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April 15, 2021

Oregon Public Utility Commission
Attn: Filing Center
P.O. Box 1088
Salem, OR 97308-1088

RE: LC 76 Cascade Natural Gas Corporation's Response to Staff PM Report and amended IRP Chapters

Attention: Filing Center

Enclosed for filing is Cascade Natural Gas Corporation's (Cascade or Company) response to Staff's Public Meeting Report regarding LC 76. Along with the filing is an amendment to Cascade's Action Plan as well as an amended executive summary, which includes a table of Cascade's amended Action Plan.

If there are any questions regarding this request, please contact me at (509) 734-4589 or via email at mark.sellers-vaughn@cngc.com or Brian Robertson at (509) 734-4546 or via email at Brian.Robertson@cngc.com.

Sincerely,
CASCADE NATURAL GAS CORPORATION

Marcus Sellers-Vaughn
Manager, Supply Resource Planning

LC 76 CNGC Enclosed

LC 76 Cascade Response to Staff Report.pdf
LC 76 Chapter 1 – Executive Summary Amendment 4-15-2021.docx
LC 76 Chapter 11 – Four-Year Action Plan Amendment 4-15-2021.docx

**BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON**

In the Matter of

CASCADE NATURAL GAS
CORPORATION dba CASCADE
NATURAL GAS, 2020

2020 Integrated Resource Plan (LC 76)

Cascade Natural Gas Final
Comments

CASCADE NATURAL GAS CORPORATION

April 15, 2021

Introduction

Cascade Natural Gas (Cascade, CNG or Company) files these reply regarding the Cascade 2020 Integrated Resource Plan (IRP or Plan), filed in Docket No. LC 76 in response to Staff's Report submitted by the Oregon Public Utility Commission Staff (OPUC, Commission Staff, or Staff). Please note the Oregon Citizens' Utility Board (CUB), and Alliance of Western Energy Consumers (AWEC) informed the Commission they would not be filing final Comments.

Opening Remarks

Cascade wishes to acknowledge the efforts of Staff and other stakeholders whose valuable feedback contributed to the successful development of the 2021 OR IRP. All stakeholders faced many challenges during the course of this IRP cycle. Events such as the COVID-19 virus and its wide-ranging impact on our daily lives, as well as other challenges occurring during this IRP cycle required all IRP participants to be adaptive, patient and flexible. This IRP also proved the importance of collaboration which the Company plans to continue to emphasize and nurture as the expectations of IRPs continue to grow.

Cascade's Response to Staff's Report

Cascade agrees with staff's recommendation of acknowledgement subject to certain revisions. Along with this filing, Cascade has also filed a revised action plan that meets the changes recommended by Staff. The Company appreciates Staff's recommendation on improving communication among the Company and stakeholders. Cascade looks forward to working with IRP stakeholders for the Distribution System Planning workshop, the 2020 IRP Update, and the next IRP cycle to work through and implement the other Staff and stakeholder recommendations.

Concluding Remarks

An IRP is a dynamic document that will continue to improve when all participants are active and engaged. Again, the Company thanks all participants for the feedback and time devoted to this IRP. Cascade is dedicated to improving the collaborative process and will continue to work closely with stakeholders in this regard. Hopefully, the challenges of the past year will ease for all participants during the remainder of 2021. The Company looks forward to working with stakeholders under hopefully more normal circumstances.

This concludes Cascade's comments.

Dated at Kennewick, Washington, this 15th day of April 2021.

A handwritten signature in blue ink that reads "Marcus Sellers-Vaughn". The signature is written in a cursive style with a large initial 'M' and a long, sweeping underline.

Marcus Sellers-Vaughn
Manager, Supply Resource Planning

CHAPTER 1

EXECUTIVE SUMMARY

Introduction

Cascade Natural Gas Corporation's (Cascade, CNGC, or the Company) Integrated Resource Plan (IRP or Plan) forecasts 20 years of expected system-wide customer and demand growth, and analyzes the most reliable and least cost supply side and demand side resources that could be used to fulfill future customers' gas service needs. Planning how to best meet customers' future demand includes the consideration of possible policy changes and the resulting impact on customer prices, the Company's operations, and the ability of Cascade's distribution system to serve gas reliably as regional demand increases. This plan discusses these elements that impact how the Company may serve its customers from 2020 through 2039. While the Plan cannot predict the future, it is a useful guide. Below is a short summary of each chapter included in this IRP. The details regarding methodologies as well as specific results are found in the chapters and appendices.

Key Points

- Cascade's first material deficiency occurs in 2023.
- The Company's four-year action plan provides the road map for resource acquisition.
- Load growth is forecasted average 1.26% per year over the 20-year planning horizon.
- Cascade modeled Cap and Trade as its main carbon forecast.
- The total avoided cost ranges between \$0.26/therm and \$1.11/therm over the 20-year planning horizon.
- Cascade projects 12.09 million therms of energy efficiency in Oregon over the 20-year planning horizon.
- This plan was informed by five Technical Advisory Group meetings, with active engagement by stakeholders.
- Cascade continues to be fully committed to the IRP process.
- Each chapter provides an *at-a-glance* summary of the key points.

Chapter 2: Company Overview

Cascade has been providing natural gas service since 1953. Over the years, the Company has expanded its service territory by purchasing and merging with other small natural gas utilities. As of 2007, Cascade is a subsidiary of Montana Dakota Utilities (MDU) Resources Inc., which is based in Bismarck, North Dakota.

Cascade serves over 299,000 customers located in smaller, mostly rural communities spread across Oregon and Washington. The Company's service territory poses some challenges for operating an energy distribution system, including the fact that the areas served are noncontiguous and the weather in each area can be vastly different. To capture this, Cascade groups its citygates into seven weather zones.

Cascade purchases natural gas from a variety of suppliers and transports gas supplies to its distribution system using primarily three natural gas pipeline

companies. Northwest Pipeline LLC (NWP) provides access to British Columbia and domestic Rocky Mountain gas, Gas Transmission Northwest (GTN) provides access to Alberta and Malin gas, and Enbridge (Westcoast Transmission) provides British Columbia gas directly into the Company's distribution system.

Chapter 3: Demand Forecast

Forecasting demand is useful for both long- and short-term planning. The Company initiates its demand forecasting process by looking at each citygate serving firm or uninterruptible service. These citygates were then assigned a weather zone because a significant portion of Cascade's customer usage fluctuates with temperature and wind.

Cascade developed a normal, or expected, future weather year by shaping 30 years of proprietary, historical weather data. Heating degree day (HDD values) were assigned to each day in the model weather year. To ensure the Company will be able to serve its firm customers during extreme weather, the Company tested a system weighted peak HDD (the system weighted coldest day in the last 30 years).

Peak day demand was then derived for each weather scenario by applying the HDD to the peak day forecast for each citygate.

Demand forecasting first requires a customer forecast. The Company developed a unique customer forecast for each county by incorporating population and employment growth data from Woods and Poole as well as from internal market intelligence into a dynamic regression model.

Load growth across Cascade's system through 2039 is expected to fluctuate between 0.78% and 1.80% annually. Load growth is split between residential, commercial, and industrial customers. Residential and commercial customer classes are expected to grow at an annual rate near 1.66% and 0.91%, respectively, while industrial expects a growth rate of around 0.51%.

After determining system-wide demand over the planning period by multiplying the use per customer times the number of customers in the forecast, Cascade stress tested its results with high and low scenarios for varying future economic conditions.

In absolute numbers, system load under normal weather conditions is expected to exceed 434 million therms in 2039. Residential customers are expected to grow from 54.5% of the total core load to 57% of the total core load by 2039.

Load across Cascade's two-state service territory is expected to increase 1.26% annually over the planning horizon, with the Oregon portion outpacing Washington at 1.58% versus 1.15%.

Chapter 4: Supply Side Resources

Chapter 4 provides an in-depth description of the supply side options the Company considered in this Plan.

Cascade's gas supply portfolio is sourced from three areas of North America: British Columbia, Alberta, and the Rockies. The Company secures its gas through firm gas supply contracts and open market purchases.

Firm supply contracts commit both the seller and the buyer to deliver and take gas on a firm basis, except during *force majeure* conditions. Supply contract terms for firm commodity supplies vary greatly. Some contracts specify fixed prices, while others are based on indices that float from month to month. Open market purchases are short-term and are subject to more volatile pricing.

The Company evaluates its demand curve and defines four categories of supply for meeting its demand. First, base load supply resources are used for the constant demand that occurs all year and does not fluctuate based on weather. Base load supplies are typically taken day in and day out, 365 days a year. Next, winter supplies meet demand occurring due to cooler weather. Winter gas supplies are firm gas supplies that are purchased for a short period during the winter months to cover increased loads, primarily for space heating. The contracts are typically three to five months in duration (primarily November through March). Next are peaking gas supplies which are used when colder weather spikes demand. Peaking gas supplies, similar to storage, are firm contracts purchased only as load actually materializes due to high winter demand. That is, the seller must deliver the gas when the Company requires it, but the Company is not required to take gas unless it is needed to meet customer load requirements. Lastly are needle peaking resources which are utilized during severe or arctic cold snaps when demand increases sharply for a few days. These resources are very expensive and are available for a very short period of time.

Cascade also utilizes natural gas storage to meet a portion of the requirements of its core market. Storing gas supplies, purchased and injected during periods of low demand, is a cost-effective way of meeting some of the peak requirements of Cascade's firm market. Cascade does not own any storage facilities and, therefore, must contract with storage owners to lease a portion of those owners' unused storage capacity.

Cascade has contracted for storage service directly from NWP since 1994. Storage is held in their Jackson Prairie and Plymouth facilities. Jackson Prairie is located in Lewis County, Washington, approximately ten miles south of Chehalis. Plymouth is located in Benton County, Washington approximately 30 miles south of Kennewick. Both Jackson Prairie facilities and the Plymouth facility are located directly on NWP's transmission system. In addition, Cascade has leased Mist storage from NW Natural. The Mist facility located in Columbia County, near Mist, OR. Mist has a direct connection to NWP for withdrawals and injections. Storage withdrawal rates

can be changed several times during an individual gas day to accommodate weather driven changes in core customer requirements.

Cascade uses interstate pipeline transportation resources to deliver the firm gas supplies it purchases from three different regions or basins. Cascade has over 30 long-term annual contracts with NWP, numerous long-term annual and winter-only transportation contracts with GTN (including the upstream capacity on TransCanada Pipeline's Foothills and Nova systems), a long-term, annual contract with Ruby Pipeline, and one long-term annual contract with Enbridge (Westcoast Transmission) in British Columbia, Canada. These contracts do not include storage or other peaking services that may provide additional delivery capability rights ranging from nine to 120 days.

In order to evaluate the price of resource options, the Company analyzed gas price forecasts from various sources. Cascade used Wood Mackenzie, the Energy Information Administration (EIA), the Northwest Power and Conservation Council (NWPPCC), and Cascade's trading partners to develop a blended long-range price forecast. With a monthly Henry Hub price from the above sources, the Company derived a weight for each source to develop the monthly Henry Hub price forecast for the 20-year planning horizon. These weights were calculated from the Symmetric Mean Absolute Percentage Error (SMAPE or Errors) of each source versus actual Henry Hub pricing since 2010. The inverse of these Errors was then used to determine the weight given to each source.

Thereafter, to determine the low case and high case, the Company utilized the EIA economic growth factors which are 1.5 for the Low Case, 2.0 for the Reference Case, and 2.6 for the High Case.¹

Besides currently used resources, Cascade considered alternative resources. Other potential incremental capacity options evaluated included: NWP Proposed Bremerton-Shelton Realignment, the Cross-Cascades Trail-West pipeline, additional GTN capacity, NWP Eastern Oregon Expansion, NWP Express Project or the I-5 Sumas expansion project, NWP Wenatchee Expansion, NWP Zone 20 (Spokane) Expansion, Pacific Connector, and Southern Crossing. Other storage options considered were: AECO, Gill Ranch Storage, Mist, Spire Storage (formerly Ryckman Creek Storage), Wild Goose Storage.

Cascade also considered unconventional supplies such as satellite LNG, renewable natural gas, and the realignment of its Maximum Daily Delivery Obligations (MDDOs) on NWP.

Long-term planning is not an exact science. The Company has considered the various risks that may challenge the assumptions used in this analysis. Risk can stem from potential Federal Energy Regulatory Commission (FERC) or Canada's

¹ EIA 2018 Annual Energy Outlook

Energy Regulator (CER) rulings that may impact the cost or availability of gas. The Company also considers the risk that firm supply may not be available when Cascade needs it or that pricing could vary due to any factor impacting the economy of supply and demand.

To mitigate risk, Cascade constantly seeks methods to ensure price stability for customers to the extent that it is reasonable. In addition to methods such as long-term physical fixed price gas supply contracts and storage, another means for creating stability is through the use of financial derivatives. Derivatives generally lock-in a forward natural gas price with a hedge, consequently eliminating exposure to significant swings in rising and falling prices. The Company's Annual Hedging Plan, approved by the Gas Supply Oversight Committee (GSOC), provides oversight and guidance for the Company's gas supply hedging strategy.

Chapter 5: Avoided Cost

The avoided cost is the estimated cost to serve the next unit of demand with a supply side resource option at a point in time. Avoided cost forecasts are used to establish a cost-effective threshold for demand side resources. If demand side resources cost as much as or less than the avoided cost, then the demand side resource is cost-effective and should be the next resource added to the Company's stack of resources.

Cascade's avoided cost includes fixed transportation costs, variable transportation costs, storage costs, commodity costs, a carbon tax, a 10% adder, distribution system costs, and a risk premium. Essentially, the avoided cost is the cost of the Company's resource stack on a per therm basis plus three values for benefits specifically acquired with energy efficiency. The largest part of the avoided cost is the cost of gas.

A carbon compliance cost forecast was added in anticipation of carbon legislation. Currently, Cascade models the market driven costs to start at \$21.13/metric ton in 2020 and capping at \$61.50/metric ton from 2030 onward. Cascade's use of this forecast does not indicate a preference towards this carbon future in Oregon, but rather signifies what the Company believes is the most probable form of carbon legislation in the state.

Next, 10% was added to the commodity portion of the avoided cost to account for nonquantifiable, environmental benefits. This 10% adder was first recommended by the Northwest Power and Conservation Council (NWPPCC) based on Federal legislation.

New to the 2020 IRP, Cascade has included distribution system costs in its avoided cost calculation. Distribution system costs capture the costs of sending gas from the citygate to Cascade's customers. For this IRP cycle, Cascade calculated distribution

system costs as the Company's system weighted average of its authorized margins, as approved in UM-1893. These costs are inflated by the Consumer Price Index (CPI) escalator every year.

For the 2020 IRP, the nominal system avoided costs ranges between \$0.26/therm and \$1.11/therm over the 20-year planning horizon. The increase over time is largely driven by the escalating cost of carbon.

Chapter 6: Demand Side Management & Environmental Policy

Demand Side Management (DSM) refers to the reduction of natural gas consumption through the installation of energy efficiency measures such as insulation, more efficient gas-fired appliances or through load management programs. Cascade targets savings of approximately 62 million therms system-wide over the 20-year planning horizon; 12.09 million therms in Oregon and 50 million therms in Washington.

Cascade acquires therm savings through its energy efficiency programs. In Oregon, the Energy Trust of Oregon (Energy Trust) administers the Company's programs and in Washington, Cascade administers its own programs. In both states the programs offer Cascade customers financial incentives to install specific cost-effective energy efficiency measures. These measures cover a broad range of applications including new homes, retrofit appliances, and commercial appliances. The programs are funded in Oregon through a public purpose charge, which applies a percentage charge to customers' bills, and in Washington through a per therm charge.

To determine the Company's savings targets in Oregon, Energy Trust performed a resource analysis of all available energy efficiency for the 20-year planning period. This was a multi-step process beginning with determining all available and potentially available conservation measures. A demographic study of the age of the houses and buildings in Cascade's Oregon service territory was then performed to estimate when new buildings and homes would be built, and when existing homes would need replacement appliances. The total amount of energy savings that can be installed in an area without consideration of economic barriers is called the technical potential.

Once Energy Trust determined the technical potential, the industry standard of decrementing this by 15% was used to get to the achievable potential. Energy Trust then created the cost-effective potential by screening all DSM measures using the total resource cost (TRC) test, which is a benefit-cost ratio (BCR) that measures the cost effectiveness of the investment being made in an efficiency measure. The cost-effective achievable potential is smaller than the achievable potential because the potential savings from non-cost-effective measures are removed.

Energy Trust then applied its knowledge of market uptake to the cost-effective achievable potential which further reduced this amount and resulted in the program savings projections which are included in Appendix D by customer class, program and year.

Each measure comprising the cost-effective achievable potential was given a levelized cost which is that measure's annualized cost over annual therm savings. The levelized cost is used to demonstrate the total potential therms that could be saved at various costs. The levelized costs per measures in the 2020 IRP's cost-effective achievable potential are slightly higher than they were in the 2018 IRP for two reasons: 1) The therm savings targets in this IRP include savings from non-cost-effective measures that the Commission is allowing the Energy Trust to incent; and 2) The price of gas has decreased over the last two years.

The program savings projections included in this IRP are also slightly higher than those presented in the Company's 2018 IRP for the following reasons: 1) New measures were considered in the analysis; 2) Measure assumptions were updated based on more current data; 3) Emerging technologies were included in the analysis; and 4) Updated measure saturation rates from third-party research and survey work were used.

Chapter 6 also considers environmental policies being both enacted and considered in Oregon, Washington, and nationally. A number of initiatives intended to reduce, eliminate, or mitigate the effects of greenhouse gases on the atmosphere are in play. Carbon legislation is a reality, as both Oregon and Washington have begun adopting carbon regulations.

The Company follows all carbon related initiatives closely as policy changes will impact the natural gas retail business in some way. A carbon tax will raise customers' prices: initiatives such as Portland's goal of being 100% renewable by 2050, or Ashland's and Eugene's plans to reduce carbon emissions, and may reduce natural gas usage. Carbon policies will also increase the Company's avoided costs thus increasing cost-effective energy savings potential. Policies addressing climate change are likely to impact all factors in integrated resource planning (e.g., demand forecasts, pricing, and DSM potential) and, therefore, must be closely monitored.

Chapter 7: Renewable Natural Gas

Renewable Natural Gas (RNG) has been introduced as its own chapter for the first time in this 2020 IRP. With there being a strong desire to mitigate the carbon footprint of the natural gas industry, the amount of information covered on RNG warranted a separate chapter. Cascade has been involved and committed to developing programs that follow RNG guidelines and rules stated in SB 98 and HB-

1257.

The Company has met with several individuals and companies within the RNG industry such as producers, municipals, wastewater treatment plants, biodigesters, and landfills. Currently, none of the projects have a timeline to implement putting RNG on the system in the near future. The Company will file an update in the 2021 Annual IRP Update.

Cascade has developed a potential RNG cost effectiveness methodology. Cascade is also utilizing SENDOUT® as another model for analyzing RNG. Cascade will continue to monitor RNG guidelines and rules and incorporate any necessary changes to these models.

Chapter 8: Distribution System Planning

Cascade uses computer modeling for network demand studies to ensure its distribution system is designed to deliver gas reliably to customers as the number of customers and their demand change.

Cascade's geographical information system (GIS) keeps an up-to-date record of pipe and facilities, complete with all system attributes such as date of install and operation pressure. Using the Company's GIS environment and other input data, Cascade is able to create system models through the use of Synergi® software. The software provides the means to theoretically model piping and facilities to represent current pressure and flow conditions while predicting future events and growth. Combining these models with historical weather data can provide a design day model that will predict a worst-case scenario. Design day models that experience less than ideal conditions can then be identified and remedied before a real problem is encountered.

When modeling demonstrates that a portion of the distribution system is unable to meet future demand, Cascade engineers consider many possible remedies including reinforcements or expansions. Enhancements include pipeline looping, upsizing, and uprating. Pipeline looping is the most common method of increasing capacity in an existing distribution system. Pipeline upsizing involves replacing existing pipe with a larger size pipe. Pipeline uprating increases the maximum allowable operating pressure of an existing pipeline.

Besides modifying the pipelines, regulators or regulator stations can be added to reduce pipeline pressure at various stages in the distribution system. If pressures are too low, compressor stations can be added to boost downstream pressures.

Another possible solution is targeted conservation. Area specific incentives for installed energy efficiency measures can reduce demand in a constrained area either eliminating or forestalling the need to add or reinforce infrastructure.

Once the optimal solution is determined, projects are ranked based on numerous criteria and are scheduled. Chapter 8, Distribution System Planning, presents three sample projects and Appendix I lists all known distribution projects.

Chapter 9: Resource Integration

Cascade utilizes SENDOUT® for resource optimization. This software permits the Company to develop and analyze a variety of resource portfolios to help determine the type, size, and timing of resources best matched to forecast requirements. The model knows the exact load and price for every day of the planning period based on input and can therefore minimize costs in a way that would not be possible in the real world. It is important to acknowledge that SENDOUT® provides helpful but not perfect information to guide decisions.

One of the purposes of integrated resource planning is to identify an illustrative resource portfolio to help guide specific resource acquisitions. In this planning cycle, the Company considered a host of resource alternatives that could potentially be added to its resource portfolio, including additional conservation programs, incremental off-system storage alternatives at AECO Hub, Mist, Spire, Wild Goose, and Gill Ranch. Additionally, incremental transportation capacity on NWP, Ruby, Nova Gas Transmission Ltd. (NGTL), Foothills and GTN pipeline systems was considered, along with on-system satellite LNG facilities, RNG, and imported LNG. Typically, utility infrastructure projects are “lumpy,” since demand grows annually at a small percentage rate, while capacity is typically added on a project-by-project basis. Utilities often have surplus capacity and must “grow into” their new pipeline capacity, because it is more cost effective for pipelines to build for several years of load growth at one time than to make small additions each year. However, the Company can minimize the impacts through the acquisition of citygate peaking resources which include both the supplies and the associated pipeline delivery for a certain number of days or through the purchase of other’s excess capacity through short- or medium-term capacity releases.

Even after the savings from energy efficiency programs are realized, Cascade will need to acquire additional capacity resources or enter into other supply arrangements to meet anticipated peak day requirements, primarily due to continued growth in the Company’s residential and commercial customer base. Utilizing the SENDOUT® resource optimization model, several portfolios were run to test the viability of acquiring incremental storage and transportation resources based on existing recourse rates and discounted rates, and via capacity release through a third party. Basin prices in the model over the 20-year planning horizon

have AECO trading at a discount to Rockies, Malin, and Sumas. The acquisition of additional traditional pipeline capacity is the most reasonable resource to address most capacity shortfalls on a peak day.

Using input from these alternative resources, SENDOUT® derives a portfolio of existing and incremental resources that Cascade defines as the Preferred Portfolio. This provides guidance as to what resources should be considered to reduce unserved demand with a reasonable least cost and least risk mix of demand and supply side resources under expected pricing, weather, and growth environments.

Twenty-year portfolio costs under a multitude of scenarios/sensitivities are expected to range between \$4,067,388,000 to \$4,627,197,000 for the planning period, with an average cost per therm ranging between \$0.5232 and \$0.5478.

A more detailed discussion regarding the Company's resource integration and the results can be found in Chapter 9, Resource Integration.

Chapter 10: Stakeholder Engagement

Input and feedback from Cascade's Technical Advisory Group (TAG) is an important resource for ensuring the IRP includes perspectives beyond the Company's and is responsive to stakeholders' concerns. Cascade held five public TAG meetings with internal and external stakeholders. One meeting was held in Bend. Participants invited to these public meetings include interested customers, regional upstream pipelines, Pacific Northwest Local Distribution Companies, Commission Staff, stakeholder representatives such as the Northwest Gas Association, Public Counsel, Citizens' Utility Board, Oregon Department of Ecology, and the Alliance of Western Energy Consumers. Cascade has a dedicated internet webpage where customers and parties can view the IRP timeline, TAG presentations and minutes, as well as current and past IRPs. This information can be found at <https://www.cngc.com/rates-services/rates-tariffs/oregon-integrated-resource-plan>.

Chapter 11: Four-Year Action Plan

Figure 1-1 on the following page shows Cascade's Four-Year Action Plan. Further descriptions can be found in Chapter 11, Four-Year Action Plan.

Cascade Natural Gas Corporation
2020 Integrated Resource Plan

Figure 1-1: Highlights of 2020 Action Plan

| Functional Area | Anticipated Action | Timing |
|------------------------------|--|---|
| Resource Planning | <p>Cascade will:</p> <ul style="list-style-type: none"> attend other regional LDC IRP meetings; work with NWP on realigning MDDOs; determine if the temporary Jackson Prairie contract should be made permanent; develop modeling scenarios that represent Pipeline OFOs; improve the alignment of resource/costs between the PGA and the IRP; develop more scenarios that address changing Canadian Markets; add RNG as a candidate portfolio; and work with Staff and Stakeholders to develop a more effective presentation for the severity of negative outcomes. Cascade will report on the status of this action item when filing the 2021 OR IRP Update. | Ongoing, for inclusion in 2022 IRP. |
| Demand | <p>Cascade will look into making adjustments to a few methodologies on the demand forecast and scenarios. Those adjustments include:</p> <ul style="list-style-type: none"> Adding wind in the stochastic weather analysis; and A new methodology for peak day. | Ongoing, for inclusion in 2022 IRP. |
| Environmental Policy | <p>Cascade will either begin or continue to participate/monitor the following items:</p> <ul style="list-style-type: none"> Continue to support the City of Bend's Climate Action Plan; Participate in City of Bellingham Climate Action Plan discussions; Monitor service areas for potential GHG reduction goal development relating to energy delivery and supply; Monitor carbon pricing and policy developments nationally and statewide; Monitor federal and state GHG regulation development for energy industry; and Continuation of current emission reduction and monitoring endeavors. | Ongoing, for inclusion in 2022 IRP. |
| DSM (Energy Efficiency) | The Company will execute the Demand Side Management action items as described on page 11-3 and 11-4. | Ongoing, for inclusion in 2022 IRP. |
| Renewable Natural Gas | Cascade will continue to develop and update the cost-effective evaluation tool. | Ongoing, for inclusion in 2022 IRP. |
| Distribution System Planning | The Company will host at least one workshop to present distribution system plan upgrade information to Staff and stakeholders, and additional workshops as necessary. Cascade has removed the projects that were in the previous Action Plan and will re-present all distribution system plans Cascade seeks acknowledgement on at the workshop(s). | Cascade will hold the workshop within 4-6 months. |

CHAPTER 11

FOUR-YEAR ACTION PLAN

2020 Action Plan

The Four-Year Action Plan demonstrates Cascade's commitment to implementing the Company's Integrated Resource Plan and creating a portfolio of resources with the reasonable least cost mix of energy supply resources and conservation.

Key Points

Cascade's 2020 Action Plan focuses on:

- Supply Side Resources
- Environmental Policy
- Avoided Cost
- Demand Side Management
- Renewable Natural Gas
- Distribution System Planning
- IRP Process

Resource Planning

Cascade recognizes the importance of gathering best practices from other jurisdictional LDCs. To that end, the Company will continue to participate in the IRP process of at least three regional utilities over the course of the next two years with the objective of incorporating aspects that may enhance Cascade's IRP. Cascade will also attempt to get additional stakeholder involvement through convening the IRP TAG meetings in various locations within Cascade's territory, updates to Company website, and/or other means. The Company will also perform cross validation on new methodologies to ensure the accuracy of the new models.

Cascade will also:

- continue to work with Northwest Pipeline to pursue opportunities to better align Maximum Daily Delivery Obligations (MDDO) contract delivery rights at no incremental costs to customers through the use of segmentation or other proposals.
- determine if the temporary Jackson Prairie account JP3 release from Puget Sound Energy should be made permanent.
- continue to work on developing scenarios to replicate potential supply and transport impacts for pipeline operational flow orders (OFO) and consideration of other strategies to minimize OFO impacts.
- continue to develop SENDOUT[®] direct models for gas cost workbooks provided to commissions during PGA filings to better improve the alignment of resources/costs between the PGA and the IRP.
- develop more scenarios to specifically address potential Canadian supply market changes such as diversion of Station 2 supplies to Liquefied Natural Gas and/or Nova Gas Transmission, Limited, and the impact of the Canadian federal fuel charge on the price and potential switching of supply basins utilization/needs of upstream pipeline transportation over time.
- add Renewable Natural Gas as a candidate portfolio for the supply resource optimization process.
- work with Staff and Stakeholders to develop a more effective presentation for the severity of negative outcomes. Cascade will report on the status of this action item when filing the 2021 OR IRP Update.

Demand

Cascade will look into making adjustments to a few methodologies on the demand forecast and scenarios. Those adjustments include:

- Adding wind in the stochastic weather analysis.
- A new methodology for peak day. Cascade's peak day is currently the coldest day in past 30 years. Beginning with the 2022 IRP, Cascade's current peak day will fall outside of the 30-year range.
- The 2021 Annual Update will discuss any potential impacts the COVID-19 crises may have on demand.

Environmental Policy

Cascade will either begin or continue to participate/monitor the following items:

- Continue to support the City of Bend's Climate Action Plan efforts which were approved by the City Council on December 4, 2019.
- Participate in City of Bellingham Climate Action Plan discussions.
- Monitor service areas for potential Greenhouse Gas reduction goal development relating to energy delivery and supply.
- Monitor carbon pricing and policy developments nationally and statewide (i.e., OR ballot measure, 2020 carbon tax or cap and trade bills, Social Cost of Carbon, Market Choice, The Clean Future Act, etc.).
- Monitor federal and state GHG regulation development for energy industry.
- Continuation of current emission reduction and monitoring endeavors (i.e., Methane Challenge Program, Renewable Natural Gas studies).

Demand Side Management (Energy Efficiency)

The Company will examine the impact that changes such as revised building codes, OPUC exemptions granted for non-cost-effective measures, and changes to avoided cost calculations may have on the Company's long- and short-term conservation potential. Success shall be measured by the following:

- The Company shall hold at least one meeting with the Energy Trust to discuss any changes that might affect the Company's energy efficiency therm savings targets, and, if applicable, what actions may need to be taken to comply with or adapt to the changes.
- Cascade will provide a summary of its meeting with the Energy Trust in its 2021 IRP Annual Update. In compliance with OAR 860-021-0400(9), the Company will file an update as soon as is reasonably possible if any changes result in a significant deviation from the 2020 IRP.

- The Company will work with the Energy Trust of Oregon to identify potential areas for expanded engagement in support of local communities' climate action planning goals. These discussions could include consideration of biogas engagement where cost-effective and regulatorily permitted. Findings on how to best support local climate plans will be included in the next IRP.

Cascade will strive to acquire the following amount of cost-effective gas therm savings over the next two years:

Figure 11-1: Cost-effective gas therm savings

| | 2020 | 2021 | 2022 | 2023 |
|------------|-----------|-----------|------------------------|-----------|
| Oregon | 547,244 | 563,251 | 520,166 | 508,325 |
| Washington | 726,625 | 853,253 | 2,041,847 ¹ | 2,407,954 |
| Total | 1,273,869 | 1,416,504 | 2,562,013 | 2,916,279 |

- The Company will acquire cost-effective therm savings by partnering with Energy Trust in Oregon and by delivering programs under the oversight of the Company's Conservation Advisory Group in Washington. Short-term annual therm savings targets are refined annually in Oregon by the Energy Trust through the budgeting process and in Cascade's Conservation Plan, which the Company files each December 1st in Washington.

As an additional action item, the Company will iterate with Energy Trust to identify and target specific areas where Energy Trust programs can alleviate load constraints in order to defer supply side investments in expanding the Company's system. Energy Trust and the Company will work together to set load reduction targets in these areas. Energy Trust will coordinate with the Company to design marketing and program implementation solutions to achieve these targets. The Company will coordinate with Energy Trust to report results and related progress toward achieving these targets to the Oregon Public Utility Commission on an annual basis.

Renewable Natural Gas

Cascade has begun creating an RNG Project Cost Effectiveness Evaluation Methodology as seen on page 7-6. Due to uncertainty around environmental attributes, as well as other rules and guidelines for RNG, Cascade will continue to develop and update the cost-effective evaluation tool.

¹ The Washington targets for 2022 and 2023 can also be found on page 7-24 in Cascade's 2018 Integrated Resource Plan (Docket UG-171186). The Company is currently finalizing an update to its Conservation Potential Assessment via AEG which will change the Washington cost-effective gas therm savings. The OPUC will have access to the updated numbers when the next WA IRP is filed in February 2021.

Distribution System Planning

The Company will host at least one workshop to present distribution system plan upgrade information to Staff and stakeholders, and additional workshops as necessary. Cascade has removed the projects that were in the previous Action Plan and will re-present all distribution system plans Cascade seeks acknowledgement on at the workshop(s).

Figure 11-1 on the following page highlights specific activities of the 2020 Action Plan.

Cascade Natural Gas Corporation
2020 Integrated Resource Plan

Figure 11-1: Highlights of 2020 Action Plan

| Functional Area | Anticipated Action | Timing |
|------------------------------|--|---|
| Resource Planning | <p>Cascade will:</p> <ul style="list-style-type: none"> attend other regional LDC IRP meetings; work with NWP on realigning MDDOs; determine if the temporary Jackson Prairie contract should be made permanent; develop modeling scenarios that represent Pipeline OFOs; improve the alignment of resource/costs between the PGA and the IRP; develop more scenarios that address changing Canadian Markets; add RNG as a candidate portfolio; and work with Staff and Stakeholders to develop a more effective presentation for the severity of negative outcomes. Cascade will report on the status of this action item when filing the 2021 OR IRP Update. | Ongoing, for inclusion in 2022 IRP. |
| Demand | <p>Cascade will look into making adjustments to a few methodologies on the demand forecast and scenarios. Those adjustments include:</p> <ul style="list-style-type: none"> Adding wind in the stochastic weather analysis; and A new methodology for peak day. | Ongoing, for inclusion in 2022 IRP. |
| Environmental Policy | <p>Cascade will either begin or continue to participate/monitor the following items:</p> <ul style="list-style-type: none"> Continue to support the City of Bend's Climate Action Plan; Participate in City of Bellingham Climate Action Plan discussions; Monitor service areas for potential GHG reduction goal development relating to energy delivery and supply; Monitor carbon pricing and policy developments nationally and statewide; Monitor federal and state GHG regulation development for energy industry; and Continuation of current emission reduction and monitoring endeavors. | Ongoing, for inclusion in 2022 IRP. |
| DSM (Energy Efficiency) | The Company will execute the Demand Side Management action items as described on page 11-3 and 11-4. | Ongoing, for inclusion in 2022 IRP. |
| Renewable Natural Gas | Cascade will continue to develop and update the cost-effective evaluation tool. | Ongoing, for inclusion in 2022 IRP. |
| Distribution System Planning | The Company will host at least one workshop to present distribution system plan upgrade information to Staff and stakeholders, and additional workshops as necessary. Cascade has removed the projects that were in the previous Action Plan and will re-present all distribution system plans Cascade seeks acknowledgement on at the workshop(s). | Cascade will hold the workshop within 4-6 months. |