanish radio ad campaign in 2021 and has connected with the Hispanic Chambers of Commerce in Zone 3. The company will expand upon this foundation in 2022 and Residential engagement will likely follow in networking with the Hispanic Chambers in 2022 and creating focused marketing in 2023.

6.1.5 Print Engagement

Bill inserts and mailers continue to serve as an effective outreach tool highlighting rebate measures and frequently asked questions. Additionally, Cascade understands a reoccurring rebate reminder arriving monthly with a customer's bill (both in the mail and through online account access) aids program understanding and brings new opportunities to the customer's attention as their needs change throughout the year.



Cascade continues advertising in magazines, newspapers, and print materials to reach its less digitally engaged customers. Cascade will continue to advertise in seven high-end lifestyle magazines focused on residents in Zones 1 and 3. Besides paper print, the advertisements in playbills and magazines are also available digitally to extend viewership. Even with the expansion of digital and virtual engagement, some level of print advertising will remain to ensure the broadest customer touch.

Incorporating promotional and QR codes onto static media such as print magazines or digital ads also helps with the reoccurring messaging across platforms. Cascade is able to connect customers directly to pertinent incentive information or the rebate application at the time the customer sees the advertisement. Staff will increase use of these codes to encourage customers to *act now* and engage when attention is on the subject. Promotional codes were also included during the first 6 months of 2021 in magazine advertisements to offer an additional \$20, and during Veteran's Day. Similar campaigns will be explored in 2022 and 2023 to engage harder to reach areas or highlight customer appreciation and special occasions. Use of promotional codes of this nature helps the Company track campaign success and audience uptake.

The Company will continue to research opportunities to communicate with captive audiences such as during movie previews, event queues, or at popular establishments. The positive reception from Mount Baker Theater will lead to exploring similar opportunities in Zones 2 and 3 in 2023.

6.1.6 Streaming and Digital Engagement

The company also ran its first digital streaming ad campaign in 2021 with a 30 second commercial broadcast to specific audiences via their streaming services across the Company's WA territory. Using streaming services allowed Cascade to only advertise to the targeted customers in certain zip codes. Reaching audiences in a new format has resulted in promising levels of customer inquiries into the EEIP. Cascade will continue to track the reception of streaming media and will likely increase video commercial advertising in 2022 and 2023. As entertainment formats transition, Cascade will continue to adapt new formats to keep up with changing technologies.

Cascade continues to layer outreach communications to help customers retain energy-efficiency information as it can take a person over seven viewings to remember a message. Cascade will use the same advertisement or theme in multiple formats per month to build brand recognition. This increases the chance of message retention if customers see the same promotion for a Home & Garden show or a heating rebate in their bill, their coffee table magazine, and in theater entertainment. Cascade's ability to



target demographics in specific regions using digital marketing tools now allows the Company to reach customers that may not have been as receptive to previous ad campaigns.

6.2 Residential Focus

Local Home Builders Associations (HBAs) provide consistent partnership opportunity for energy efficiency messaging. The Company will continue to participate in Home and Garden shows, regional events, and Home Tours and will look for further opportunities to reach the building community.

In 2020 and through 2021 many HBA's were unable to host their annual Home and Garden shows or Home Tours in person. Some offered virtual tours or postponed in person tours, while others cancelled them in 2022 and into 2023, the Company plans on continuing to partner in whichever capacity the HBA's choose to pursue their events, through both in-person and virtual events. Extent of the Company's participation is dependent on available venues.

Cascade relies heavily on coordination with local area contractors to encourage uptake of its conservation programs. One on one meetings will occur mostly virtually until it's safe to visit in person. Training and outreach to contractors continues throughout the biennium to improve understanding of the EEIP, update contractors on program changes and confirm accurate messaging and ease customer application processing.

The Trade Ally program offers benefits and advantages to TAs in addition to POS options and training/advertising reimbursements. TAs also receive advertising on the company website and referrals as vetted contractors.

Other benefits include technical support and special bonus coupons. TAs find the bonus coupons one of the most valuable benefits of the Trade Ally program. The coupons are submitted by a customer in conjunction with a qualifying rebate application whereupon funds are distributed directly to the customer. These coupons encourage TAs to promote higher-efficiency rebate eligible options with customers as opposed to standard efficiency and can lower upfront installation costs. Additionally, supply chain issues are affecting equipment availability which will require the Company to work with its TAs to support and prioritize high-efficiency equipment installs whenever possible throughout 2022 even when the HE equipment is more difficult to obtain.

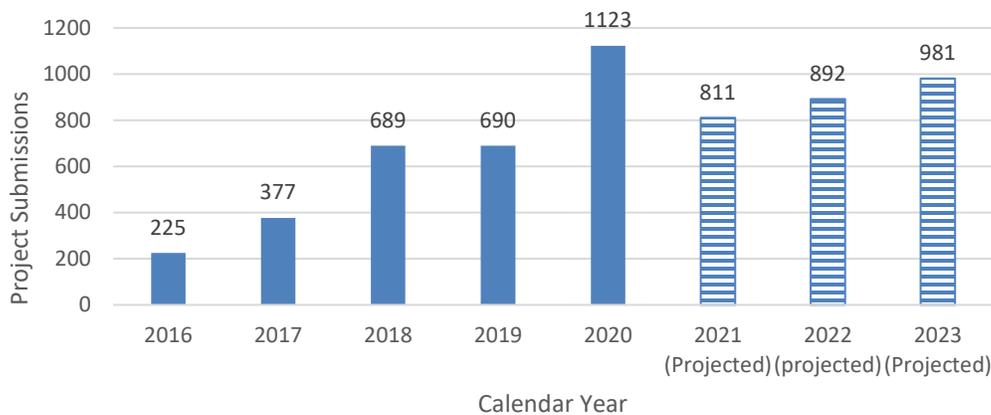
6.2.1 Supporting the Builder Cohort

The builder program exceeded expectations in 2020, receiving 300 applications more



than were projected. The Company does not expect the builder program will surpass this high-water mark in 2022 or 2023. With changes to the WSEC, Cascade anticipates participation in the New Home rebate program will decrease in alignment with the Company’s 2020 CPA forecast. The code update is driving this decrease as space and water heat rebates account for most New Home rebate applications and the code now incentivizes builders to use electric heat pumps for space and water heat as opposed to high-efficiency natural gas heating options.

Figure 15: Builder Program Projects 2016-2023



6.3 Builder Outlook

As of 2021 and beyond builders are facing unique challenges to achieving natural gas energy-efficiency credit requirements under section R406 in the WSEC²⁰, see Figure 15. The builder program coordinator performed a survey in the first half of 2021 to identify potential impacts the building code update would have on program participation. The results show 30% of builders surveyed would not continue installing natural gas in their homes. Further, for the 70% of builders that will continue installing gas only 38% will be installing the natural gas for use as a primary fuel for space and water heating. This means that only 26% of the entire cohort is anticipated to continue installing gas as a primary fuel source for space and water heat. The remaining number of builders represent only 20% of applications submitted indicating a potential decrease of 80% for furnace and tankless water heater New Home Program rebate applications. An alternate analysis performed by NEEA²¹ found that the impact in the next two years could range

²⁰ <https://sbcc.wa.gov/state-codes-regulations-guidelines/state-building-code/energy-code> (see R406)

²¹ NEEA Home Builders Market Research Report, June 3, 2021 <https://neea.org/resources/home-builders-market-research-report>



from a 2% to 15% decrease in the share of homes built with natural gas space and water heat. In the next three to five years the decrease could range from 4% to 50%. Likely the decrease will lie in between the findings of Cascade and NEEA and additional insights will occur as data on sector impacts becomes available throughout the biennium. This is a significant hurdle for continued growth of the Cascade builder cohort and is likely to result in participant attrition.

Despite this projected impact Cascade believes responsible growth is possible considering the robust new homes market in areas of its territory and is targeting a 10% increase each year of the biennium in new home application submittals for 2022 and 2023. For that to realistically happen the following are essential to maintain momentum:

2022 Focus:

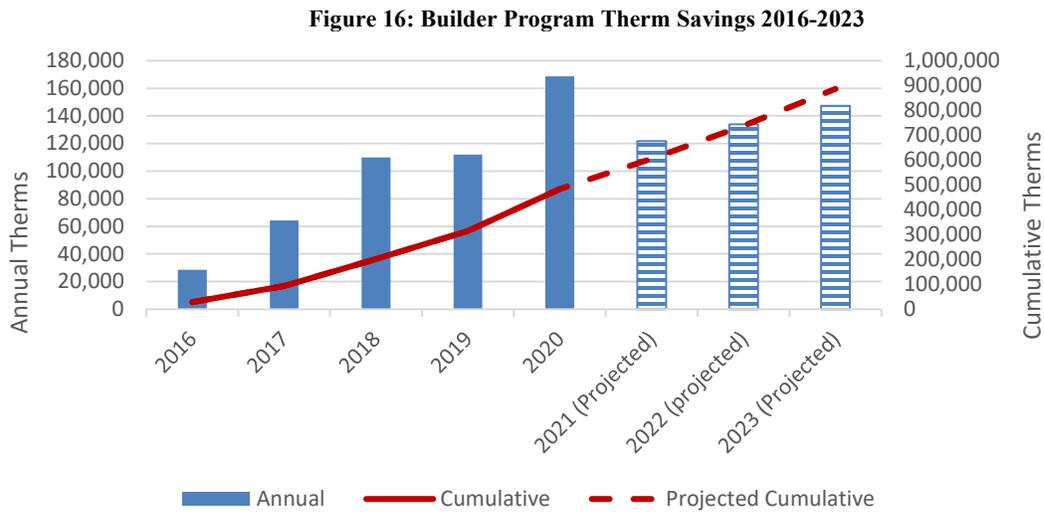
- Expand efforts for direct one-on-one outreach with builders providing custom training so builders can streamline their application process
- Field time to connect with builders in underserved areas, travel permitting
- Research high performance building envelope technologies for incentives
- Reduce the time from receipt to payment by prioritizing builder batches

2023 Focus:

- The Western region merger of the EE and Regulatory Departments for Cascade and Intermountain Gas presents an opportunity to incorporate lessons from Intermountain Gas who has great success incentivizing home certifications
- Home certifications are becoming more important as energy savings potential for individual measures decrease. The Company will focus efforts on supporting home raters in the CNGC territory and connecting builders with raters

See Figure 16 for Projected New Home Builder Program therm savings moving from 2021 into the 2022/2023 biennium.





6.4 Low Income messaging opportunities

As per the prior year, Cascade set aside a budget of \$20,000 for outreach to the community to generate greater awareness of, and participation in, the Weatherization Assistance Program (WAP) in 2021. Cascade expanded the purpose of these funds to also cover trainings on COVID-safe work practices associated with weatherization work performed for Cascade customers. No agencies have requested funds for either purpose yet for the program year. However, one agency has expressed interest in a joint outreach effort to generate more customer awareness of the WIP during Weatherization Month in October.

Cascade intends to hold a virtual meeting with agencies within the next six months to discuss additional opportunities to generate program awareness and to provide further support as agencies continue to navigate challenges associated with COVID-19 variants and a slowed economy.

6.5 Commercial Focus

In 2021, the C/I community outreach team developed messaging focused on supporting businesses to get back to business as usual after pandemic related closures. The new messaging promoted the program’s Re-COV-ery initiative, which offers eligible commercial customers an additional 10% in incentives when they install any three qualifying measures. Re-COV-ery incentives not only helped the program show support for businesses affected by the pandemic, but they also provided business owners the opportunity to focus on the long-term resiliency of their businesses. The messaging was delivered to customers through print and digital advertising, bill inserts, email campaigns, direct mailers and direct outreach.



Additionally, the C/I team continued to refine efforts to expand the program's reach within minority and historically hard-to-reach communities. The majority of businesses in these communities are small businesses that are frequently unfamiliar with the C/I incentive program. To help build trust and awareness, the team worked with local organizations, publications and radio stations to promote EE through messaging that resonates with these unique audiences. Cascade's approach included translating materials and advertisements into Spanish as many of the targeted minority communities are predominantly Hispanic.

In 2022, the C/I team plans to focus on businesses with high growth potential including small businesses, businesses in hard-to-reach communities, and businesses in markets severely affected by the ongoing pandemic. To ensure marketing and outreach efforts resonate with these audiences, the content created in 2022 will rely heavily on written and video customer stories. The past two years have left many businesses struggling and owners are now looking forward to a more positive future. With this in mind, the team plans to lead with real people, real stories, authentic messaging and clear next steps for customers to take. This approach is more human-centric, allowing the team to engage the people behind the businesses in a personable and authentic manner.

Furthermore, the C/I team plans to shift the messaging strategy from emphasizing recovery to focusing on rediscovery. In the past year, business owners have adjusted their behavior as the economy reopens. Many business owners are coming out of survival mode and are ready to look to the future, which includes reevaluating their business models and properties. This rediscovery phase many business owners are experiencing presents the perfect opportunity for the program to advertise the value energy-efficient natural gas upgrades can deliver.

The C/I team will continue to promote specific technologies based on seasonal trends and measure uptake. However, it also plans to incorporate messaging that focuses on educating customers on the associated benefits of energy-efficiency improvements. Through print and digital advertising, targeted emails, streaming and radio advertisements and direct mail the program plans to introduce energy use tips and education to position Cascade as an energy-efficiency resource and help the program capitalize on the rediscovery phase for business owners seeking business improvement solutions.

6.6. Online

In 2021, the C/I team implemented paid advertising campaigns to drive website traffic and provide customers with more efficiency information. This included a paid Google Ads campaign to bring customers to the C/I web pages. The campaigns were effective



in raising web page visits. In 2022, the C/I team will continue to run Google search ads and plans to also use a paid keyword resource tool to optimize and refine advertising.

As seen in Figure 17 traffic to the website in May dipped due to an inadvertent alteration to the Google tracking code. In June, the team tested new commercial-focused search terms and experienced a record number of visitors to the commercial rebates page. The rest of the months remain steady, as the program continues to conduct paid keyword research. See Figures 17, 18 and 19 for specific page views.

Figure 17: Pageviews from website: /energy-efficiency/commercial-rebate-offerings

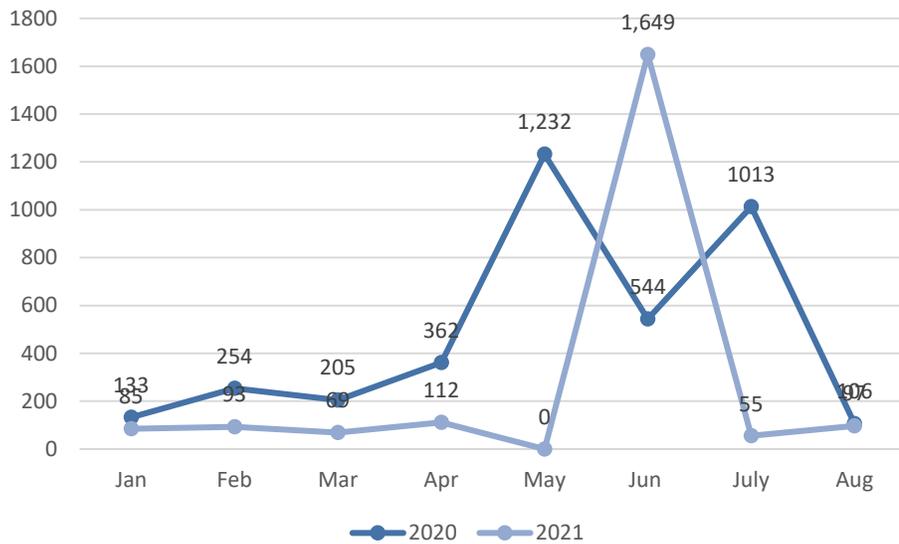


Figure 18: Pageviews from website: /commercial-and-industrial-rebate-application

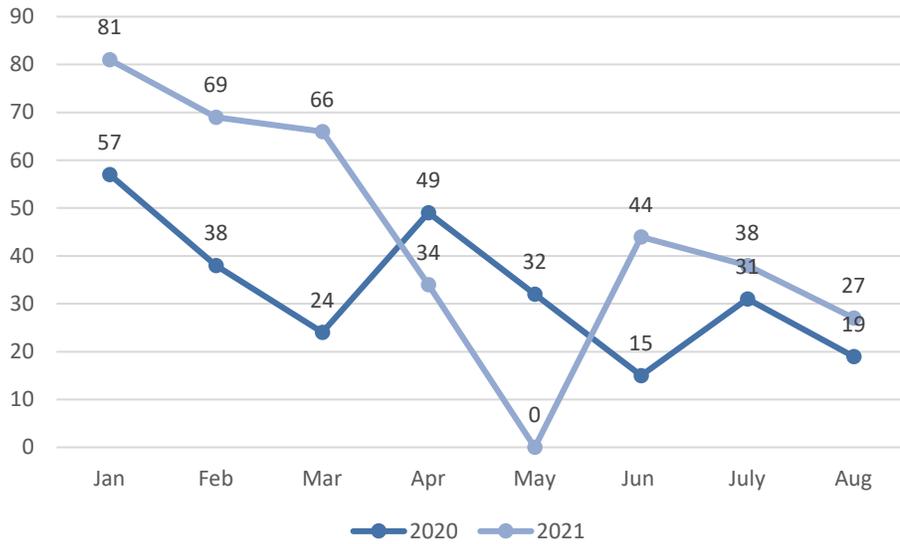
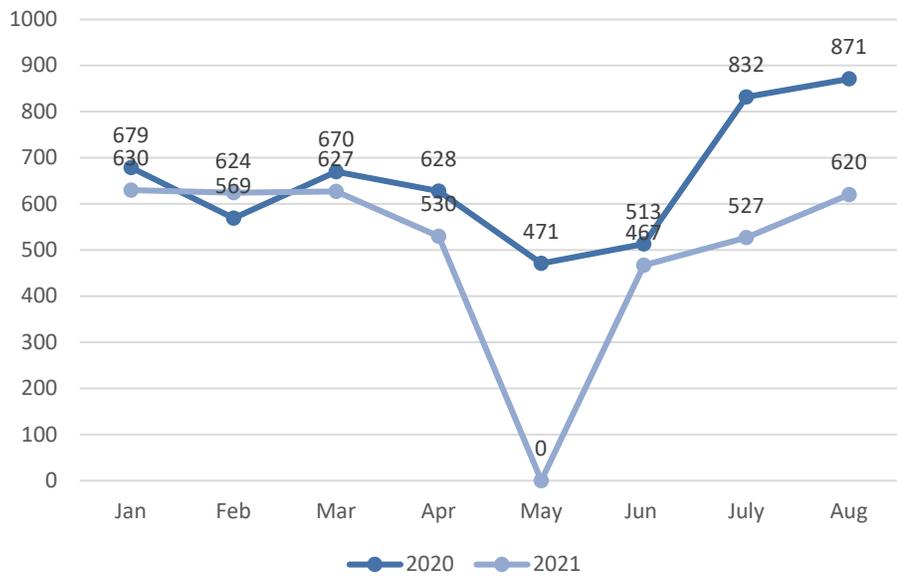


Figure 19: Pageviews from website: /energy-efficiency



For the Residential program, Cascade continues to explore improvements online to provide a satisfying customer experience. This includes taking detailed notes in call logs



and listening to customer feedback when interacting with staff through emails or calls as many customers visit the EE landing page while looking for incentive information. The department plans to provide customers educational tools on the importance of efficiency while also providing clear efficiency requirements for rebate submittals. As an example, the window offering qualifications and documentation requirements can be difficult for customers to understand. After listening to customer input, as well as internal observation, Cascade created a hyperlink on the landing page that opens a separate window dedicated to window rebate amounts, eligibility, and application document requirements. These types of improvements not only create a better customer experience, but also cut down on admin costs as processors can spend less time on disqualifications and missing information, and more time on getting applications through the payment request stage. As a further effort to simplify application submittals in 2022 Cascade will create a FAQ page to guide customers through the process, similar to the windows page developed in 2021.

See Figure 20 for website views to the Residential program for the first half of CY 2021.

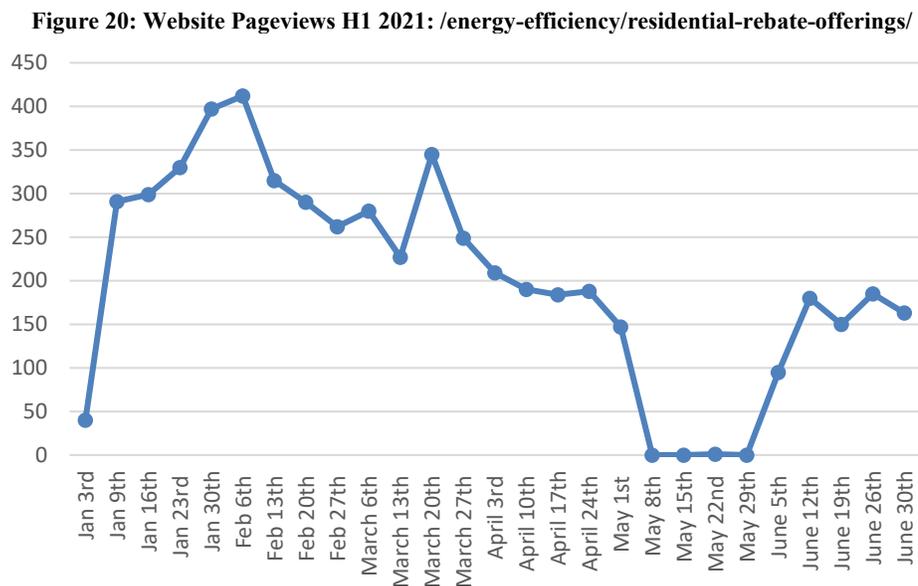
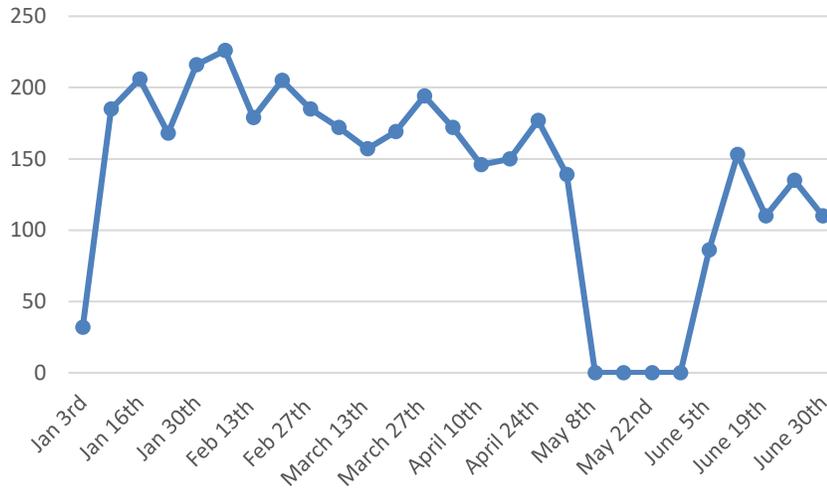


Figure 21 represents the pageviews for the Energy Efficiency page, which seem to trend similar to what is seen with winter application intake levels. Starting off high in January and reducing toward the warmer months. Unfortunately, a systems glitch makes May analytics unrecoverable.



Figure 21: Pageviews H1: 2021/energy-efficiency/



Throughout the pandemic year, the EE department managed to maintain a healthy flow of viewers. Most viewers are coming from Cascade’s main page and migrate to the EE landing page. The majority of outside traffic is directed from partners in the community such as ENERGY STAR, Lopi Stoves and Home Depot. For the first half of 2021, Cascade received 5,652 new users and 1,926 returning.

Launching a paid Google Ad Word campaign focused on the Residential audience is a priority in 2022 to improve online exposure. The goal of these campaigns is to reach customers unaware of the Cascade incentive program, targeting those who are searching the web for upgrades and haven’t made a commitment to a specific efficiency or piece of equipment. Cascade will run several campaigns to identify key phrases and words to capture viewers’ attention and drive further web traffic. The plan is to cast a wide net to interact with hard-to-reach consumers and accommodate varying levels of human behavior.

As more outreach is transitioning to online platforms including home builder sponsorships, Cascade plans to use buttons and hyperlinks from ads to link directly to the EE website. Direct links cut out confusion as online customers are only one click away from earning an incentive or learning ways to save. Syncing the clicks from an ad to the specific page will provide the department with enough feedback to analyze what messaging resonated with customers and what the Company can build off of to replicate that call to action in future posts.

6.6.1 Website improvements

The EE online platform has come a long way since the Conservation Corner microsite.



However, the online experience is ever evolving. The EE media team will collaborate with MDU website development to ensure the website presence has a strong sense of coherence, relevance clarity and is easy for customers to use.

To further refine and improve the C/I customer experience on the [Commercial Rebates landing page](#) the Company is planning to:

- Switch the order on the page so Washington is above Oregon
- Reorder the Washington sections for easier access and visibility:
 - Add Commercial Rebates and Steps
 - Increased Savings for your Business – possibly making Commercial Rebate Incentive sheet/Application links into a button for easier readability
 - Update Contact Information
- Replace the tree image with an image of a happy efficient customer

Refreshing the landing page in these ways will help the page display the most relevant information first and will improve the customer experience. In other words, the customer will know exactly where to go after landing on the main Commercial Rebates page.

In 2022, a Frequently Asked Questions (FAQ) webpage will be added to Cascade's EE website to help customers understand the incentive program and rebate process. The FAQ will reiterate messaging from bill inserts or marketing ads about applying for rebates, incentive eligibility and customer service resources.

The C/I team also plans to implement a new online application for customers to complete and submit documents. The aim is to make this application more user-friendly, more attractive and streamlined.

The Residential program will work on the following updates:

- Develop a readily available FAQs to reduce administrative burden and speed customer support
- Add additional customer resources including references to fireplace efficiency source documents (similar to the AHRI link available for customers to verify furnace efficiency)
- Review options for higher web click rates, driving down the bounce rate (customers leaving the page without interacting or clicking)
- Add visual clues, for instance a stop sign was added to the application page, urging applicants to double check install efficiency prior to proceeding



- Research options to add a rolling banner that displays the total number of rebates paid out per measure per month – driving up interest by customers seeing how much money has been paid out recently for similar efforts to their peers

6.6.2 Social Media

While the department has kicked print media into high gear, social media uptake has stalled. In the next two years Cascade plans to hold quarterly meetings with the corporate community outreach coordinator who manages the corporation's social media content. Strengthening relationships between departments will allow for improved messaging by tailoring the posts to a specific rebate and directions on how to get started and how to apply which are all ways to drive additional traffic to the EE landing page.

While EE messaging is communicated several times a month, the department aims to equal the playing field between EE saving tips, low-cost, no-cost upgrades, and specific CNGC incentive messaging. The media team for EE will lend support for creation of these social posts, brainstorm with the corporate communications coordinator on feedback the Department is receiving from customers and coordinate social media posts with printed outreach (heating season – space heat rebates, summer water heat, windows, etc.). It's important to note bandwidth is limited and needs to be shared between Company outreach topics (EE, general safety, 811, customer service, low-income and more) as the Company posts no more than twice a week to prevent contact fatigue. This strategy is in place to prevent customers from encountering Cascade messages in their newsfeeds too frequently, which could result in customers overlooking the post or removing themselves from the page.

Having a prominent presence on social media with TAs will also be more important in the virtual realm. The Company will work with contractors to post ads or articles to their social media pages to broaden the EEIP's reach demographically by exposing existing and potential customers to rebate opportunities. Table 15 displays the monthly social media communications plan for 2022.



Table 15: Social Media Calendar 2022

January	February	March	April	May & June
Ad- EE Tips “Caulking and weather-stripping”	Ad – Love your home, EE tips	TSTAT – EE tips Ad – St. Patrick’s Day EE tips Ad – Rebates for CNGC Furnace filter replacement awareness	Ad- Earth Day post	Did you know? Rebates available
July	August	September	October	Nov. & Dec.
NG water heat - EE tips TA Highlight – Bonus Coupon Appreciation Clean Buildings reminder	Furnace filter replacement – EE tips	<i>TBD</i>	<i>TBD</i>	<i>TBD</i>

6.7 Customer Calls

Cascade will continue to perfect outreach that leads customers to pick up the phone to learn more about EE. At the end of each month, a Call log analysis is sent to EE with customer call metrics and feedback, for example, what measures they are interested in, or whether they called before or after their install. This allows the Company to pinpoint areas to improve EE communication especially on rebate offerings with low uptake. This analysis includes information on:

- Pre-Purchase calls – Customers are seeking eligibility requirements prior to purchase or install
- Pre-Application – Questions on whether existing equipment qualifies, or about application submittal processes
- Status – Status update requests on rebate applications
- Transfer – Transferring to another line: includes to the Energy Trust of Oregon, Cascade customer call center and TRC Companies for C/I assistance
- Follow-up – Outgoing calls for missing information and miscellaneous inquiries

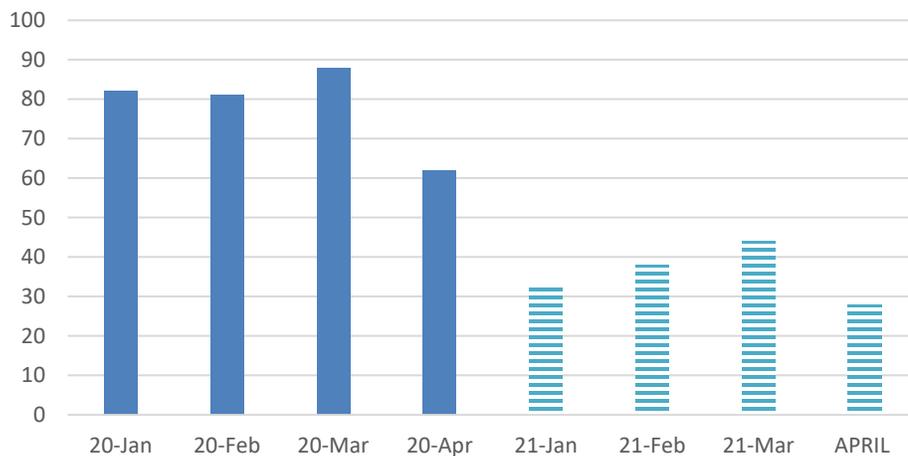
In the upcoming two years, the department plans to target measures lacking customer call engagement. Weatherization rebates like duct insulation and duct sealing are examples of relatively new offerings that could use outreach support to generate interest. Informing customers of the benefits in performing more than one measure, sealing ducts during a furnace upgrade for example, could help encourage higher program participation and increased savings. This gives the Company valuable intelligence to inform future messaging needs by enabling it to pivot to less frequently mentioned offerings.

The EE program has done a stellar job of keeping the receipt to paid age low throughout



the pandemic year. This quick turnaround time allows customers to receive timely checks and prevents frequent status calls. Cascade plans to search for additional process improvements to maintain shorter payment times, as well as improve the transparency of a customer’s application status. Public User Interface application submission rates continue to rise as improvements are made to the online rebate entry tool. With the roll out of the new online customer portal, the Public User Experience, PUX, customers will be able to see their application progress through review, approval, and all the way up until request for payment, a feature not currently available. Instead of calling to see if their application has been touched, customers will have insights into their application’s progression resulting in fewer status calls. See Figure 22 for a 2020 to 2021 four-month comparison of status calls by volumes.

Figure 22: H1 2021 to 2020 Status Call comparison

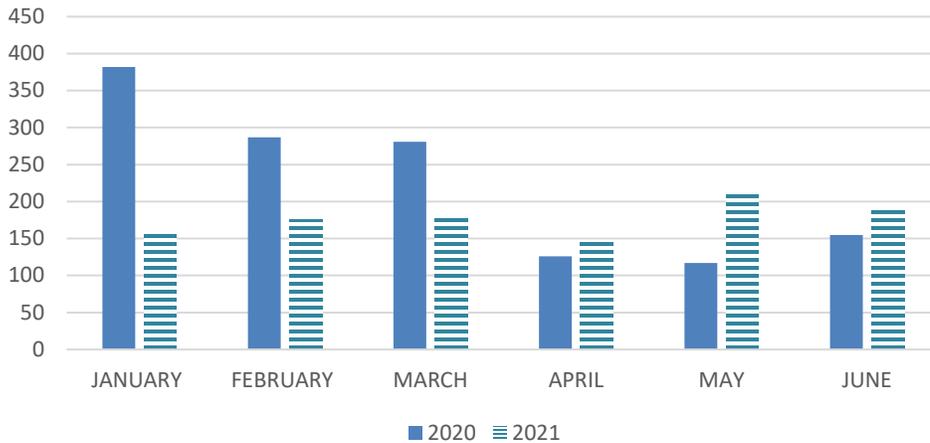


Incoming call trends have varied in 2021 from what the Company experienced in recent years which could be a positive indicator of improved customer communication. Typically, the department experiences high volumes of status calls at the start of the calendar year. As seen in Figure 22, status calls have decreased by almost 60% from January 2020 to January 2021 resulting in an overall decrease in incoming calls over historic trends.

The department continues to operate under the business model developed at the start of the COVID-19 restrictions, returning customer voice messages within 24 hours while staff are continuing to work in a hybrid remote environment. The message instructs customers to email or visit the Company’s EE website for quicker response times. Figure 23 represents the incoming call volume variance between CY 2020 and CY 2021.



Figure 23: Residential Incoming Call Comparison (2020/2021)



6.8 Business Development Collaboration

Energy Services Representatives (ESRs) provide customers in the field the opportunity to learn about EE before purchase and installation of equipment. These customers fall into three categories as either a Residential customer, Builder, or C/I customer.

Cascade’s EE department recognizes the value in collaborating with the ESR team to help influence new customers to make energy efficient decisions. EE participates in quarterly meetings with the ESR department to brainstorm how to support one another, while keeping both groups apprised of program successes, opportunities to promote the incentives or updates to program offerings. As part of that collaboration EE provides tools for the ESR team including targeted rebate offering handouts to these representatives as they engage in pivotal pre-install conversations.

The residential pipeline for ESR referrals has slowed as COVID-19 placed a barrier to the main role the ESR team plays through in person communications with customers. Due to the need for remote contact the system of emailing leads for a new gas line or extension request has similar contact rates as the old Feasibility Workbook process where EE staff culled through numerous digital files for customer leads. The new process is much more personal however, as instead of mailing an incentive sheet and application to the contact, the EE team is able to make contact with the customer while they’re in the process of choosing their equipment. Walking them through the application process and explaining the benefits of EE develops a relationship early on that helps influence the decision-making process for high efficiency installs.

