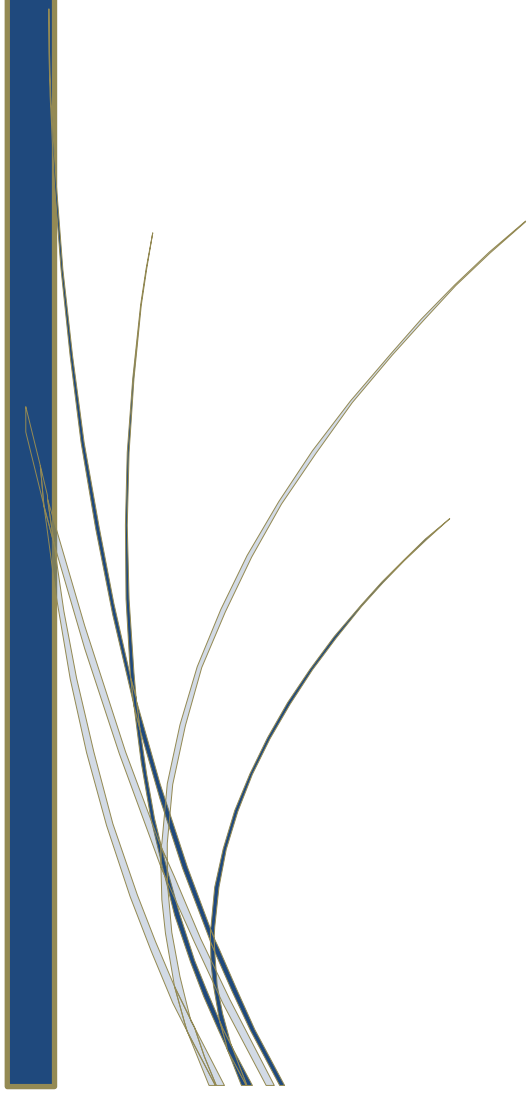
2019

Annual Conservation Achievement Report



Cascade Natural Gas Corporation
Docket UG-180990

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Background

On October 1, 2007 the Washington Utilities and Transportation Commission (WUTC or Commission) approved an addendum to the Cascade Natural Gas (Cascade or Company) Conservation Alliance Plan and Decoupling Pilot, which was developed in compliance with the Commission's Order 06 in Docket UG-060256. As part of this addendum, the Company agreed to submit "an annual report to the Commission on the achievement of the Calendar Year (CY) therm savings target, along with its Commission Basis results of operations report". Following this order, the Company submitted an annual report by March 31 of each year, to report prior years' Energy Efficiency (EE) achievements and Conservation Alliance Plan deferrals. As of October 1, 2010, the Pilot Decoupling Mechanism and Conservation Plan, approved by the WUTC on October 1, 2007, were no longer in effect. Per its commitment in the 2010 Annual Conservation Report, the Company voluntarily continued this reporting with the WUTC, submitting its energy efficiency achievements by July 1st of the following program year. As of CY 2016, per Docket UG-152286, the Company commits to submitting the Annual Conservation Report to the WUTC by June 1 each year, with advanced copies provided to the Company's Conservation Advisory Group (CAG) 30 days prior to Commission filing.

ANNUAL REPORT ACRONYMS

AEG	Applied Energy Group
BPI	Building Performance Institute
CY	Calendar Year
CO2e	Carbon Dioxide Equivalent
CNGC	Cascade Natural Gas Corporation
C/I	Commercial/ Industrial
CAG	Conservation Advisory Group
CPA	Conservation Potential Assessment
DCV	Demand Control Ventilation
DSM	Demand Side Management
DOE	Department of Energy
DBtC	Direct Benefit to Customer
HE	High Efficiency
EE	Energy Efficiency
ESK	Energy Saver Kit
EWIP	Enhanced Weatherization Incentive Program
EM&V	Evaluation Measurement & Verification
FWB	Feasibility Workbook
IRP	Integrated Resource Plan
MI	Missing Information
NEEA	Northwest Energy Efficiency Alliance
NEI	Non-Energy Impact
PIV	Post Installation Verification
PY	Program Year
SIR	Savings to Investment Ratio
TRC	Total Resource Cost Test
UCT	Utility Cost Test
WUTC	WA Utilities and Transportation Commission
WAP	Weatherization Assistance Program
WIP	Weatherization Incentive Program

The Annual Conservation Achievement Report is intended as a synopsis of Cascade's Energy Efficiency achievements and activities in the previous calendar year. The report contains the following:

- The year's conservation achievement by program and customer type
- Total expenditures for the year by program and customer class
- Cost effectiveness calculations
- Program evaluations completed during the calendar year
- Program outreach from CY 2019

Forecasting of savings potential is available for review within the Demand Side Management (DSM) section of the Company's Integrated Resource Plan (IRP). Additionally, as of CY 2015 the Company submits an Annual Conservation Plan by December 1st, which includes the EE targets for the following year by program and customer class. The Conservation Plan also addresses program development, measure portfolios, projected budgets, an estimate of program cost effectiveness, and a list of measures and updates for the following year.

Cost-Effectiveness Inputs

Variations to avoided costs have a significant impact on program cost effectiveness. Thus Residential and Commercial/Industrial (C/I) cost effectiveness is calculated based on the avoided costs as published in the 2018 IRP, and Low-Income program cost effectiveness is calculated based on the avoided costs as published in the 2016 IRP, which coincides with the EE tariffs in place throughout the 2019 CY. DSM calculations are updated for this report to include a 4.43% long-term discount rate and an inflation rate of 2.00% for the avoided costs from the 2018 IRP; for Low-Income a 3.52% long-term discount rate and an inflation rate of 1.00% for the avoided costs are applied from the 2016 IRP. Note, the Company is filing for an update to the Low-Income tariff in late June 2020 to transition to the most recently approved avoided costs to align with the rest of the EE portfolio.

Discrete non-energy benefits are calculated per measure for the Residential and C/I programs. The Low-Income program utilizes a flat 10% of costs to represent non-energy benefits. These non-energy benefits traditionally have the greatest impact on the Total Resource Cost test (TRC) which is included in this report. However, for the purposes of program evaluation Cascade continues to utilize the Utility Cost Test (UCT) or Program Administrator Cost test as allowed under UG-121207 in coordination with the CAG. The UCT is the Company's primary metric of program success and cost-effectiveness. Cascade will further evaluate and revise non-energy benefits for the TRC throughout 2020 and 2021.

Additionally, Applied Energy Group (AEG) performed a Conservation Potential Assessment (CPA) for Cascade in Q2 2018. This CPA and its forecasting tool (LoadMAP) are used for program planning, goal setting and cost effectiveness calculations. It allows the Company to explore updates to the portfolio including additions of new measures, changes to incentive offerings and updates to deemed therm savings. The LoadMAP tool was first available during the 2019 planning cycle, so for the first year both goals and achievements are weighed against LoadMAP. Note, the Company is also planning to update LoadMAP through a new CPA throughout 2020/2021 to comply with requirements from HB-1257.

Summary of 2019 Program Achievements

The 2019 Calendar Year proved a challenging year for Cascade as deemed savings estimates per install were reduced by approximately 15% on average based off the last CPA. This change required a concerted effort from program staff to drive uptake to offset the reduction after a February 2019 tariff change prompted the update to savings potential; 2019 savings potential goals were set before the February tariff that resulted in the 15% per measure decrement. When paired with a loss of staff from attrition and unanticipated departures, the program was under-resourced throughout much of the year. Despite these hurdles, the EE group stayed on track to meet goals set in the 2019 Conservation Plan. In addition, the avoided costs in this report remain consistent per program throughout 2019 as the pre and post tariff changes reference the same avoided costs.

Table A represents the Company's 2019 Energy Efficiency Incentive Program achievements. Key takeaways include the Residential program meeting goal despite the 15% reduction on average per measure from 2018, C/I meeting and exceeding goal, the Low-Income Program more than doubling savings from CY 2018 and the Direct Benefit to Customer Ratio maintaining a high benefit to customers compared to costs to deliver the programs.

Table A: 2019 Program Achievements

	Residential	Commercial	Total		Low-Income
2019 Targets	**333,424**	**370,587**	**704,011**		**15,000**
Therms Achieved	**363,364**	**384,176**	**747,540**		**13,416**
Measures Installed	**5,430**	**272**	**5,702**		254
***Carbon Offset (metric tons CO_{2e} avoided)**	**1696**	**1793**	**3490**		**63**
****NEEA Savings**	**21,727**	**379**	**22,106**		**N/A**

*Based on carbon offset calculations of 10.29139 pounds per therm (decimals rounded)
**Savings reported by NEEA not included in portfolio at this time

In CY 2019, the Company achieved a deemed therm savings of **363,364** for its **Residential** program. This represents 109% of the projected goal set in the 2019 Conservation Plan and indicates an improvement in the goal setting process available to Cascade through the LoadMAP model. CY 2019's Residential program represented 57,275 fewer therms than those reported for the 2018 program year; however, when considering the 15% on average decrement in savings per measure, the difference in savings from 2018's residential report is not unexpected.

Cascade achieved savings of **384,176** therms through its **C/I** program. This is 104% of the Company's projected savings goal for CY 2019, and 38,177 more therms than was achieved in the prior year.

At a portfolio level the savings for Residential, C/I and Low-Income equated to **760,956** therms for CY 2019, exceeding the goal of **719,011 by 6%**. Both the Residential and C/I program met their goal while the LI program more than doubled savings from the previous year, although it fell short of the goal by 11%.

The residential program has maintained its momentum throughout 2019 thanks to a focus on customer service, outreach and streamlining the rebate process for both Trade Allies and customers interested in installing efficiency measures.

Program cost effectiveness is shown in Table B. On an individual basis, the Residential program proved cost effective at a UCT benefit cost ratio of **1.957**. The C/I program was also cost effective at a **2.150** UCT benefit cost ratio. At a portfolio level, the combined program is cost effective at a UCT of **2.056.** The Residential program calculates at a **1.910** TRC, the C/I at a **2.327**, and a combined **2.124** at a portfolio level. See *UG-180990, CNGC 2019 Conservation Annual Rpt WP-1, 5.29.20.xlsx* for the full portfolio cost-effectiveness calculations.

Table B: 2019 Program Cost Effectiveness

*Cost Effectiveness**	**UCT**	**TRC**
Residential	1.957	1.910
Commercial	2.150	2.327
Portfolio	**2.056**	**2.124**

**Cost effectiveness excludes Northwest Energy Efficiency Alliance membership and software implementation*

Although the Company gauges cost-effectiveness primarily based on the UCT, the TRC test is also provided for reference. Note the CPA from 2018 provided recommendations and some guidance for the Company to incorporate TRC calculation's cost-effectiveness to better balance the metric. The 2020/2021 CPA update will further explore Non-Energy Impacts (NEIs) with AEG to improve the valuation through the TRC test. In the calculation of Net Installed Cost for each measure, the Company has attempted to quantify the value of the most valuable Societal and Participant NEI. While Cascade made every effort to be conservative in the magnitude of these benefits, especially in the C/I program, there will be some measures where the value of the NEIs exceed the incremental cost of the measure. In those instances, the Company has provided a net zero value for the installed cost given that a negative value for these large projects for installed cost is counterintuitive and would result in a biased TRC Benefit to Cost Ratio. Further information on program NEIs can be referenced in the UG-180990 Cascade Natural Gas 2019 Annual Conservation Plan.

Programmatic achievements in the C/I sector historically hinge upon intermittent deep therm-savings projects. In 2018 the Company's energy efficiency team took a more strategic approach to address this variability by increasing the percentage of projects through the prescriptive program. In 2019 the Company also started tracking program achievements on a quarterly basis, allowing for real time implementation shifts to keep the program on track to goal. This revised approach allows for a steadier trajectory for forecasting, while providing a more consistent and dependable basis for program planning.

It is also common for C/I projects to stretch beyond the year they were initiated. In such cases, the Company builds a queue, or pipeline of projects with significant energy savings potential in future years. Thus, it is beneficial to gauge C/I program accomplishments both as a single year accomplishment and through a two-year lens.

Table C represents the total program expenditures for incentives, programmatic delivery and administrative costs associated with implementation of the Company's Washington EE programs compared to estimated budgets.

Table C: 2019 Programmatic Expenses and Paid Rebates

	Incentive Budget Estimates	Actual Incentives Paid	Administrative Budget Estimates	Actual Administrative Expenditures	Actual Totals
Residential	$1,920,000	$2,228,048	$924,186	$745,383	$2,973,431
Commercial	$950,000	$940,237	$1,261,274	$1,107,154	$2,047,391
Low-Income	$515,000	$910,314	$25,568	$45,062	$955,376
Expense Totals	**$3,385,000**	**$4,078,599**	**$2,211,028**	**$1,897,599**	**$5,976,198**
	Direct Benefit to Customers (DBtC)*		**Program Delivery**		**Total Program Costs**
Program Expense Comparison	$4,115,792		$1,860,407		**$5,976,198**
Program Expenditure Ratio	**69%**		**31%**		
NEEA Gas Market Transformation					$548,804
LoadMAP Software updates & eM&V Implementation					$56,095

**Note DBtC includes all rebates paid through the Residential, Commercial/Industrial and Low-Income program in addition to some expenses recorded under the "programmatic expenditures category" like bonus coupon payments to customers, quality control inspections and partnership agreements with community organizations working directly with customers to assist with rebate eligibility and installation.

Costs associated with the Northwest Energy Efficiency Alliance (NEEA) Gas Market Transformation efforts, and one-time software implementation costs are separated from general programmatic expenditures for the purposes of assessing program cost-effectiveness. Market transformation investments create conditions for future energy savings. NEEA estimates cost-effectiveness on a longer time horizon for its initiatives, in lieu of annualized cost-effectiveness calculations. A second calculation in *UG-180990, CNGC 2019 Conservation Annual Rpt WP-1, 5.29.20.xlsx* is available to assess

cost-effectiveness of the program portfolio including the software implementation fees and the NEEA Gas Market Transformation Collaborative expenses for the fifth year of the Company's NEEA partnership. Note - expenses associated with the NEEA Collaborative effort increased each year through 2019.

For the first time NEEA has reported savings estimates for the Next Step Homes program and condensing rooftop units. These savings are shown in Table A and are represented outside other program accomplishments, see *UG-180990, CNGC 2019 NEEA Annual Rpt for CNGC WP-6, 5.29.20. for details on NEEA's efforts in 2019.*

The Company includes a Direct Benefit to Customer (DBtC) ratio per Docket UG-161253 with a target of 60% expenses attributed as a direct customer benefit. Initial estimates of DBtC in the 2019 Conservation Plan were 62% of total program costs. The year exceeded this goal at a 69% DBtC ratio. The higher incentive payments through the LI program than forecast, paired with a focus on Trade Ally involvement and bonus coupons, played a key role in the benefit allocation. Additionally, bundle measures allowed customers to install more measures than they otherwise would have without the assistance to offset initial installation costs.

Current Year Highlights

CY 2019 highlights are in the following section for the Residential and C/I programs.

Residential

The CY 2019 results represent a total participant decline of nearly 50% in attic insulation from the previous year, however the square footage and therms were only about 3% less per install. The average square footage per application decreased from 1279 to 1240 square feet of insulation, which is far closer to the Company's average home size per the 2018 Conservation Potential Assessment performed by AEG[1]. Non-equipment measures added to the program post-tariff were duct sealing, duct insulation, and windows which together comprised 1.7% of prescriptive therm savings. The bundle measures helped drive weatherization installs throughout the year and represent positive adoption by many of the Company's insulation Trade Allies. The decrease in residential Ceiling/Attic insulation installs is likely tied to the removal of an aggressive contractor in Zone 3 from the Trade Ally network in late 2018 due to quality control concerns.

Furnaces maintain their equilibrium as the most prevalent residential measure. Last year hearth therm levels were becoming significant contributors to the savings for Residential program equipment installs and have been eclipsed by high efficiency (HE) tankless water heaters. The Company changed the standard for HE tankless water heaters from 87% efficient to 93% post tariff resulting in a combined water heater prescriptive therm savings of over 10%. This makes it the second most popular residential measure. See Table D for residential highlights and comparisons from PY 2018 and 2019.

[1] Applied Energy Group: 2017 Cascade Natural Gas Conservation Potential Assessment Volume 1, Final Report 04/16/18.

Table D: Residential Program Highlights

New and Existing Residential Equipment & Weatherization Measures					
Existing Home Weatherization	**Participants**		**Therms**		
Insulation (in sq. ft.)	2019	Change from Previous Year	2019	Change from Previous Year	% of Therms Saved
Ceiling or Attic Insulation: **441,347**	356	-47%	33,078	-51%	9.1%
Floor Insulation: **393,398**	338	2%	22,093	1%	6.1%
Wall Insulation: **93,830**	112	19%	6,811	26%	1.9%
Duct Insulation: **9,064**	52	N/A	571	N/A	0.2%
Windows 0.27: **4,487**	35	N/A	2,827	N/A	0.8%
Other Weatherization					
Duct Sealing	90	N/A	2,520	N/A	0.7%
Whole Home Air Sealing	34	-64%	2,559	-80%	0.7%
Weatherization Bundle A	165	-38%	N/A	N/A	N/A
Weatherization Bundle B	24	100%	N/A	N/A	N/A
Subtotals	1,206	-18%	70,459	-34%	19.4%
**New Home Measures*					
Built Green Certified	108	32%	22,965	0.3	6.3%
Energy Star Certified	19	36%	3,878	0.3	1.1%
Subtotals	127	32%	26,843	33%	7.4%
****New & Existing Equipment Measures***					
High Efficiency Tankless Water Heater Tier 1	334	-33%	18,305	N/A	5.0%
High Efficiency Tankless Water Heater Tier 2	274	N/A	18,519	N/A	5.1%
Conventional High-Efficiency Water Heater	6	-54%	198	-54%	0.1%
Energy Savings Kits	135	-19%	3,811	-19%	1.0%
High Efficiency Combination Domestic Hot Water & Hydronic Space Heating	59	13%	20,283	-18%	5.6%
High Efficiency Boiler	9	-31%	767	-44%	0.2%
High-Efficiency Exterior Door	115	161%	1,495	102%	0.4%
High-Efficiency Natural Gas Furnace	1,727	-5%	169,570	-16%	46.7%
High-Efficiency Natural Gas Hearth	179	1%	10,030	-2%	2.8%
Programmable Thermostat	1,228	13%	23,084	10%	6.4%
Subtotals	4,066	5%	266,062	-9%	73.2%
Prescriptive Program Totals	5,399	-1%	363,364	-13%	100.0%

*Builder program includes all portfolio measures except weatherization

The Builder Program remains a core component of Cascade's residential rebate offerings in 2019. The mantle of Builder Program Coordinator passed to a new staff member for the latter half of the 2019 program year. Throughout this transition, the Builder Program maintained momentum and finished 2019 with 690 new home rebate applications. In 2018, this figure was 689 homes installing a variety of the portfolio measures; moreover, the therm savings were nearly identical with roughly 109,000 therms saved in each year (this sum reflects therm savings of builder applications received in each respective program year, vs therms paid).

The 2019 Builder Program increased participation by 16%, from 25 to 29 builders and increased the number of builders that accounted for at least 1,000 deemed therms by 19%. The normalized therm savings per application were greater in 2018 than in 2019 due to the deemed savings per measure decrease as a result of the 2019 tariff. While the year-over-year therm savings remains equal, Cascade was able to incentivize more builders and provide more rebates to a greater portion of the builder cohort. The 2019 performance speaks to how a builder program coordinator, focusing on outreach and growth of the program, is integral to the residential program's success.

Commercial

While the recent results for the CNG C/I program have tended towards increases in standard/prescriptive incentives, 2019 was highlighted by a dramatic increase in custom incentives. The Ostrom Farms project filled a large portion of the 233% growth in custom therms saved in 2019 over 2018. This project accounted for nearly 92,000 of the 153,377 therms saved through the custom program in 2019.

This project consisted of three (3) 3,300,000 kBtu Cleaver Brooks CFC condensing boilers. These boilers serve both hot water and steam purposes at this new facility for growing mushrooms indoors. Note, the significant increase in custom therms achieved in 2019 is due largely to the Ostrom project. This project is similar to most large custom projects, in that they are not projects which the program can count on year over year and are developed through building relationships with contractors and Energy Services Companies.

On the standard or prescriptive side, there was a dip in total therms achieved for 2019 compared with 2018 (230,799 in 2019; 279,363 in 2018) although several measures did increase over the previous year. Radiant heating, Demand Control Ventilation (DCV) and Energy Savings Kits (ESKs) each saw growth of more than 200% in 2019.

Radiant heating may prove a measure with a bright future for the program moving forward. It is ideal for manufacturing facilities, radiant heat operates efficiently, and the incentive offered through the program makes it an appealing option.

Though six of the nine DCV measures completed in 2019 were part of a single project, staff are aware of numerous contractors promoting this work. DCV will continue to grow with the future of advanced rooftop units still in the development phase.

The showerhead and aerator ESKs (ESK B) grew 240% in 2019 as compared to 2018. Though the growth was expected, changes in Washington State code for these items were revealed later in the year, meaning increased outreach played a significant role in the increase.

The drop in prescriptive incentives was forecast as program staff identified an expected increase in custom therms early in the year. However, increased outreach has laid a solid foundation for 2020 for both standard and custom therms savings measures.

See Figure A and Table E for therm savings comparison between custom and prescriptive measure installs.

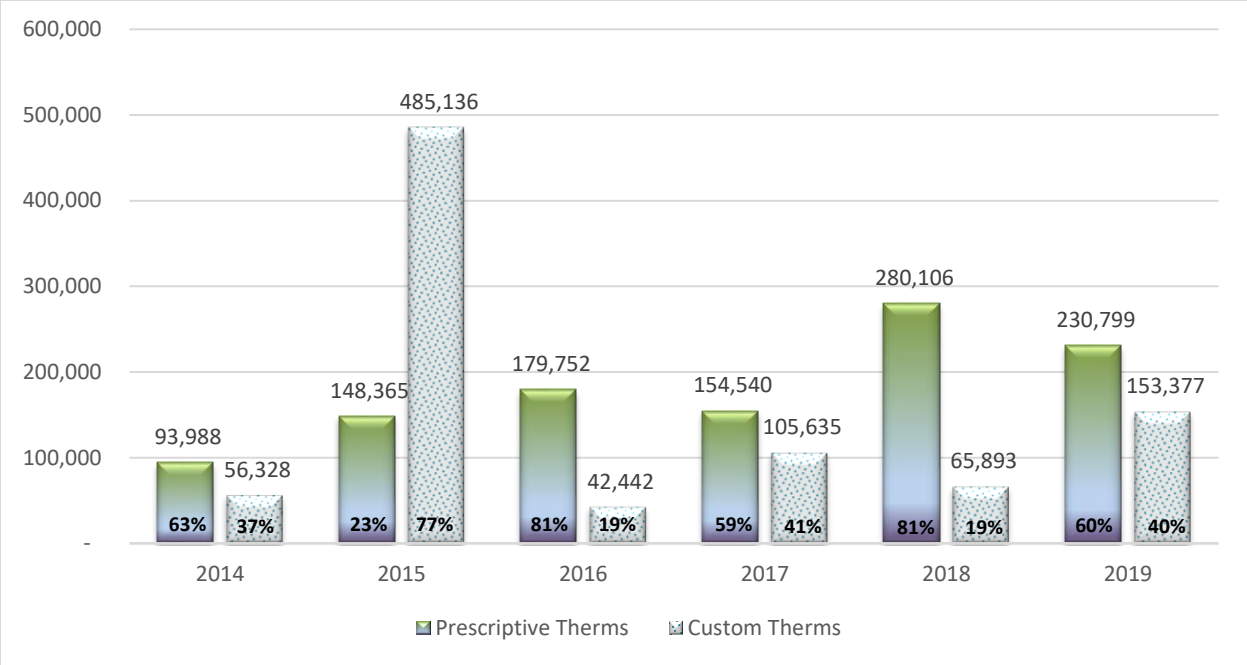

Figure A: Prescriptive vs Custom C/I Therms Savings 2014-2019

See Table E for further C/I program highlights.

Table E: Commercial Program Highlights

Commercial Equipment & Weatherization Measure						
Weatherization		**Participants**		**Therms**		
Insulation Measures (in sq. ft.)		2019	Change from Previous Year	2019	Change from Previous Year	% of Therms Saved
Attic Insulation (Tier 1):	**32,215**	10	25%	12,156	-55%	5.3%
Attic Insulation (Tier 2):	**1,500**	1	-83%	480	-92%	0.2%
Wall Insulation (Tier 1):	**4,499**	3	0%	719	102%	0.3%
Wall Insulation (Tier 2):	**27,921**	5	-55%	5,303	-56%	2.3%
Roof Insulation (Tier 1):	**1,450**	1	-50%	507	-98%	0.2%
Roof Insulation (Tier 2):	**34,192**	3	50%	34,192	332%	14.8%
Windows:	**94,979**	9	N/A	339	N/A	0.1%
Subtotals		32	0%	53,696	132%	23.3%
Food Service Measures						
Gas Conveyor Oven		2	-71%	154	-88%	0.1%
Gas Convection Oven		2	-83%	1,298	-84%	0.6%
Gas Fryer		32	3%	23,290	-29%	10.1%
Door Type Dishwasher Low Temp Gas - New Tariff		7	133%	3,584	167%	1.6%
Connectionless 6-Pan Steamer		2	N/A	1,824	N/A	0.8%
Connectionless 3-Pan Steamer		1	N/A	535	N/A	0.2%
Griddles		2	N/A	546	N/A	0.2%
Double Rack Oven		1	N/A	1,806	N/A	0.8%
Subtotals		49	-8%	33,037	-24%	14.3%
Space & Water Heat Measures						
Demand Control Ventilation		9	800%	2,359	159%	1.0%
Boiler		38	-21%	80,437	-28%	34.9%
Motion Control Faucet		3	-40%	15,776	87%	6.8%
DHW Tankless Water Heater		23	28%	8,260	127%	3.6%
Domestic Hot Water Tanks		37	-35%	5,920	-49%	2.6%
Energy Savings Kits		19	138%	22,625	N/A	9.8%
Warm Air Furnace		54	-5%	5,542	-22%	2.4%
Radiant Heating		10	100%	3,139	4%	1.4%
Subtotals		193	-3%	144,058	-2%	62.4%
Prescriptive Program Totals		**274**	-4%	230,791	-16%	100.0%

Cumulative Savings – Overview of the larger impact[2]

Since 2010, Cascade's Energy Efficiency Incentive Programs have saved roughly 6.2 million therms, which equates to 32,742 metric tons of Carbon Dioxide Equivalent (CO2e). This can be likened to either:

- Green House Gas emissions from 5,000 average vehicles each driven 16,300 miles
- CO2e emissions from:
    - 3,684,221 gallons of gasoline consumed
    - 36,076,835 pounds of coal burned
    - 3,778 homes' energy use for one year
    - 75,804 barrels of oil consumed

Reporting Details

Prior to 2016, the Company tracked savings based solely on install date, which frequently required review of accomplishments after the annual report was filed to fully capture savings from the previous year. The Cascade Energy Efficiency Incentive Program now records its annual performance based on the year the incentive was paid, as opposed to reporting based on the measure's install date. This alteration in reporting has removed the Company's need to revisit the previous year's report and allows Cascade to better gauge program accomplishments in real time while enabling the Company to pivot efforts as needed.

Cascade absorbed residential rebate processing from an external vendor in April 2016 and has since carefully tracked the rebate queue to predict the ebbs and flows and address potential delays. See Figure B for queue levels per month during this timeframe. See Figure C for monthly total rebate submissions since 2016. To remain within the 8-12 week processing target the Company tries to maintain a queue around 400 applications, allowing for standard processing within 10 weeks of submission.

[2] Calculations based on United States Environmental Protection Agency Greenhouse Gas Equivalencies Calculator - https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

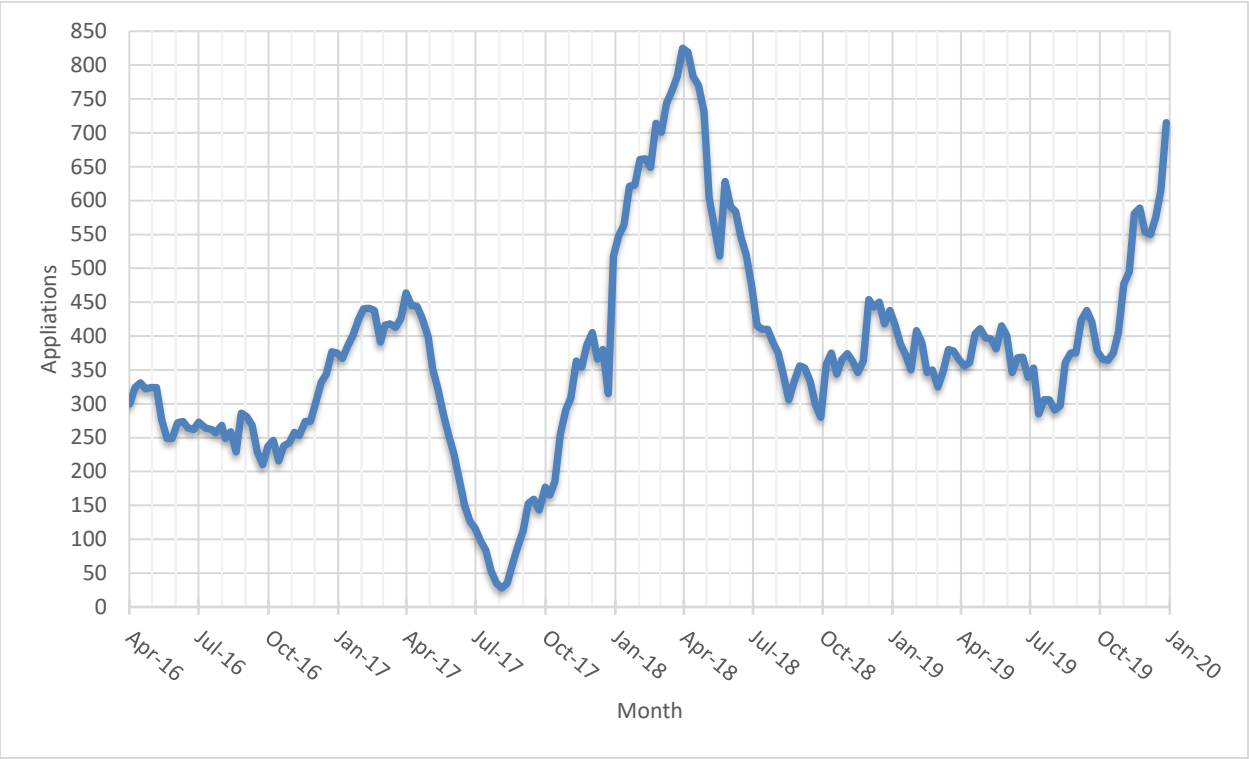

Figure B: Residential Monthly Queue 2016-2019

As demonstrated in both Figure B and C the Company has historically experienced an uptick in Residential submittals in a cyclical pattern from late November, through March. However, 2019 saw a slight variation where a large number of submittals were received in Q4. Figure C displays the increased performance over time with the red trend line smoothing the variability to depict a smooth increase by just over 2 times over the past four years.

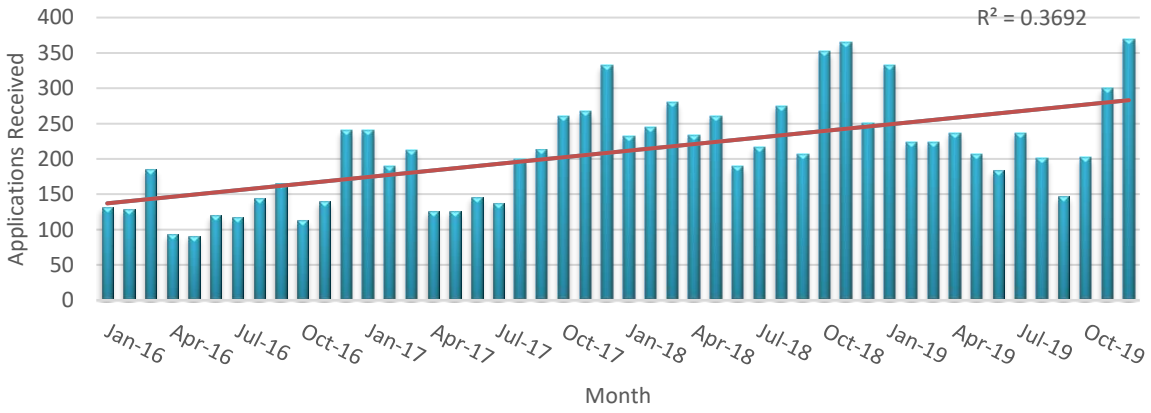

Figure C: Residential Monthly Intake 2016-2019

Low-Income

Cascade's partnership through the Low-Income Weatherization Assistance Program (WAP) started in 2008. The Company offers rebates to qualified agencies delivering whole-home energy improvements to income eligible customers in the State of Washington. Weatherization reduces the customer's energy burden by improving efficiency through upgrades to the building envelope and home-heating equipment. Whereas bill assistance addresses the immediate crisis, weatherization addresses the household's long-term energy demand by reducing the amount of energy needed to heat the home. Cascade commits to ensuring as many low-income natural gas homes receive weatherization services as possible within the Company's service area.

On August 1, 2018, revisions to the Company's Enhanced Weatherization Assistance Program (EWIP) took effect. This program expansion was designed to remove remaining barriers to serving natural gas homes in Cascade's service area.

The expanded EWIP program removed the $10k per-project cap and added a 15% project coordination fee and 10% indirect rate. The Company also updated the per-therm payment allowable in the tariff to reflect the most recently acknowledged IRP avoided cost rate of $18.77 for 30-year measures. In addition to these changes, the Company removed the $500 cap for health and safety funding. Agencies may now submit a request for the total costs associated with health and safety work directly tied to a qualified weatherization measure. Cascade has seen a marked increase in program participation and engagement since the time these changes have taken effect.

Since implementation of the revised tariff, Cascade held its second annual meeting of the weatherization agencies to check in on program progress and identify ways to maintain the momentum of the collective efforts. During the agency meeting held in December 2019, the agencies expressed overall satisfaction with ongoing program changes. They also described the effectiveness of various outreach strategies Cascade had supported through a $20,000 budget set aside for customer-facing marketing of the agencies' weatherization services. Bill inserts, yard signs, and social media seemed to have the strongest impact. Radio messaging varied in effectiveness depending on the region where the campaign took place. Cascade will continue to work with the agencies in support of optimizing outreach strategies based on regional need.

In addition to outreach strategies, Cascade and the weatherization agencies communicated about external developments with potential impacts to program operation. These developments included the discontinuation of the Department of Commerce's Weatherization Priority List consistent with national Department of Energy (DOE) policy. The Department of Commerce retired the DOE approved "Priority List" as of February 3, 2020. On February 21, 2019, Commerce implemented a revised "Deemed Measures Priority List" via policy memo. The original deemed measures list took effect Nov 1, 2018 as a result of Commerce Policy 5.2.7-SF and serves as an alternative to TREAT with no Savings to Investment Ration (SIR) requirements for a list of measures with predetermined value; The SIR calculation is how the Deemed Measure Priority List is populated, therefore all

measures on the list have a savings to investment ration of one or greater utilizing averaged savings data.

The Deemed Measures Priority List is allowable for use with all weatherization funding, except DOE. Commerce renamed the Deemed Measures List to "Deemed Measures Priority" so program contracts currently in place across the state that refer to the Priority List would remain viable without revision.

The agencies have indicated to Cascade they will continue to use TREAT for home energy auditing. They will also have the opportunity to explore the Snugg Pro auditing tool on a pilot basis as appropriate. During the pilot phase Commerce requires TREAT be utilized concurrent with Snugg Pro. The Deemed Measures Priority list approved by Commerce is allowed as a replacement for other auditing methodology.

Other policy changes that may impact agencies' weatherization efforts include the Federal Department of Energy's adjustment of measure lives for certain measures. The agencies anticipate this could have an effect on SIR, where measure lives drop from 45 years to 20-30 years. The agencies will keep the Company apprised if any challenges emerge as a result of this development. The Company will also work with the agencies to monitor any future changes to federal, state, or regulatory policy that could impact agency program delivery, such as contractor payroll or energy burden prioritization requirements.

The Company believes most major barriers to agency participation have now been removed. The increase to 2019 participation and achievements has been significant. Anticipated participation for 2020 is estimated by the weatherization agencies to be even higher. However, some of this upward momentum may be dampened by the Washington Stay at Home order necessitated by the COVID 19 crisis of 2020. As of the writing of this report, a stay at home order has been issued by the Governor of WA State, which ended all in-home work for the WAP on March 14, 2020. At the time of publishing this document, no work has been allowed to continue. This will have dramatic impacts on program outcomes for 2020. Tables F and G show results for Program Years (PY) 2008 through PY 2019 and indicate program costs.

Per the guidance of Staff and Cascade's Conservation Advisory Group, the Company develops therm savings targets, and an associated budget for its WIP/EWIP. This target is drafted as part of Cascade's Conservation Plan. Estimated therm savings and participation targets are developed based on anticipated homes served, historical program participation, and direct estimates from the agencies delivering weatherization services to Cascade customers. Cascade multiplies the anticipated number of homes served by the most recent average therm savings per home to develop a general estimate of how much energy could be saved if the target was met. The number of homes served is multiplied by the anticipated average cost-per-project to develop an annual incentive budget. Administrative budgets are based from a general allocation of Company staff time dedicated to rebate processing and program support, as well as funding for meetings and outreach.

It's important to note Cascade develops these estimates to better understand anticipated therm savings and expenditures. However, the incentive and homes-served targets should not be seen as a performance metric for the agencies delivering the WIP/EWIP. Cascade instead determines the health of the program based on the overall ability of the agencies to easily access WIP/EWIP monies as needed to fully fund gas weatherization projects in Cascade's service area; continued robust communication between Cascade and the agencies; and continued program momentum commensurate with on-the-ground realities (such as the COVID-19 crisis) and community need. It's also important to note, while an incentive budget is developed on best estimates of program participation and per-project costs, the WIP/EWIP is able to fund qualified agency work throughout the year without a cap on the total dollars expended by the agencies. Cascade strongly encourages robust program participation. As long as eligible agencies submit qualified projects, rebate checks are issued.

While Cascade's 2019 estimate that 15,000 therms would be saved by WIP/EWIP was slightly higher than the final 2019 actuals, the Company celebrates the success of its agencies in serving low-income gas households, and recognizes the significant upward momentum achieved in 2019.

The Company believes this momentum will continue once the current health crisis normalizes. Additionally, the annual savings more than doubled, the direct payment to agencies far exceeded estimates and while the administrative costs increased, so did therms saved per household by 10%. Further, savings realized per administrative dollars spent were proportionately larger than the previous year.

Table F: Weatherization Incentive Program Participation Levels and Savings by Year

Year	Homes Served	Measures Installed	Average Therms Saved per Household	Total Therms Saved	Carbon Offset (metric tons of CO2e avoided) *
2008	46	125	304	13,985	72.7
2009	54	168	273	14,733	76.6
2010	112	354	275	30,809	160.2
2011	84	259	287	24,130	125.4
2012	64	227	341	21,824	113.4
2013	38	144	394	14,960	77.8
2014	21	66	349	7,338	38.1
2015	19	64	617	11,724	60.9
2016	24	87	489	11,743	61.0
2017	27	108	206	5,564	28.9
2018	28	91	185	5,181	26.9
2019	66	253	203	13,416	62.6

**Based on 2018 IRP Avoided Cost carbon offset calculation of 11.46 pounds per therm.*

Table G: 2019 Low-Income Programmatic Costs

*Total Costs***	**Low-Income**
Total WIP Incentives	$277,706
Total EWIP Incentives	$452,551
15% Project Coordination	$108,035
10% Indirect Rate	$72,023
Total Project Costs with Agency Admin	$910,314
Cascade Admin (Including Program Outreach)	$45,062

***Totals rounded to the nearest dollar. The Low-Income program does not fall under the same cost-effectiveness criteria as the rest of the portfolio, and while both the Utility Cost Test and Total Resource Cost are provided in UG-180990, CNGC 2020 Conservation Annual Rpt WP-4, 5.29.20.xlsx, they are not included in the full portfolio cost effectiveness calculation.*

As demonstrated in Table F, the Company experienced a significant increase in the number of homes served, reaching **66** in 2019, the highest participation level since 2011, when an unprecedented $5 billion of American Recovery and Reinvestment Act funds were made available, $59,545,074 of which were allocated to WA State.

Total therm savings for the PY was **13,416** an increase of **8,235** therms from the prior year. Cascade is proud of this successful outcome and commends the local agencies for their dedication to serving Cascade's most vulnerable households.

Cascade continues to work closely with the agencies to help ensure their success in 2020. Through their Memorandums of Understanding with the Company, the agencies in total have committed to an anticipated **128** homes served through the WIP/EWIP program in 2020. However, with the unprecedented disruption caused by COVID 19, it is likely that weatherization activity will be directly impacted. Cascade will continue to coordinate with its weatherization partners to keep apprised of how we can support agencies during these uncertain times.

When the public health situation normalizes, Cascade will work closely with its agencies to ensure continued participation and momentum. We will also continue to identify partnership opportunities for joint outreach to potential customers.

As demonstrated, 2019 was a highly successful year for the weatherization program. The partnership between Cascade Natural Gas and its weatherization agencies has yielded strong results and ensured vulnerable gas customers in Cascade's service area had access to weatherization. The Company looks forward to continuing this momentum.

Goal Setting

Although the Company's Conservation Plan is the primary platform for goal setting this Annual Report provides an opportunity to delve into factors affecting whether Cascade is able to accomplish the goals set through its modeling software. Portfolios are periodically reevaluated and updated to balance cost-effectiveness (in keeping with current avoided costs), participation outcomes and updated building codes. The Company also confers with its CAG when alterations to the program portfolios are necessary.

As of Q2 2018, the Company started using the LoadMAP forecasting tool as the end use planning software for the 2018 DSM section of the IRP and the 2019 program year. One of the primary benefits of the tool is its ability to run the forecast based on a methodology consistent with the Northwest Power and Conservation Council's Seventh Conservation and Electric Power Plan[3]. "This includes estimated technical, achievable technical, then achievable economic potential using the Council's ramp rates as the starting point for all achievability assumptions."[4]. The Company is currently working with AEG to update the 2016 baseline CPA (released in 2018) to align with requirements as set forth in HB-1257 and looks forward to incorporating the updated model into future program planning.

Goal setting is an estimate only, as the achievable level of potential savings identified by a model is unable to fully account for all possible reasons a customer would not apply, or qualify for, a rebate. For instance, some customers install higher-efficiency upgrades and choose not to notify the Company of the install. Alternatively, some who do apply do not qualify for a rebate due to lack of documentation, late submission or a misunderstanding of program requirements (including use of a licensed contractor). As part of the Company's efforts to increase customer participation and satisfaction, Cascade continues to remove barriers to successful rebate submittal and increase customer satisfaction through process improvements, tariff upgrades and program clarifications. In the February 2019 tariff update, new measures were added to the portfolio for residential windows, duct insulation and duct sealing. The C/I program experienced some revisions as well including addition of floor insulation and windows upgrades. This Annual Report captures customer uptake of these newly offered measures and helps the Company evaluate ways to improve the measure offerings and program requirements to increase customer accessibility to these home and business improvement incentives.

[3] "Seventh Northwest Conservation and Electric Power Plan." Northwest Power & Conservation Council, February 10, 2016. http://www.nwcouncil.org/energy/powerplan/7/plan/

[4] "2017 Cascade Natural Gas Conservation Potential Assessment" AEG, Applied Energy Group, March 16, 2018.

Quality Systems Management – Program Review, Quality Control and Evaluation

The Company's EE Program growth required intensified focus on resource planning and deployment in 2019. Both the Residential and Commercial Programs experienced turnover and the Residential Program's robust trajectory justified additional staffing as the Company maxed out its in-house processing capacity. In 2019, two analysts left to pursue other opportunities and two remaining staff were out on extended medical leave. At any given time during the year, the department was operating at 50% – 75% of necessary resources. Continual improvements within the Quality Management framework drove efficiencies across programs, and the EE department was able to maintain customer satisfaction and data quality.

Process Improvements

Note: resource constraints and training new employees limited the number of new improvements made in 2019

- EE worked with Accounts Payable and its third-party software vendor to configure forms to facilitate software reporting and accounting sheet reconciliation
- A new monthly reconciliation process was initiated to address any payment or reporting discrepancies in real time
    - Previously this task was done on an annual basis and the aging of projects by the end of the year made tracking and corrections onerous
- Expense items were codified for ease of tracking and budget analysis
- The new Builder Coordinator made consistent communication a focus as he works to further grow the program
- The Builder Coordinator was certified by the Building Performance Institute, to provide internal backup to the quality inspector
- The EE Department met with the newly created Energy Services Department for Cascade and initiated a monthly meeting to optimize business development and energy efficiency uptake
    - The Feasibility Workbook process (FWB) was analyzed and determined as overly time consuming and was discontinued in favor of the Energy Services representatives providing the information in real time via email
    - Figures D and E represent the number of new customers who indicated an interest in energy efficiency to Operations field staff during the program year. However, when these FWBs were submitted, the EE team was contacting the customer too late to help influence purchase decisions. Not only were these notifications too late for success, the process included opening each large FWB excel file to see if the customer indicated yes for more EE information. The success rate was estimated around 5% with 10-100 submissions each day, consuming several hours a day with limited return

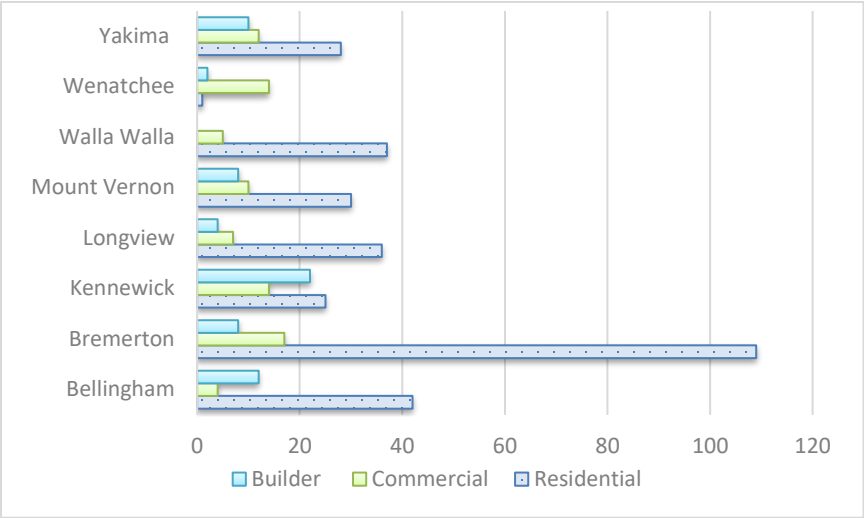

Figure D: 2019 FWB Totals by District

- For the period of 2019 when the FWB process was implemented, there were a total of 308 residential, 75 commercial, and 66 builders who indicated an interest in energy efficiency as new customers

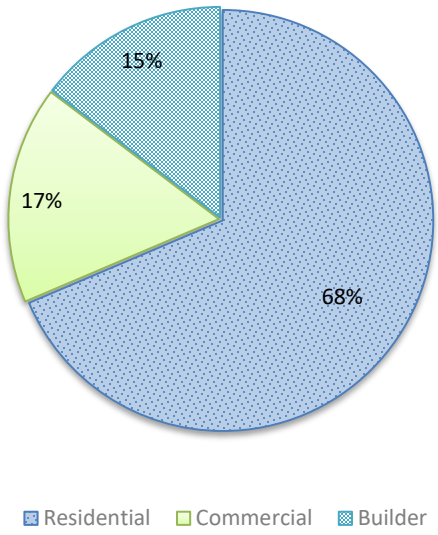

Figure E: 2019 FWB Totals by Category

- In Q4 of 2019 the Energy Services Reps and the EE team held several meetings to brainstorm process improvements to better serve customers. Starting in December, instead of using a SharePoint notification through the FWB process the Energy Services Reps sent emails immediately after a customer requested new service

Table H: December 2019 EE Leads

District	Residential	Commercial	Builder
Bellingham	6	0	2
Bremerton	1	0	1
Kennewick	6	0	1
Longview	0	0	0
Mt. Vernon	12	2	4
Walla Walla	1	1	0
Wenatchee	1	0	0
Yakima	2	1	0
Totals	29	4	8

    - Although these numbers aren't as high as the FWB process, the leads are more concrete and provide earlier indications to inform purchase decisions
- More than 100 call center representatives received an EE presentation, and plans were finalized to deliver a similar presentation to all WA Districts to leverage Cascade employee and customer communications
- A weekly report from the manager is created during payment review to identify trends and corrective actions during processing
- Missing information data collection began in July for evaluation in 2020 including tracking and streamlining guidelines to minimize processing delays and disqualifications
- Cascade began collaboration with Puget Sound Energy to support technical audits and green certifications, although it was put on hold when Puget Sound Energy's portion of the funding was not approved for the 2020 program year
- An updated technical specification manual was created and distributed to all Trade Allies to aid in program guideline adherence and best practices
- The new Economic Analyst scheduled meetings with Cascade's forecast group and AEG to reinforce consistency in the DSM planning value stream
- The C/I vendor added additional staff focused in Eastern Washington and Southwestern WA (climate zone 2 and 3)
- The Point of Sale program was also expanded to include more Trade Allies allowing for the contractors to remove more of the upfront cost barriers to promote higher efficiency installs
- A Pilot project with Travis Industries was also initiated to place a link to the incentive information directly on Lopi's online fireplace catalog

Software Customization

- Nexant Inc. the Company's residential DSM software vendor moved to a Salesforce platform in 2019 allowing for a slight improvement in system reliability and performance
- In 2017, with CAG support through an existing software contract, the Company sought to develop in-house Evaluation, Measurement and Verification (EM&V) capabilities as an interim tool between contracted, third-party EM&V assessments. The Company's Nexant eM&V software implementation continued throughout 2018 and 2019. Customer usage data integrity proved the most challenging aspect in the beta testing, resulting in several iterations of Customer Care and Billing system job extraction coding by Cascade's IT department.
    - Cascade's intern project is scoped to include eM&V data quality analysis and customer surveys and was started in 2020

Resource management

- In 2019, the EE department successfully navigated a series of resource depletions including the departure of two analysts and the medical leave of two other staff members. Cross-training existing staff and implementing an aggressive hiring process mitigated negative impacts to customers and savings achievements
- EE worked with Western Washington University's Institute for Energy Studies to recruit an intern to help process seasonal peak rebate volume and to initiate the eM&V pilot

Miscellaneous

The Weekly Energy Efficiency Metric reporting is used to provide a real time snapshot of the residential program's performance in relation to year end goals, which is a key element to the program's quality system. In 2019 the formulae used to produce this report were automated.

The automation standardizes the weekly report process and reduces chances for operator error. With the automation in place several existing formulae were refined to smooth the model output using rolling averages to produce a report that more accurately reflects weekly production and progress to goal.

Disqualified Measure Applications

The Company denied 413 measure submittals across 318 project applications in the program year; 154 of those projects were partial denials, meaning the customer received a rebate for at least one measure on their application. The denied measures represent 7.7% of all measures processed in 2019.

Most measures were denied because they fell short of the program's efficiency requirements (58% of all denials). The second leading cause of denied measures involved projects with incomplete or missing invoices (about 19%). Further, half of all denied measures came from contractors in Cascade's Trade Ally program. See Figure F for residential program denial reason percentages and Figure G for residential denials by measure type.

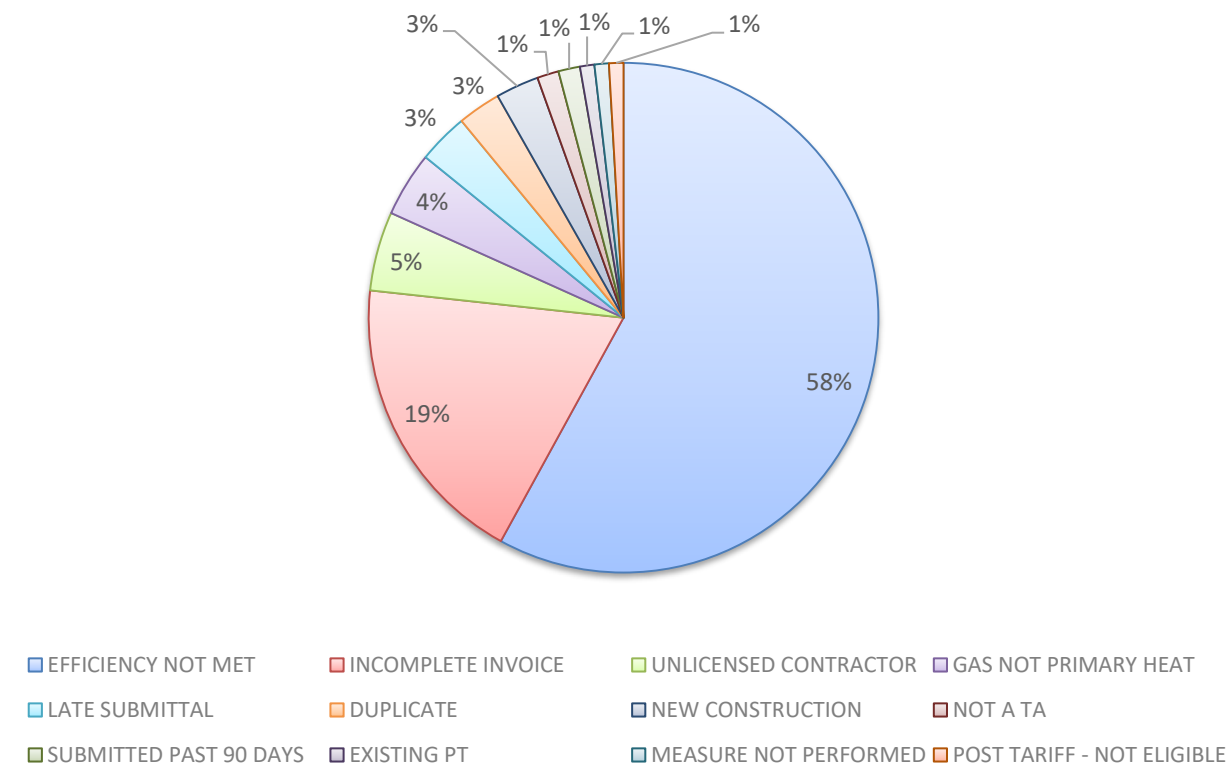

Figure F: 2019 Residential Program Denial Reasons

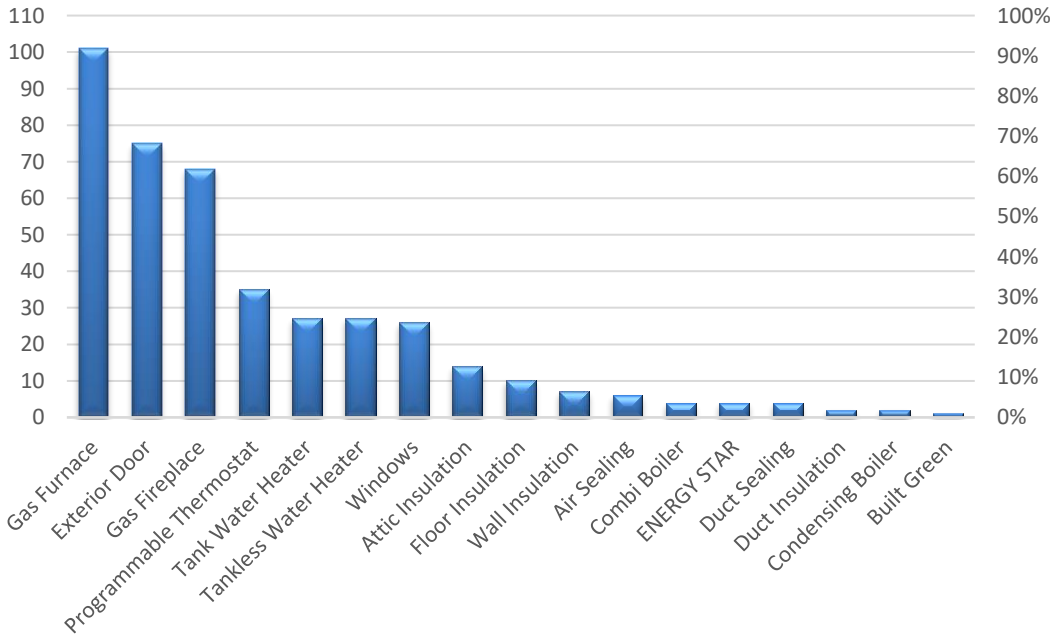

Figure G: Residential Denials by Measure Type

Missing Information Analysis

Data about missing information (MI) applications was gathered throughout 2019. A three-month time study was conducted to collect individual rebate processing times. Followed by statistical analysis to convert the data into useable information for future MI process improvements.

The Company developed six buckets based on like-type instances from a combined sample size of 478 apps (~16% of total 2019 paid apps) curated over 2019: Incomplete Application, Signatures, Missing or Incomplete Invoices, Insulation, Windows, and Doors.

Based on this process, the Company then reduced and smoothed out statistical variances in each bucket to analyze time spent and by isolating and averaging the instances in terms of percentage from the data curated over 2019. Using this method, the Company was able to distill key findings on issues resulting in MI situations, costs associated with processing these rebates and opportunities for improvement.

Of the total ~3,000 applications processed and paid in CY 2019, 21% (extrapolated from the sample of 478 instances) or ~600 were received with MI. The average time to process MI applications was 35 minutes, whereas the average time to process a clean application is about 8 minutes. In total, the team spent ~180 hours or 23 full-time equivalent days, which equated to ~9% of 2019's workable days.

The team identified two major contributors to MI, Missing or Incomplete Invoices and Insulation invoice requirements, which together encompassed over 60% of MI processing time over the PY. To address MI, the team then devised two recommendations to target and reduce these contributing factors.

First, the new and existing application could be divided into two separate applications, one for weatherization measures and one for mechanical equipment measures, which will simplify and free up real estate on the front page of the application. The Company can then use the now available space to target clearer messaging about rebate requirements through larger font and strategic color use.

Second, the Company will reinforce the work with Trade Allies to consistently communicate invoice requirements and consequences when an invoice is submitted with MI. The goal is to make it as easy as possible for the customer to successfully apply, and the belief is EE can both improve the customer experience and decrease the application processing time.

Quality Control Inspections

Cascade's EE program tracks customer installations by Climate Zone, see Figure H for key towns located within Cascade's three Climate Zones. Within these Climate Zones, Cascade performs Quality Control Inspections through both the C/I and Residential programs.

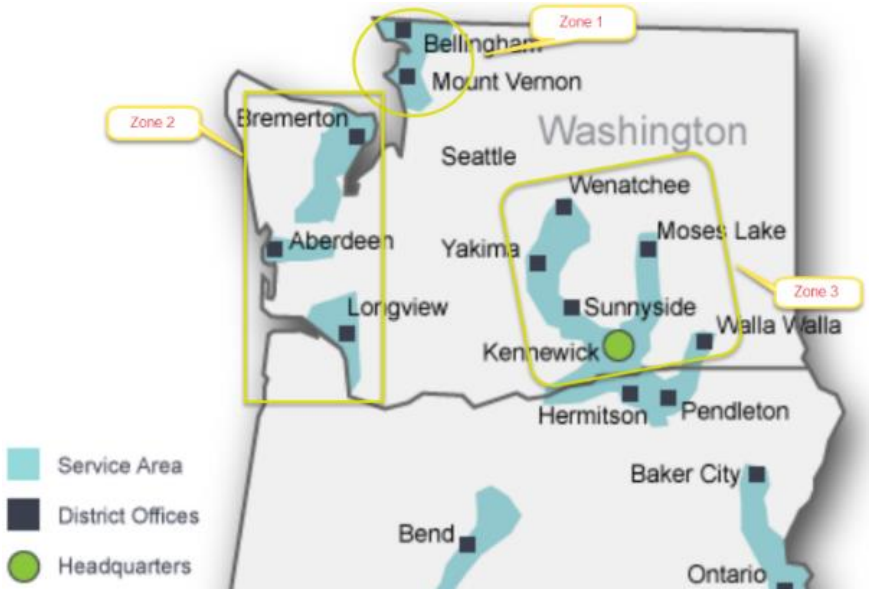

Figure H: Cascade Energy Efficiency Washington Climate Zones

Residential Sector

Historically, up to 5% of applications submitted for the Residential rebate program are assigned quality control inspections, see Table I for total inspections from the program year. In 2019's Residential program, 26 inspections were performed in Climate Zone 1 (Northwest portion of the Company's service territory), 3 in Zone 2 (Western/Coastal region) and 29 in Zone 3 (East of the Cascade Mountains). These projects consisted of randomly selected and flagged Residential submissions.

Table I: Residential Program 2019 Inspection Summary

Climate Zone	QC performed
Zone 1	26
*Zone 2	3
Zone 3	29
Total	58

*Due to economic barriers, Zone 2 experienced less program uptake and aligns with QC inspections relative to the other WA zones.

The Residential program inspections are performed through a combination of internal staff review and third party contracting through the Sustainable Living Center located out of Walla Walla, Washington.

The Residential inspections are geared toward confirming submitted applications match installed measures and meet minimum efficiency requirements, that all pertinent health and safety

requirements have been addressed, and that generally accepted industry best practices have been demonstrated. The inspector verifies efficiency of the equipment as well as the R-values and U-factors on weatherization projects to confirm deemed savings are viable for those projects. If an issue is noted as part of an inspection the customer and contractor are notified of the issue, and in most cases given an opportunity to address and correct. Cascade also uses quality control inspections to confirm the quality of installations performed by Trade Ally contractors and vet contractors seeking admittance.

During 2019, the Company enlisted a second employee to certify as a Building Analyst with the Building Performance Institute (BPI). BPI works to advance the building performance industry by developing standards that foster quality and consistency throughout the nation's home performance and weatherization workforce. The Building Analyst candidate must show understanding of ANSI/BPI-1200-S-2017 Standard Practice for Basic Analysis of Buildings, through written and field exams. The addition of a second BPI Certified Building Analyst deepened the bench for Residential inspection completion allowing for additional internal inspections in 2020.

Commercial/Industrial Sector

Post-Installation Verification (PIV) for C/I is determined by the dollar amount of the project and what measures were completed. For example, Radiant Heating, Boilers, Domestic Hot Water Tankless and all Insulation measures over $10,000 receive PIV. All other measures that exceed $5,000 in the C/I sector undergo PIV. Most Custom Projects receive PIV, with few exceptions. Every C/I Self-Install Insulation projects requires inspection as well.

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

Table J: Commercial Program 2019 Inspection Summary

Climate Zone	QC performed
Zone 1	**5**
Zone 2	**5**
Zone 3	**20**
Total	**30**

Participation Summary

A full breakdown of therm savings, Utility Costs and Total Resource Costs by all measures and programs for the 2019 program year can be found within the following files filed in addition to this report with the commission:

- *UG-180990, CNGC 2019 Conservation Annual Rpt WP-1, 5.29.20.xlsx* – This first work paper provides the cost effectiveness calculations for the entire portfolio.
- *UG-180990, CNGC 2019 Conservation Annual Rpt WP-2, 5.29.20.xlsx* – This second work paper provides the cost effectiveness calculation for the Commercial program.
- *UG-180990, CNGC 2019 Conservation Annual Rpt WP-3, 5.29.20.xlsx* – This third work paper provides the cost effectiveness calculation for the Residential program.
- *UG-180990, CNGC 2019 Conservation Annual Rpt WP-4, 5.29.20.xlsx* – This fourth work paper provides the cost effectiveness calculation for the Low-Income Weatherization program.
- *UG-180990, CNGC 2019 Conservation Annual Rpt WP-5, 5.29.20.pdf* – This fifth work paper outlines the community outreach efforts of the EE program.
- *UG-180990, CNGC 2019 Conservation Annual Rpt WP-6, 5.29.20.*pdf – This sixth work paper outlines NEEA's efforts on behalf of CNGC.

Updates to CY19 Program Achievements

No 2019 True-up is provided as no material additional expenditures or rebates were submitted after the report was filed. This is due in large part to the Company reporting savings by paid versus install date. There is one residential measure install that was corrected between 2018 and the 2019 reporting timeframe. The project was initially processed as a boiler rebate in 2018 and was disputed and corrected to a combination unit rebate. As the initial savings were claimed in 2018 the additional savings and costs were paid in 2019 and are reported as part of the 2019 calendar year.