Conservation Plan 2021 - Appendixes A—B

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CASCADE NATURAL GAS CORPORATION
A Subsidiary of MDU Resources Group, Inc.
In the Community to Serve®

Washington Conservation Incentive Program New & Existing Home Incentives

New & Existing Homes

Rebates effective for installs on or after **February 19, 2019**. Incentives may be subject to change and are only applicable for tariff approved measures in place at the time of installation.

High-Efficiency Natural Gas Measures	Basic Specifications	Incentive
Furnace [1]	95% + AFUE	$400
Hearth (Fireplace) [2]	70% + EnerGuide FE (Fireplace Efficiency)	$300
Combination Radiant Heat [1 & 3]	95% + AFUE, pre-approval required	$1,250
Condensing Tankless Water Heater [3]	0.87 + UEF / 0.93 + UEF	$250/$350
Exterior Entry (not sliding) Door [1]	U ≤ 0.21	$100
Condensing Boiler [1]	95% + AFUE	$750
Programmable Thermostat [1]	7 day (flexibility)/5+2 (workweek/weekend)/5+1+1 day models	$25

Existing Homes

Energy-Saving Measure [1]	Basic Specifications	Incentive
Floor Insulation [4]	Post R ≥ 30 or fill cavity to ≥ R-19, prior condition must not exceed R-11	$0.75/sqft
Wall Insulation [4]	Post R ≥ 11 or fill cavity, prior condition must not exceed R-4	$0.75/sqft
Ceiling or Attic Insulation [4] Attic insulation cannot fill cavity	Tier 1: Post R ≥ 38, Prior condition must not exceed R-19 Tier 2: Post R ≥ 49, Prior condition must not exceed R-19	$0.75/sqft $1.00/sqft
Whole House Air Sealing [4 & 5]	Minimum 400 CFM50 reduction using pre and post blower door testing	$150
Duct Sealing [4]	30% or more of supply ducts in unconditioned space	$150
Duct Insulation [4]	Post R ≥ 8, prior condition must not exceed R-0	$0.50 per linear foot
Windows	ENERGY STAR® Northern Zone, U Factor ≤ 0.27 Pre-existing must be single pane	$5.00/sqft
Add on Rebates	**Basic Specifications**	**Incentive**
Bundle A: In *addition* to your standard incentives	**Any Two:** Floor, Wall, Ceiling/Attic Insulation, or Air Sealing. Minimum of 1,000 sqft insulation total	+$250
Bundle B: In *addition* to your standard incentives	**Air Sealing and any two** insulation measures Minimum of 1,000 sqft insulation total	+$500

New Homes

Energy-Saving Measure [1&6]	Basic Specifications	Incentive
ENERGY STAR® Certified Home	National Program Requirements Version 3.1 (Rev. 08)	$2,000
Built Green Certified Home	Requires Built Green Certification	$2,000

1. *Home must be heated by natural gas and a VRF or multizone ductless electric heat pump cannot be present.*
2. *Must use intermittent ignition device. Specifically, per CSA P.4-15 Testing Standard referenced to downloadable Natural Resources Canada EnerGuide database of December 3, 2018 and later. Eligibility for older models not referenced in the December 2018 or later downloadable database, based per CSA P.4 Testing Standard referenced to downloadable Natural Resources Canada EnerGuide database of February 14, 2017. Ventless fireplaces are not eligible.*
3. *Water-heating fuel must be provided by Cascade Natural Gas for all water-heating incentives. Use of tankless water heater is acceptable for combined space and water heating with a Uniform Energy Factor (UEF) of 0.95 or higher. Combined use of indirect, non-fired tank is acceptable for use with approved 95% AFUE Boiler where required.*
4. *Insulation and air sealing must be performed by a CNGC qualified Trade Ally. Visit www.cngc.com/energy-efficiency for a list of qualified Cascade Trade Allies in your area.*
5. *Requires WA Department of Commerce Combustion Safety Test Report Exhibit 5.3.1A.*
6. *These New Home only rebates may not be combined with any other measure except Hearths (Fireplaces). Built Green measures require proof of a natural gas heating system, such as a photo or invoice.*

Last Updated 02/2019

CASCADE NATURAL GAS CORPORATION
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Washington Conservation Incentive Program New & Existing Home Incentives

Eligibility Requirements

Rebates effective for installs on or after **February 19, 2019**. Incentives may be subject to change and are only applicable for tariff approved measures in place at the time of installation.

- Applications must be received within 90 days of install date.
- Applicant must be a Washington State Cascade Natural Gas customer on residential rate schedule 503 (see bill).
- Homes must be heated by natural gas to be eligible for space heating and weatherization rebates.
    - Homes using a **VRF or multizone ductless electric heat pump are ineligible for space heating rebates.**
- Measures must be installed by a Washington State licensed contractor, except doors and programmable thermostats. **Note:** if installing insulation or air sealing you must use a CNGC qualified Trade Ally.
- Appliances and building materials specified by Washington state code are not eligible for Cascade Natural gas incentives.
- ENERGY STAR homes must be approved by an ENERGY STAR verifier.
- Built Green Homes must present Built Green Certification.
- Review all terms and conditions for the program at **www.cngc.com/energy-efficiency**

How to qualify for Cascade Natural Gas incentives:

1. **Establish your eligibility** visit **www.cngc.com/energy-efficiency** or Call 866.626.4479 for program requirements.
2. **Install energy-efficient home improvements.** Contact a CNGC Trade Ally or Washington licensed contractor to install eligible measures. Visit **www.cngc.com/energy-efficiency** for a list of qualified trade allies. Note: if installing insulation or air sealing you must use a CNGC qualified Trade Ally.
3. **Submit Application**. Obtain the application at **www.cngc.com/energy-efficiency** or call 866.626.4479. Sign and send with a copy of your invoice to:

Mail: Cascade Energy Efficiency Admin
1600 Iowa Street, Bellingham, WA 98229

Fax: 360.788.2396

Upon receipt of completed applications, please allow up to 12 weeks for processing.

Home Energy Savings Kit[3]

Water and energy saving shower heads and faucet aerators available upon request. Please call 866.626.4479 for details or apply online.

For questions or more information, please visit us online at www.cngc.com/energy-efficiency or call 866.626.4479.

Cascade Natural Gas
WA Commercial and Industrial Incentives

Rebates effective on installs on or after February 19, 2019

Heating

Warm Air Furnaces - $5.00/kBtu/hr
High Efficiency Condensing Furnace—Min 91% AFUE
Ex: 120 kBtuh x $5/ kBtuh = $600

HVAC Unit Heater - $5.00/kBtu/hr
High Efficiency Condensing Min—91% AFUE
Ex: 180 kBtuh x $5/ kBtuh = $900

Radiant Heating - $15.00/kBtu/hr
Direct fired radiant heating
Ex: 180 kBtuh x $15/ kBtuh = $2,700

Boiler Vent Damper - $1,000
Min 1,000 kBtu input

Boiler Steam Trap[2 & 3] - $125
Min 300 kBtu in; steam pressure at 7psig or > Retrofit Only

Demand Control Ventilation[4] - $20/nominal ton
5 tons ≤ Unit Cooling Capacity ≤ 20 tons.
Pre-Approval Required.

High-Efficiency Condensing Boiler - $6.00/kBtu/hr
Min 90% Thermal Eff & 300 kBtu input
Ex: 1600 kBtuh x $6/ kBtuh = $9,600

Kitchen Equipment/Appliances

Connectionless 6 Pan Gas Steamer - $1,200
ENERGY STAR® or CEE/FSTC Qualified
≥38% Cooking Eff / ≤2,083 Btu/hr/pan Idle Rate

Gas Griddle - $500
ENERGY STAR®
≥38% Cooking Eff/ ≤2650 Btu/hr sq ft Idle Rate

Multi-Tank Conveyor Low Temp Dishwasher[3] - $2,500
Gas Main w/Electric Booster ENERGY STAR®
≤2.0 kw Idle Rate; ≤ 0.50 gallons/rack

Connectionless 3 Pan Gas Steamer - $850
ENERGY STAR® or CEE/FSTC Qualified
≥38% Cooking Eff / ≤2,083 Btu/hr/pan Idle Rate

Gas Convection Oven - $800
ENERGY STAR®
≥42% Cooking Eff/ ≤13,000 Btu/hr Idle Rate

Gas Conveyor Oven - $450
≥42% tested baking efficiency

Double Rack Oven - $2,500
FSTC Qualified
≥50% Cooking Eff/ ≤3,500 Btu/hr/Idle Rate D Rack

ENERGY STAR® Gas Fryer - $750

Door Type Dishwasher Low Temp Gas[3] - $800
ENERGY STAR®
≤.6 kw Idle Rate/ ≤1.18 gallon/rack

Weatherization

Windows - $5.00/sq ft - (retrofit only)
Pre-Existing must be single pane; Post must be ENERGY STAR® Northern Zone, U-Factor ≤ 0.27

Attic Insulation[1] - (retrofit only)
Ex: 1000 sq ft x $2/ sq ft = $2000
Tier 1: Min R-30 - $2.00/sq ft
Tier 2: Min R-45 - $2.50/sq ft

Roof Insulation[1] - (retrofit only)
Tier 1: Min R-21 - $2.00/sq ft
Tier 2: Min R-30 - $2.50/sq ft

Wall Insulation[1] - (retrofit only)
Tier 1: Min R-11 - $1.25/sq ft
Tier 2: Min R-19 - $1.50/sq ft

Floor Insulation[1] - (retrofit only)
Min R-30 - $0.75/sq ft

Hot Fluid Pipe Insulation[3] - (retrofit only)
> 140F, <200F, 1.5" insulation - $15.00 per linear foot,
≥ 200F, 2.5" insulation- $25.00 per linear foot

Water

Energy Savings Kits[3] - FREE
A: Kitchen Pre Rinse Spray Valve
B: Low Flow Showerheads & Bath Aerators

Domestic Hot Water Tankless Water Heater[3]
.87 UEF/Thermal Efficiency - $120/gpm
.93 UEF/Thermal Efficiency - $150/gpm
Ex: 0.93 UEF 6 GPM x $150/ kBtuh = $900

DHW Recirculation Controls[3] - $200
Continuous Operation DHW Pump. Retrofit Only.
Pre-approval required.

Motion Control Faucet[3] - $105
Maximum flow rate of 1.8 gpm
WaterSense® Certified and Below Deck Mixing Valve

Domestic Hot Water Tanks[3] - $2.50/kBtu/hr
Condensing tank, Min 91% Thermal Eff
Ex: 199 kBtuh x $2.50/ kBtuh = $497.50

Ozone Injection Laundry[3] - $2,500
Venturi injection or bubble diffusion - Min 125 lb. total washer/extractor capacity. **Pre-approval required.**

Bundle and save in addition to your standard incentive!
Two insulation measures, min. 1000 sqft +$500
Two Kitchen Equipment[5] +$300, Three Kitchen Equipment[5] +$500

If you are planning equipment or building upgrades that do not fit within the standard incentives, but significantly reduce natural gas consumption, please call 866.450.0005 to learn about custom project opportunities.

1. Insulation must be installed in an existing building, heated by natural gas, without functional insulation. Rebate will not exceed total project costs. Wall minimum value of R-11 applies only where existing walls have no internal insulation cavities.
2. This measure will only be allowed where the customer agrees to regular trap maintenance and replacement every seven (7) years.
3. Incentive eligibility contingent upon use of natural gas fired domestic hot water serving the specified measure equipment or fixture.
4. For Existing Packaged HVAC Units equipped with Gas Fired Furnace and Direct Expansion Cooling Sections DCV Unit; Controller must meet Joint Utility Advanced Rooftop Control Guidelines.
5. Kitchen equipment is defined as dishwashers, steamers, ovens, fryers, and griddles.

Who is eligible to participate?

- Mixed purpose facilities that include buildings on both Residential Rate Schedule 503 and qualifying Rate Schedules 504, 505, 511, and 570 as part of the same Cascade Natural Gas customer account are also eligible for custom conservation incentives.
- Incentives apply on qualified high-efficiency natural gas equipment such as heating, insulation, water heating systems, cooking equipment installed as replacement, retrofit as well as new installation in place of standard efficiency equipment. If the equipment installation, replacement, or retrofit provides significant increase over existing high-efficiency equipment, and is not listed here please contact program representative for potential custom incentive.
- Eligible measures installed are subject to the available incentives coinciding with the date of the installation as outlined in CNGC's tariff.
- 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 to be calculated using standard engineering practices. CNGC will review the natural gas savings calculations and reserves the right to modify energy savings estimates.

How to qualify for Cascade Natural Gas incentives

1. Establish eligibility:
   Call 1.866.450.0005 or visit www.cngc.com/energy-efficiency for program requirements.
2. Install energy-efficient upgrades:
   Contact a licensed contractor or one of our Trade Allies to install eligible measures.
3. Submit application:
   Available online at www.cngc.com/energy-efficiency.
   Sign and enclose:
   - ☐ Application
   - ☐ W9 form
   - ☐ CNG bill
   - ☐ Invoice/Quote showing total cost, model number and R Values for insulation measures

Mail forms to:

Cascade Natural Gas Corporation,
c/o Lockheed Martin Energy
22121 20th Avenue SE, Bothell, WA 98021
Fax: 877.671.2998

Upon receipt of completed application, please allow six to eight weeks for processing and payment.

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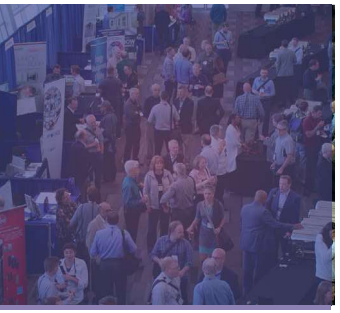
NEEA Cycle Six Natural Gas Programs

For 2020–2024, NEEA is proposing to operate a portfolio of natural gas market transformation programs that includes two gas-only programs (Condensing Rooftop Units, Efficient Gas Water Heating) and one dual-fuel program (Next Step Homes). This diverse portfolio covers residential and commercial products, retrofit and new construction applications, a range from pre-commercialized products to those currently in the market, and three product groups: HVAC, Water Heating, and New Construction.

NEEA Cycle Six Natural Gas Programs:

PROGRAMS	MARKET DESCRIPTION	OBJECTIVES
Condensing Rooftop Units (C-RTUs)	Includes the supply chain that manufactures, distributes, specifies, designs and installs commercial HVAC products and the end consumer who purchases them.	1. Transform the market so that Northwest commercial building owners and managers install C-RTUs as standard practice in applicable existing and new small to medium-sized commercial buildings. 2. Increase Northwest specifier and installer skill in designing, sizing and configuring C-RTUs for applicable commercial buildings. 3. Influence a federal requirement of at least 90% efficiency for commercial warm air furnaces. 4. Influence the development of a readily-available C-RTUs with cost, weight and reliability in line with a C-RTUs.
Next Step Homes	Includes the supply chain that designs, builds, verifies and sells residential single-family site built new homes. Leverages the work and resources of the alliance's established, electric Next Step Homes program.	1. Maximize energy efficiency opportunities for new homes in residential new construction code requirements. 2. Influence developers and builders to incorporate advanced energy-efficient products and practices in new homes. 3. Inform and enable code advancement through market adoption of energy-efficient products and practices.
Efficient Gas Water Heating (EGWH)	Includes the supply chain that manufactures, distributes (wholesale and retail), specifies, designs and installs residential gas-fired water heaters and the end consumers who purchase these products.	1. Transform the residential gas water heating market, ultimately making gas heat pump water heaters the standard in gas water heating appliances. 2. Influence federal manufacturing standards for residential storage gas water heaters to require a Uniform Energy Factor >1 for units larger than 35 gallons by 2030.



STRATEGIC & BUSINESS PLANS 2020-2024


NATURAL GAS PORTFOLIO

TRANSFORMATIONAL GOAL:

Sustain a portfolio of programs and support functions that enable more cost-effective efficiency to occur sooner, in larger amounts, and/or at lower cost than otherwise expected.

Key Transformational Strategies

Budgeted Special Projects

STRATEGY 1: EMERGING TECHNOLOGY

Description: Emerging technologies offer new and significant energy efficiency for the region. Though efficient natural gas technologies have historically lagged behind electric technologies, the Northwest's investment in natural gas efficiency in the 2015-2019 business cycle, along with investments by other utilities around the country, have accelerated market interest in commercialization efforts for new efficient products.

In the 2020-2024 funding cycle, the alliance's emerging technology efforts will continue focusing on identifying and vetting efficient natural gas products, practices and services with the potential to increase consumer choices and more efficiently use natural gas in the Northwest.

DEFINITIONS

Emerging Technology:
An energy-efficient product, service, or best practice that has the potential for improving performance, expanding to new markets, and/or bringing new value to the market.

Pipeline: Emerging technologies at various levels.

Market Conditions and Assumptions Driving Emerging Technology Work

1. Energy efficiency emerging technology opportunities will continue to exist for the region through 2024 and beyond.
2. While emerging energy efficiency technologies are plentiful, many face cost effectiveness challenges.
3. Product cost reductions through cost engineering and potential economies of scale hold promise for meeting utility cost effectiveness targets.

Objectives

1. Help the region achieve its long-term savings goals by scanning, tracking and assessing new gas measures.
2. Advance the alliance's portfolio of market transformation programs by introducing new emerging technologies with the strongest market potential.

Success Metrics

1. **Portfolio Advancement:** Total energy efficiency market potential of emerging technologies advanced into the alliance's market transformation portfolio over the 5-year business cycle.
2. **Market Advancement:** Total energy efficiency market potential of emerging technologies readied for market development over the 5-year business cycle.

Key Activities to Provide Value to the Region

Within the alliance portfolio of programs, a portion of the work will focus on emerging technologies and product management. These activities will address products relevant to markets specific to those programs. Additional emerging technology efforts outside of programs will scan for new opportunities and will track and advance the readiness of those technologies to achieve transformation goals. By leveraging the alliance's core strengths of market influence, economies of scale and risk pooling, the region can benefit from emerging technologies at a lower risk and cost than if each organization explored these technologies on their own.

1. **Scanning:**
   The alliance scans for technologies through:
   - **a.** An open unsolicited proposal process;
   - **b.** Annual sponsorship and technical partnership with the Gas Technology Institute;
   - **c.** Collaboration with utilities, DOE National Labs, DOE Advanced Research Projects Agency-Energy (ARPA-E) and other organizations outside the Northwest; and,
   - **d.** Discussions with manufacturers and other market actors.

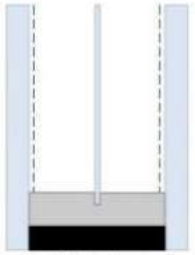
2. **Tracking:**
   In cooperation with members of the Regional Emerging Technology Advisory Committee (RETAC), NEEA staff developed a regional pipeline that includes both gas and electric emerging technologies and needed or active projects to assess these technologies. A common framework for the status (readiness) of the technologies along with a common taxonomy for categorizing the technologies enables anyone interested in or working on emerging technologies to see opportunities and add their contributions (see Emerging Technology Appendix 7). This regional pipeline has increased the effectiveness of regional coordination and encouraged out-of-region organizations to reference and build on the region's work. The regional pipeline, combined with regional and national collaboration, will continue to be core organizing elements in advancing emerging technologies in the 2020–2024 business cycle.

3. **Product Management:**
   Once technologies are identified and prioritized, the alliance works to translate the technologies into an evaluable product or measure that is useful to meet the region's goals. Product management involves defining the product, considering the product's value based on opportunities and market barriers, developing and evaluating test methods, collaborating on performance specifications, testing commercially available products, planning for product evolution and collaborating with manufacturers to adjust products to better meet the needs of the Northwest. Product management activities vary significantly between products, but they are more aligned within product groupings.

Examples of Natural Gas Emerging Technology Opportunities

Some examples of technologies that the alliance is tracking that could provide value to the region can be seen below.

Figure 9: Natural Gas Emerging Technology Opportunity Examples

END USE	EMERGING TECHNOLOGY	EXAMPLES
Envelope	• Light-weight triple pane windows • Surface-applied window films with self-powered / dynamic control of solar gain and light bending for deeper day lighting and low emissivity for reduced solar gain	  Thin glass triple pane
HVAC	• Gas-driven combination systems capable of heating space and water at greater than 100% efficiency • Systems that are able to provide cooling capabilities and/or backup power as well as utilize internal combustion engine, adsorption/absorption or modified sterling engine technology	 
Water Heating	• Gas-fired heat pump water heaters capable of achieving a UEF >1 • Smart circulator pumps that reduce heat loss	

STRATEGY 2: EFFECTIVE PORTFOLIO EXECUTION

Description: Once a new energy efficiency opportunity is identified and proven to deliver reliable energy savings, the alliance develops and implements market transformation initiatives at a scale that can accelerate adoption of these new opportunities.

In 2015-2019, the alliance began its first collaboration on natural gas market transformation. For this first five-year period, the alliance adopted a strategy that focused on implementing a small portfolio of initiatives, designed to allow the alliance to gain experience working on gas market transformation together and minimize major organizational changes. This initial foray resulted in significant progress in product development and market characterization as well as funder collaboration within the region and with extra-regional partners, such as the Gas Technology Institute. Some products from the initial portfolio met with unexpected barriers (dryers and hearths) or didn't progress as quickly as expected (combination units) and are therefore not included as full programs in the 2020–2024 business cycle.

For 2020–2024, NEEA is proposing to operate a portfolio of natural gas market transformation programs that includes two gas-only programs (Condensing Rooftop Units, Efficient Gas Water Heating) and one dual-fuel program (Next Step Homes). This diverse portfolio covers residential and commercial products, retrofit and new construction applications, a range from pre-commercialized products to those currently in the market, and three product groups: HVAC, Water Heating, and New Construction.

The market transformation theory and key activities for each of these natural gas market transformation programs are detailed further in Appendix 2. Per the Operations Efficiency section of this plan, NEEA staff will manage the portfolio adaptively, potentially shifting resources between programs with funder guidance, as market opportunities emerge throughout the 5-year cycle.

Market Conditions and Assumptions

NEEA's 2020–2024 Strategic Plan outlines numerous macro trends affecting the utility and energy industries. Additional market trends affecting the supply chain and their work with the alliance surfaced through interviews conducted with the supply chain. Key themes from those interviews inform the following assumptions:

1. Market consolidation, alignment with state or national regulation, global competition and pressures for greater speed to market are increasing pressure for manufacturers to seek solutions that cross regional territories. To maintain leverage with these market actors, the alliance must focus on energy efficiency solutions that can be applied across national and global markets and coordinate consistent delivery of these solutions across the nation.
2. The supply chain sees value in energy efficiency programs to reach new customer segments or increase customer loyalty.
3. Low commodity costs are making it more difficult to acquire energy efficiency cost-effectively and requiring new and different approaches to capitalize on synergies and reduce program costs.

Objectives

1. Implement market transformation initiatives that deliver energy savings and avoided carbon emissions.
2. Increase market channel leverage for funders and the region.

Success Metrics

Because the programs in the natural gas portfolio are early stage (pre-Market Development), they have an estimated 20-year savings potential but no detailed models have been developed yet to forecast short-term savings. Therefore, success metrics for the 2020-2024 business cycle will be reported, but specific targets have not been defined. All metrics are currently under review and the timing and scale of savings will be further refined as alliance natural gas savings models are developed.

1. **Energy Savings:** Estimated Total Regional Savings forecasts for the alliance Portfolio. Five (2020-2024) and ten (2020-2029) year forecasts of the initiative investment portfolio will be provided.
2. **Avoided Carbon Emissions:** Annual achieved and 5-year estimated regional avoided carbon emissions as a result of the total Co-Created savings forecast.
3. **Benefit-Cost Ratio:** A Portfolio benefit-cost ratio that reflects the 20-year value of the regional investment in market transformation efforts.

Key Activities to Provide Value to the Region

1. **Programs:** develop and implement market transformation programs by identifying and removing market barriers. See Figure 10 and Appendix 2 for more information about these programs.
2. **Alliance Marketing:** Create and excecute marketing strategies that support programs in successfully achieving market transformation goals. The alliance will begin to develop marketing activities for its natual gas programs in 2020-2024, based on the approach outligned in Appendix 3.
3. **Enabling Infrastructure: Develop and implement Cross-Cutting Enabling Infrastructure that builds market capability, awareness and demand for energy-efficient products, services and practices or new customer engagement opportunities for funders.** See Figure 11 for examples of enabling infrastructure needed. Other activities may be identified as natural gas programs develop.

Figure 10: Natural Gas Programs

PROGRAMS	MARKET DESCRIPTION	OBJECTIVES
Condensing Rooftop Units (C-RTUs)	Includes the supply chain that manufactures, distributes, specifies, designs and installs commercial HVAC products and the end consumer who purchases them.	1. Transform the market so that Northwest commercial building owners and managers install C-RTUs as standard practice in applicable existing and new small to medium-sized commercial buildings. 2. Increase Northwest specifier and installer skill in designing, sizing and configuring C-RTUs for applicable commercial buildings. 3. Influence a federal requirement of at least 90% efficiency for commercial warm air furnaces. 4. Influence the development of a readily-available C-RTUs with cost, weight and reliability in line with a C-RTUs.
Next Step Homes	Includes the supply chain that designs, builds, verifies and sells residential single-family site built new homes. Leverages the work and resources of the alliance's established, electric Next Step Homes program.	1. Maximize energy efficiency opportunities for new homes in residential new construction code requirements. 2. Influence developers and builders to incorporate advanced energy-efficient products and practices in new homes. 3. Inform and enable code advancement through market adoption of energy-efficient products and practices.
Efficient Gas Water Heating (EGWH)	Includes the supply chain that manufactures, distributes (wholesale and retail), specifies, designs and installs residential gas-fired water heaters and the end consumers who purchase these products.	1. Transform the residential gas water heating market, ultimately making gas heat pump water heaters the standard in gas water heating appliances. 2. Influence federal manufacturing standards for residential storage gas water heaters to require a Uniform Energy Factor >1 for units larger than 35 gallons by 2030.

Figure 11: Enabling Infrastructure

INFRASTRUCTURE	DESCRIPTION	OBJECTIVES
MARKET RESOURCES		
Commercial & Industrial Strategic Energy Management (Special Project)	Strategic Energy Management (SEM) is recognized as a pathway to deeper energy efficiency within commercial and industrial programs, and is a foundation for deeper and more enduring customer relationships. Existing SEM infrastructure is the result of several years of regional investment and collaboration. The 2015-2019 funding cycle work established valuable SEM tools and resources on the online SEM Hub knowledge center, increased consensus on common SEM standards, and improved regional and national collaboration on SEM initiatives.	1. Enable Commercial and industrial customers to see value in SEM as a strategy for meeting their sustainability and energy performance goals. 2. Enable greater development and use of high-value SEM tools and resources by regional stakeholders to launch, grow, and sustain regional SEM programs. 3. Leverage the SEM Hub Energy Management Assessment (EMA) tool to measure baseline SEM practices and identify targeted savings opportunities. 4. Build regional and national consensus on SEM as a best practice or de facto standard.
TRAINING		
Industrial Technical Training (Special Project)	Industrial Technical Training infrastructure provides coordinated technical training on key industrial energy efficiency concepts to support industrial energy efficiency programs and build market capacity to implement industrial energy efficiency projects.	1. Build industrial energy efficiency awareness and technical capacity among the region's industrial end-users. 2. Achieve economies of scale for providing industrial energy efficiency training in support of alliance programs.

STRATEGY 3: CODES AND STANDARDS

Description: Building energy codes set minimum efficiency requirements for residential and commercial buildings for the design, materials and equipment used in new construction and major renovations. Energy codes present a unique opportunity to assure savings through efficient building design, technologies, and construction practices in a cost-effective way. The alliance supports regional stakeholders in energy code development and adoption, training and implementation, as well as assessing code compliance.

Appliance and equipment standards specify the minimum energy and/or water efficiency levels of specific products including major home appliances such as clothes washers and water heaters, commercial and industrial equipment, and HVAC equipment such as gas furnaces. Equipment standards are set by U.S. DOE through a public rulemaking process. NEEA staff serve as technical experts and providers of data in U.S. DOE's rulemakings to encourage the adoption of federal appliance and equipment efficiency standards.

Market Conditions and Assumptions Driving Codes and Standards Focus

1. The codes and standards landscape has evolved substantially over the course of the current business plan. The current federal administration has set aside U.S. DOE's federal standards and test and rating procedure rulemakings for an undetermined period. In response, the standards community has turned to state and regional forums to further this work. New partnerships will enable the development of new, more effective test and rating procedures that can be used in voluntary programs to promote the best-performing equipment and systems, while demonstrating the changes needed in federal procedures to be pursued in later rulemakings.
2. Codes and standards continue to be one the most cost-efficient ways to ensure adoption of efficiency measures and provide significant benefits to the consumers. The alliance will continue to work with emerging technologies, utility programs and market research to develop roadmaps and long-term goals for advancing efficient codes and standards through strategic partnerships, such as with the Canadian Standards Association (CSA) and the Pacific Coast Collaborative.

Objectives

1. Influence the development of and support for successful implementation of building energy codes in the region.
2. Continue to advance the equipment efficiency standards and improve the test rating methods and procedures.

Success Metrics

1. Count of new code proposals reducing regional natual gas energy intensity that are adopted each year.
2. Count of new product standards which reduce regional natual gas energy intensity that are adopted each year.

Key Activities to Provide Value to the Region

With its extensive background in product technologies of many types, and a growing catalog of field data, the alliance can be a leader in these collaborative efforts to advance progressively more efficient codes and standards. Several of the alliance programs and utility programs can leverage the new test and rating procedures to advance regional efficiency work. Later, this work can be leveraged to upgrade federal procedures.

In the codes realm, the region has seen some notable achievements in energy code enhancement, especially in Washington State. The adoption of new codes in all four states demonstrates the regional progress in constructing better buildings and acknowledges steady improvement in building and system technologies. Post-adoption education, training and technical support to local jurisdictions support high compliance rates that, in turn, optimize building performance and realize energy savings in a cost-effective way. Specific activities the alliance implements to support these efforts include:

1. Developing and supporting energy code development in individual states. In Idaho, this requires supporting code proposals in the national model code through the International Energy Conservation Code process. In Oregon and Washington, this means supporting code proposals in their respective state-specific code processes through the Washington Department of Commerce and the Oregon Department of Energy.

2. Providing codes education, training and technical support to individual states which will support the implementation of codes and achieve energy savings in buildings.

3. Supporting the new test methods on products and systems including packaged commercial HVAC equipment.

4. Participating in the U.S. DOE equipment standards and test procedures rulemaking process by providing technical input, testing and market data and analysis.

5. Collaborating with Emerging Technology, utility programs and market research to develop roadmaps and long-term goals for advancing codes and standards through strategic partnerships, such as the Canadian Standards Association and the Pacific Code Collaborative.

6. Working with Consumer Technology Association, Institute of Electrical and Electronics Engineers, U.S. DOE and state and local agencies to standardize requirements governing open standard protocols for flexible demand functionality as an integral component of efficient products and buildings.

STRATEGY 4: CONVENE AND COLLABORATE

Description: Alliance convene and collaborate activities are overseen by the Stakeholder Relations and Corporate Communications functions at NEEA. They include internal and external activities that support effective and transparent regional collaboration and market transformation programs.

NEEA staff work closely with the Natural Gas Advisory Committee (NGAC), whose purpose is to provide NEEA with broad-based advice, experience and guidance. The committee works to reach consensus on the prioritization and advancement of market transformation natural gas programs to help steer the alliance's work toward achievement of its strategic goals, priorities and objectives.

This committee is a management advisory committee, providing support to the work of NEEA managers and other staff in its program development and implementation responsibilities.

Assumptions Driving Convene and Collaborate Activities

1. The Natural Gas Advisory Committee guides and informs program design and market strategies.
2. Board committees provide oversight and governance of the organization. There are currently five standing Board committees, including a Natural Gas Committee.
3. Funders and stakeholders require communication and coordination on the plans for and results of alliance work through formal and informal channels.
4. NEEA staff must have adequate understanding of funder and key stakeholder business needs and how they relate to alliance programs to effectively and efficiently design and execute the alliance's portfolio of work.
5. Market partners and supply chain actors must understand the alliance and the value it brings them for successful execution of market transformation programs.
6. Regional collaboration (both online and in-person) drives market transformation success and brings value to funders and stakeholders.
7. Facilitation of regional collaboration is required to achieve regional strategic goals identified by funders and stakeholders.

Objectives

1. Ensure all alliance stakeholders are heard and their viewpoints continuously inform alliance work as it evolves by following established Rules of Engagement (see Strategy 6: Optimized Resource Allocation).
2. Convene the region to enable regional energy efficiency work that reflect the diverse needs of the region.
3. Bolster the alliance's market influence to maximize support for market transformation efforts.
4. Support organizational development and effectiveness of NEEA staff in understanding funder and regional business needs.

Success Metric

Positive funder and stakeholder satisfaction: Measure and maintain strong funder and stakeholder satisfaction through an annual satisfaction survey and regular funder and stakeholder engagements.

Key Activities to Provide Value to the Region

1. **Board of Directors, Board Committee, and Advisory Committee meeting facilitation to foster:**
   a. Regional input and conversations that drive alliance work in ways that complement funders' and alliance programs.

b. Board of Director leadership, oversight and governance of and advocacy for the organization, and contributions of insight and other support and value.

c. Collaboration between market actors, researchers, funders and industry leaders to understand technology and market trends, opportunities and pitfalls as well as advance energy efficiency opportunities.

2. **Funder Account Management** to understand and convene discussion on funder and regional perspectives on alliance initiatives, ensure funder coordination plans are implemented throughout every stage of the Initiative Lifecycle Process (see Operations Efficiency section) and that funders have the information and resources needed to collaborate effectively in alliance work.

3. **External Communications** that increase supply chain understanding of the alliance and the value it can provide market partners through NEEA's corporate website, program communications materials and other strategic communications, including those related to Strategic and Business Planning. Corporate Communications supports market transformation programs through recognition and celebration of market partner success and participation in alliance programs.

4. **Efficiency Exchange Conference** to provide a forum for knowledge-sharing to help regional energy efficiency professionals achieve their goals as well as networking opportunities. The Efficiency Exchange Conference is an event provided for the benefit of staff from funding and stakeholder organizations.

STRATEGY 5: MARKET INTELLIGENCE

Description: Market Intelligence (MI) is defined as the systematic and objective identification, collection, analysis and dissemination of data, information and insight for assisting decision making to advance and report progress of energy efficiency and market transformation. This description covers work in evaluation, research, regional studies, planning and market trend analysis.

Assumptions Driving Market Intelligence Focus

1. Market Research and Evaluation:
   - a. The region will continue to value independent evaluations of all programs.
   - b. The number and complexity of programs will continue to increase over time.
   - c. The demand for information gathered through Market Research will continue to increase to support adaptive management and continual improvement on programs.
2. Large-scale Data Collection and Analyses Studies:
   - a. The region will continue to value the Residential Building Stock Assessment (RBSA) and Commercial Building Stock Assessment (CBSA). This will be the first cycle that gas funding supports the stock assessments.
   - b. The depth and number of codes that will be necessary to evaluate will increase.
   - c. Large-scale data collection and analysis studies will require the same level of stakeholder engagement.
   - d. A lack of awareness of existing data has led to expensive duplication of research, and enabling direct access to regionally-specific energy efficiency data would help streamline and enhance regional energy efficiency efforts.
   - e. There is an emerging need for a Multi-Family Stock Assessment. Multi-family buildings make up a large and increasing share of new construction in the region, with nearly a third (31%) of commercial building floor area since 2013 happening in these building types, including an increasing portion in Idaho and Montana. (This assumption applies to a potential Special Project.)
3. Market Planning:
   - a. The region will continue to value the alliance's work to analyze, estimate, document, report and forecast the potential energy savings and other value metrics associated with the market transformation efforts of each measure and for the full portfolio, in accordance with current energy savings accounting practices.
   - b. Funders will continue to require reporting and forecast needs as is currently done.
   - c. Measure levels are increasing in complexity and volume. Alliance electric measures have grown from 80 measures in 2014 to a current volume in 2018 of 170+, and have expanded to address both electric and natural gas efficiency. The alliance expects the size and complexity of its portfolio to remain at this current level, if not increase due to the system integration overlap complexity of future measure work.
4. Marketplace Trend Analytics:
   - a. Many of the data sets, tools and capabilities NEEA has organized for Marketplace Trend Analytics are done cost effectively, leveraging NEEA's nonprofit status.
   - b. Findings from the RBSA will continue to identify opportunities for improved performance and identify gaps in regional energy efficiency efforts.

Objectives

1. Ensure valuable and defensible evaluation, market progress tracking and savings accounting and estimating to assess results from market transformation efforts.
2. Provide research and market intelligence that lends value to program and business planning needs for internal and external partners.
3. Maintain data collection and housing best practices.

Success Metrics

1. **Actionable Information:** Evaluations that provide valuable inputs for program planning and validated assumptions for best accuracy of savings and other value reporting.
2. **Customer Service:** Meet individual funder needs for savings forecasting, reporting and other data or market intelligence needs in a timely, accurate manner.
3. **Actionable Data:** Increased and/or comprehensive access to data, data infrastructure, and analytics necessary to strategically influence the market toward measurable transformation.

Key Activities

Through the MI work, NEEA enhances decision making and mitigates risk for the region for current programs, as well as for the next generation of resource planning and programs. When done on a regional scale, this work provides substantial economies of scale. Specific MI activities that support the alliance's market transformation work include:

1. **Market Research and Evaluation** to inform market transformation efforts as well as formal evaluations of programs in market development. When possible, the alliance leverages secondary research first to inform program efforts. Primary market research in both quantitative and qualitative forms is used when secondary research is unavailable or inadequate for regional needs. Primary research provides:
   a. Insight into potential target market sizing and segmentation;
   b. Market characterization efforts;
   c. Baseline estimates that project adoption of energy-efficient products, services and practices; and
   d. Independent, third-party evaluations to assess the impact or processes of alliance-funded programs.
2. **Market Planning** to support the organization with analytical expertise responsible for forecasting and reporting cost effective, energy savings, and other value metrics. The department develops and manages cost effectiveness models, defensible methodologies to measure the effects of market interventions and other valuation tools to support alliance programs at various stages of the market transformation initiative's lifecycle. Market Planning is also responsible for the portfolio management system to ensure that the alliance is on track to meet its business plan goals.
3. **Marketplace Trend Analytics** delivers research findings to alliance programs and regional stakeholders to assist in their strategic decision-making. NEEA creates, purchases, and compiles gigabytes of regional data to answer business questions through the blending of data sets. These analyses may be as simple as targeting households based on structure and demographic data for a single program
or as complex as identifying representative census blocks for building stock analysis research in the Northwest.

Other Market Intelligence activities that support alliance and regional energy efficiency efforts include large-scale data collection and analysis studies, including:

1. **Regional Building Stock Assessments (Commercial & Residential)** that characterize the existing building stock to account for regional differences such as climate, building practices and fuel choices. The residential assessment will focus on single family homes. The commercial stock assessment will be scoped and started in this 2020-2024 Business Plan and will be concluded early in the next business cycle (2024-2029).
2. **Multi-Family Dwelling Stock Assessment Study** (Special Project) To accurately characterize the Multi-Family Dwelling Unit building stock, sample design and data collection protocols need to be different
from single family residential buildings and commercial buildings. By performing a Multi-Family Building Stock Assessment, the alliance will have a better understanding of the market that will support new energy efficiency opportunities.

Status update:
Energy Efficiency's 2020 IRP Two-Year EE Action Plan

Long-term program success requires a commitment to support and advance the Company's EE programs. In this context, Cascade notes the following actions it will take, keeping in mind some are driven from legislative requirements and others are part of operating ever evolving programs.

Adherence to the Washington Clean Buildings Act, HB-1257, is a key proponent of the EEIP two-year action plan. While a variety of the elements of the bill pertain to energy efficiency programs the company will focus on the following:

- Implementation and completion of Phase 2 of the CPA with WUTC filing by Summer 2021
    - This allows for a complete review of measure assumptions, market availability and ramp rates per the Northwest Power and Conservation Council's Seventh Power Plan.
    - It will also include a Low-Income specific market segment review to better determine energy efficiency potential in the at-needs community
    - Provide an updated reality check to the goals set for 2021 through Phase 1 of the CPA
- Revise the Conservation Plan development timeline from annual to biannual beginning in fall of 2021 and meet all requirements associated with the biannual plan development
- Meet WA Clean Buildings requirements for early adopters (applies to Commercial property owners of 50,000 square feet or more buildings) including baseline data submission and review through ENERGY STAR®'s Portfolio Manager

In addition, the program will focus on the following areas to increase uptake in alignment with the higher goals set through LoadMAP:

- Evaluate the progress, and potentially expand, the C/I Mid-Stream pilot for tankless water heaters
- Research both Multi-family offerings to target the sector within Cascade's territories for specialized building upgrades and alternative no cost-low cost options to the existing Energy Savings Kits
- Continue to leverage partnerships (NEEA and GTI) to incorporate new technologies as they become viable

And, not to be understated, Calendar Year 2021 will require consistent adaptive management of the programs based on COVID-19 impacts. Some of the elements of this management will include:

- Exploration of assumptions with the CAG to run alternative potential scenarios through LoadMAP
- Efforts to target C/I customers based on their economic impact, closures and renovation opportunities
- Exploration of efficiency opportunities associated with improvements to air quality in buildings

- Implementation of remote quality inspection processes to initially replace in-person inspections, and eventually transition to a complementary offering with potential to offer light audit review to customers prior to measure installs

Program Budgets - Reflected in the 2020 CNGC Conservation Plan					
Incentive Estimates					
Program	**Budget**	**Allocated as DBtC**	**Notes**		
Residential	$3,017,205	√	See Residential section		
Commercial/Industrial	$1,216,930	√	See Com/Ind section		
Low Income	$700,000	√	See Low Income section		
Total Incentives	**$4,934,135**				
Non-Incentive/Program Implementation Expenses					
Program	**Budget**		**Notes**		
Residential	$1,036,849		Staffing, software, marketing		
Commercial/Industrial	$1,209,203		Third party program mgmt., marketing, CNGC coordination		
Low Income	$56,900		Staffing, marketing, training, supplies		
Portfolio Admin Total	**$2,302,953**		Residential, C/I, & Low Income (LI) Weatherization		
Non- Incentive Expenses Breakout:	**Budget**	**Notes**			
Labor	*$758,157*	Company staff allocated 70% residential/ 30% C/I, low-income hours & part time temporary staff for seasonal processing			
Third Party Commercial/ Industrial Program Mgmt.	*$992,112*	Implementation, outreach for C/I EEIP, total for contractor coordination is dependent on vendor goal achievement			
Annual Software fees	*$195,500*	Residential & Low-Income rebate processing and data management, TA Program, Care Package/program update support			
Outreach / Trade Ally	*$304,300*	**Breakdown**	**Allocated as DBtC**	**Notes**	
		$20,000	√	LI Weatherization Outreach	
		$68,800	√	Bonus coupons delivered by TAs to customers & Quality Control Inspections	
		$5,500	√	Residential Program partnership with local community energy program partnerships, e.g. Sustainable Living Center, Community Energy Challenge	
		$3,000	√	Partnership with local Commercial energy program: Sustainable Connections	
		$4,000	√	Customer Service Resolution	
		$113,200		Trade Ally Support & Auditing	

		$25,000		Professional Dues, e.g. AESP, WA Lodging and Restaurant associations, HBAs, etc.
		$64,800		Outreach: Campaigns, Web, etc.
Other	*$52,883*	$19,356		Miscellaneous & General Operating Expenses
		$15,762		Travel
		$12,630		Professional Development
		$5,135		Office supplies
Portfolio Admin Total (Included from above)	**$2,302,953**	Non-Incentive/Admin Expenses		
Additional Expenses (excluded from DBtC)	**$377,908**	NEEA Market Transformation & Regional Technical Forum (Regional expenses)		
Total Program Expense	**$7,614,996**	Incentives & Total Portfolio Admin & Regional expenses		

Ramp Rates from the NWPCC's 8th Plan

Key	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058
LO12Med	10.94%	21.87%	32.81%	43.75%	54.69%	64.53%	72.41%	78.71%	83.73%	87.78%	91.00%	93.59%	95.65%	97.30%	98.62%	99.63%	99.63%	99.63%	99.63%	99.63%	99.63%	99.63%	99.63%	99.63%	99.63%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
LO6Med	4.30%	9.58%	16.04%	23.54%	32.10%	42.00%	53.07%	64.28%	74.04%	83.92%	90.95%	95.77%	98.65%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
LO15Slow	0.50%	0.77%	1.68%	3.16%	5.41%	8.63%	13.00%	18.68%	25.70%	33.86%	43.26%	53.14%	63.06%	72.42%	80.64%	87.33%	92.33%	96.00%	98.00%	99.60%	99.60%	99.60%	99.60%	99.60%	99.60%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
LO50Fast	45.00%	66.00%	80.00%	88.00%	94.95%	97.33%	99.25%	99.78%	99.88%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
LO20Fast	22.12%	37.62%	48.36%	56.12%	64.04%	70.38%	75.81%	80.42%	84.31%	87.58%	90.30%	92.42%	94.07%	95.36%	96.36%	97.14%	97.75%	98.40%	98.80%	99.60%	99.60%	99.60%	99.60%	99.60%	99.60%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
LO6Even20	5.00%	10.00%	15.00%	20.00%	25.00%	30.00%	35.00%	40.00%	45.00%	50.00%	55.00%	60.00%	65.00%	70.00%	75.00%	80.00%	85.00%	90.00%	95.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
LO35Slow	0.53%	1.42%	3.16%	6.21%	10.94%	17.37%	26.00%	35.93%	46.44%	57.04%	66.94%	75.53%	82.72%	88.26%	92.35%	95.21%	97.12%	98.33%	99.07%	99.60%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
LO80Fast	76.00%	83.00%	88.00%	92.00%	95.00%	97.00%	98.00%	99.00%	99.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Retro12Med	10.94%	10.94%	10.94%	10.94%	10.94%	9.84%	7.87%	6.30%	5.04%	4.03%	3.23%	2.58%	2.06%	1.65%	1.32%	1.06%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Retro6Med	4.30%	5.28%	6.46%	7.50%	8.55%	10.00%	10.97%	11.27%	10.56%	9.08%	7.03%	4.45%	2.70%	1.30%	0.75%	0.20%	0.06%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Retro15Slow	0.26%	0.51%	0.91%	1.46%	2.25%	3.22%	4.38%	5.66%	7.02%	8.28%	9.28%	9.88%	9.92%	9.35%	8.22%	6.80%	5.20%	3.60%	2.30%	1.30%	0.60%	0.20%	0.06%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Retro50Fast	45.00%	21.00%	14.00%	9.00%	5.95%	2.98%	1.02%	0.53%	0.18%	0.06%	0.02%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Retro20Fast	22.12%	15.50%	10.73%	8.36%	7.12%	6.34%	5.43%	4.61%	3.88%	3.26%	2.72%	2.12%	1.65%	1.28%	1.00%	0.82%	0.72%	0.62%	0.52%	0.42%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Retro6Even20	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Retro3Slow	0.53%	0.87%	1.74%	3.04%	4.73%	6.63%	8.44%	9.84%	10.60%	10.60%	9.83%	8.66%	7.15%	5.54%	4.08%	2.86%	1.91%	1.21%	0.74%	0.50%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Residential DSM Highlights

Summary of Natural Gas Savings (therms), Selected Years	2021	2022	2023	2025	2030	2040
Baseline Forecast (therms)	131,264,375	132,685,926	134,141,789	136,500,212	143,497,442	158,860,700
Cumulative Savings (therms)						
UCT Achievable Economic Potential	471,164	974,111	1,578,956	2,844,476	10,067,040	22,120,024
TRC Achievable Economic Potential	263,853	532,719	833,344	794,225	2,463,959	5,641,270
RVT Achievable Economic Potential	283,539	574,417	907,519	995,320	3,244,406	7,722,114
Achievable Technical Potential	846,386	1,720,245	2,714,206	5,181,093	16,624,936	36,292,986
Technical Potential	1,965,083	3,822,166	5,733,270	8,807,569	23,069,363	44,073,761
Energy Savings (% of Baseline)						
UCT Achievable Economic Potential	0.4%	0.7%	1.2%	2.1%	7.0%	13.9%
TRC Achievable Economic Potential	0.2%	0.4%	0.6%	0.6%	1.7%	3.6%
RVT Achievable Economic Potential	0.2%	0.4%	0.7%	0.7%	2.3%	4.9%
Achievable Technical Potential	0.6%	1.3%	2.0%	3.8%	11.6%	22.8%
Technical Potential	1.5%	2.9%	4.3%	6.5%	16.1%	27.7%
Incremental Savings (therms)						
UCT Achievable Economic Potential	471,164	504,604	608,734	1,196,694	1,746,689	796,499
TRC Achievable Economic Potential	263,853	269,611	302,506	287,341	418,404	218,132
RVT Achievable Economic Potential	283,539	291,824	335,405	370,692	566,516	331,436
Achievable Technical Potential	846,386	879,618	1,006,218	2,008,572	2,903,395	1,226,072
Technical Potential	1,965,083	1,865,852	1,929,655	2,761,348	3,483,955	1,278,434

Commercial DSM Forecast Highlights

Summary of Energy Savings (therms), Selected Years	2021	2022	2023	2025	2030	2040
Baseline Forecast (therms)	99,157,616	99,868,648	100,573,087	102,029,513	106,126,979	115,759,671
Potential Forecasts (therms)						
UCT Achievable Economic Potential	98,658,711	98,938,038	99,153,053	98,641,736	95,343,111	95,908,984
TRC Achievable Economic Potential	98,733,730	99,086,519	99,375,620	99,042,177	96,174,758	97,160,303
Achievable Technical Potential	97,974,932	97,583,430	97,133,836	95,282,580	89,325,978	88,526,181
Technical Potential	96,700,595	95,440,347	94,134,159	90,548,483	81,033,147	78,022,662
Cumulative Savings (therms)						
UCT Achievable Economic Potential	498,905	930,610	1,420,034	3,387,777	10,783,868	19,850,688
TRC Achievable Economic Potential	423,886	782,129	1,197,467	2,987,336	9,952,220	18,599,368
Achievable Technical Potential	1,182,684	2,285,218	3,439,251	6,746,933	16,801,001	27,233,491
Technical Potential	2,457,021	4,428,301	6,438,927	11,481,030	25,093,831	37,737,009
Energy Savings (% of Baseline)						
UCT Achievable Economic Potential	0.5%	0.9%	1.4%	3.3%	10.2%	17.1%
TRC Achievable Economic Potential	0.4%	0.8%	1.2%	2.9%	9.4%	16.1%
Achievable Technical Potential	1.2%	2.3%	3.4%	6.6%	15.8%	23.5%
Technical Potential	2.5%	4.4%	6.4%	11.3%	23.6%	32.6%
Incremental Savings (therms)						
UCT Achievable Economic Potential	498,905	433,871	495,025	1,394,162	1,742,926	856,591
TRC Achievable Economic Potential	423,886	359,721	419,559	1,288,804	1,642,804	799,895
Achievable Technical Potential	1,371,608	1,235,569	1,311,167	2,293,078	2,461,117	1,219,608
Technical Potential	2,457,021	2,011,277	2,048,958	3,078,509	2,981,568	1,523,488

Industrial DSM Forecast Highlights

Summary of Energy Savings (therms), Selected Years	2021	2022	2023	2025	2030	2040
Baseline Forecast (therms)	32,823,316	33,529,775	34,241,951	35,672,248	39,080,320	45,041,889
Potential Forecasts (therms)						
UCT Achievable Economic Potential	32,743,738	33,374,557	33,987,792	35,192,313	38,004,958	43,307,517
TRC Achievable Economic Potential	32,744,875	33,376,842	33,991,235	35,198,100	38,016,716	43,329,110
RVT Achievable Economic Potential	32,743,853	33,374,798	33,988,174	35,193,012	38,006,640	43,311,244
Achievable Technical Potential	32,738,028	33,363,341	33,971,400	35,166,475	37,960,422	43,238,878
Technical Potential	32,645,526	33,235,771	33,805,972	34,925,109	37,557,594	42,702,095
Cumulative Savings (therms)						
UCT Achievable Economic Potential	79,578	155,218	254,159	479,934	1,075,362	1,734,372
TRC Achievable Economic Potential	78,441	152,933	250,715	474,148	1,063,604	1,712,780
RVT Achievable Economic Potential	79,463	154,977	253,777	479,236	1,073,680	1,730,646
Achievable Technical Potential	85,288	166,434	270,551	505,772	1,119,898	1,803,011
Technical Potential	177,790	294,004	435,979	747,138	1,522,725	2,339,794
Energy Savings (% of Baseline)						
UCT Achievable Economic Potential	0.2%	0.5%	0.7%	1.3%	2.8%	3.9%
TRC Achievable Economic Potential	0.2%	0.5%	0.7%	1.3%	2.7%	3.8%
RVT Achievable Economic Potential	0.2%	0.5%	0.7%	1.3%	2.7%	3.8%
Achievable Technical Potential	0.3%	0.5%	0.8%	1.4%	2.9%	4.0%
Technical Potential	0.5%	0.9%	1.3%	2.1%	3.9%	5.2%
Incremental Savings (therms)						
UCT Achievable Economic Potential	79,578	75,770	99,265	127,801	115,286	64,165
TRC Achievable Economic Potential	78,441	74,618	98,099	126,606	114,028	62,778
RVT Achievable Economic Potential	79,463	75,643	99,125	127,636	115,064	63,846
Achievable Technical Potential	92,679	84,254	108,182	136,833	124,212	71,101
Technical Potential	177,790	116,502	142,755	171,654	149,557	86,582