**Cascade 2018 IRP (UG-171186) TAG Meeting #4**

**Date & Time**: 8/23/2018, 09:00 AM – 03:00 PM

**Location**: SeaTac Conference Center –Amsterdam Room

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**Minutes by**: Resource Planning Team

Brian began the meeting by welcoming everyone to the 4th WUTC Tag Meeting of 2018. He also provided safety instructions for those in the room. This was followed by introduction of participants in-person and on the phone.

Mark explained in addition to Scott Madison being the new senior executive responsible for the IRP. In addition, Mark introduced the new Director of Gas Supply, Kevin Connell. Kevin gave a brief overview of his decades of experience in Gas Supply related functions. Kevin thanked everyone for their participation. He stated that this is important for customers and stakeholders. He also thanked everyone for taking the time to be a part of the process and thanked the Resource Planning Team as well. Scott said he would not be on the call for the whole meeting.

Brian then went over today’s Agenda.

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***TAG 2/3 Recap***

-What is Satellite LNG? – Off system supply of liquified natural gas.

-Does this signal anything specific or out of the ordinary? Such as, the GH plant is increasing generation and could soon need that additional capacity or something? – We do not want to speak on behalf of Grays Harbor, but if they were to continue utilizing high levels of gas there is a risk of them wanting to acquire the Bremerton capacity

-Re: Supplemental workshop to discuss contracts versus actuals – We will be talking a lot about contract during this meeting, if there is still a need of clarification we would be happy to hold this workshop.

Re: Market intel - Can you please offer a quick reminder of how this information gets incorporated into the modeling? – Many elements of the market intel play a role in the IRP. The infrastructure section provides the RPT with insights into new resource alternative for Cascade to consider modeling, such as new storage or transportation projects. The regulatory/renewables sections make Cascade aware of carbon legislation to consider for modeling, such as the Market Choice proposal in the house of representatives that will be discussed shortly. These are just a few examples of the quantitative and qualitative impact of the market intel.

***1st Presentation – IRP Carbon Update and Assumptions*** *(Abbie Krebsbach), Slide #4*

* GHG Policy Update
	+ Provide insight into current national, regional/state and local policy activities that inform Cascade Natural Gas Corporation’s IRP process.
	+ Provide discussion on Cascade’s actions to reduce methane leaks and fugitive emissions while ensuring safe, reliable and economic service, and utilizing natural resources efficiently to minimize environmental impact.
* Carbon Modeling Assumptions
	+ To explain Cascade’s approach in determining range of carbon dioxide emissions values and assumptions for calculating inputs to project a 20-year avoided cost of natural gas, with associated two-year action items.

Regarding laying the foundation: CNGC explained that this information is from 2016 data that EPA has published. In 2016, CO2 accounted for about 81.6% of all U.S. greenhouse gas emissions from human activities, while methane emissions are second at 10%. The contribution of GHG emissions from US human activities that would be from our customers’ consumption of natural gas we deliver is included within the residential and commercial, and industrial pie pieces shown here, but is not specifically broken out.

Much of the GHG reductions observed for energy delivery is due to the transition from coal-fired electric generation resources to lower emitting resources such as natural gas-fired and renewable electric generation resources. Energy efficiency programs have contributed to this downward trend as well. Washington shows decreasing emissions from review of EPA and EIA data, but no state charts were available to present.

Electric Generation - Power plants fueled by natural gas emit about half the CO2 emissions of coal plants, and natural gas fired-generation is better suited to provide ramping and intermittent dispatchable power for varied generation from increasing renewables on the grid. Washington has lower GHG emission from power plants than most states due to having so much hydropower, as well as other renewable generation and natural gas units available, but that can vary each year.

Oil & Gas Sector - Fugitive methane emissions can come from well/pipeline infrastructure and well completion processes, as well as CO2 emissions from natural gas flaring, compressor engines and other combustion equipment. There is continued debate on contribution of these emissions and how to consider emissions in total energy supply chain since emissions studies vary.

Northwest Power & Conservation Council's has included these statements and we’ll continue to review new versions of the Power Plan when they are released – the next one is expected to be published in January 2019.

From our review of EPA GHG emissions reports in 2016, the oil and gas sector emitted about 9.5 percent of the total GHG emissions from all industries. (283 million metric tons of CO2 equivalent compared with total of 2,990 million metric tons of all industries).

Natural Gas Distribution – natural gas distribution company facility contribution to GHG emissions generally result from fugitive methane emissions/leaks from pipeline infrastructure, and from combustion of fuel in compressors. For instance, Cascade has one small natural gas-fired compressor station in Mt. Vernon. Normally, the majority of compressor stations that are in operation are owned and operated by transmission companies.

Depending on where you get your data, about 5% of O&G sector emissions are from natural gas distribution company infrastructure (EPA 2016 data shows 14 million metric tons of CO2 equivalent compared with total of 283 million metric tons for O&G and total of 2,990 million metric tons of all industries)

However, due to conservative methods in calculating and reporting emissions, it is likely that the natural gas distribution companies’ contribution is lower than this.

Cascade is required to report facility emissions for the State of Washington and are about 27,000 metric tons of CO2 per year. Cascade’s emission in Oregon are low and are not required to be reported to EPA or the State of Oregon.

Natural Gas Distribution Customers – CO2 emissions from customers’ combustion of natural gas has increased due to low natural gas prices, increasing demand and steady economic growth. With that growth, emissions also increase from customers combustion of natural gas.

The total annual emissions from our core customers are in the range of 2 to 2.5 million metric tons of CO2 per year. Emissions from non-core customers have totaled in the range of about 800,000 tons per year, depending on the year.

Cascade’s energy efficiency programs currently save about 40,000 to 80,000 dekatherms annually, slightly less than 5,000 metric tons of CO2 per year. More emission reductions will be realized as Cascade's programs mature and continue to grow.

**What do you consider “customer” emissions**? Does it mean the emissions from all the gas your customers consume? Yes, this means emissions from Cascade’s core and non-core customers. Emissions are from the natural gas that Cascade sells.

Cascade has committed to methane fugitive emissions and leak reductions through the EPA’s Natural Gas Star Methane Challenge Program.

Cascade became a founding member of that Program in March 2016 and is participating specifically in the Program’s Excavation Damages Prevention segment.

Best management practices implemented for that program include reductions the company has realized in creating the Public Awareness position. In 2014, Cascade created the Public Awareness position to actively manage the Public Awareness Program and Damage Prevention Program. This person assists in providing community education and outreach opportunities, focusing on damage prevention and further reducing potential releases of methane from excavation damages.

Cascade is currently implementing a Damage Prevention Program that focuses on working with contractors or third parties that are repeat offenders. By identifying and reaching out to these third parties prior to work beginning on the respective project, we believe that we’ll see a reduction in excavation damages throughout our service territory.

Cascade actively participates in 811, Common Ground Alliance, and damage complaint programs in Washington and Oregon. And, we continue to explore other voluntary actions which could reduce methane emissions resulting from excavation damage

Cascade has also implemented pipeline replacement projects which have contributed to fugitive emissions reductions. Newer and more leak proof pipeline materials such as polyethylene and steel are used to replace older more leak-prone materials, methane leaks are reduced.

From 2012-2018, Cascade has replaced nearly 91 miles of early vintage steel pipe, ranging from service lines up to 12-inch mains, and have been replaced with new steel or polyethylene pipe.

Also, Cascade is better positioned than most US utilities as it has no unprotected steel pipeline and none of the potentially leak-prone cast iron pipe seen elsewhere. There are many utilities who still have cast iron pipe in their systems.

Cascade also encourages direct use of natural gas – especially as innovative gas solutions can maximize the efficient use of energy and offer customers more choice and improved affordability, reliability and comfort.

National policy trends we have seen in this administration is less focus on required emissions reductions. EPA is still funding its voluntary emissions reduction programs such as the Methane Challenge Program.

We see growing regional and state focus on adopting GHG emissions reductions or renewables mandates and studies through regulation or statute. We see this happening in Oregon, Washington and further south in California. We’ll touch on what we see in Washington and Oregon in a few slides.

We see influence There are more cities across the US committing to emissions reductions and renewable energy through city goals and requirements vary – some goals are 2030 and some further out – ie. 2050. May include city infrastructure only, but some are community-wide. We will talk about a recent referendum in the City of Bellingham in a few slides.

The NSPS OOOOa Rule requires methane monitoring and leak repair at new oil and gas production facilities upstream of natural gas local distribution company facilities. EPA excluded local distribution company systems from the rule since LDC systems generally operate at lower pressures than interstate pipelines, and due to the downward trend of methane emissions from distribution company implementation of voluntary process improvements that have reduced fugitive emissions as mentioned before. Only oil and gas facilities upstream of LDC custody transfer meters are regulated by this rule.

The rule is in effect, and has been in the news over the past couple years due to EPA’s continued re-evaluation and re-proposal of some of the monitoring and repair requirements and compliance deadlines. Environmental groups litigated EPA’s approach to staying the compliance deadlines and rule is in effect.

An example of a recent federal legislative option to address GHGs is the proposed Market Choice bill in the US House. It includes a carbon tax provision for fossil fuels and applies an initial tax of $24 starting in 2020 and includes an annual inflation adder. Election year politics will make it difficult for bills addressing GHG emissions to pass. We will continue to monitor any potential congressional actions.

***2nd Presentation – Avoided Cost*** (Devin McGreal), Slide #35

* 20-year price forecast
* Avoided cost is a 45-year outlook
* One for each weather zone
* More transparent and intuitive final number

Devin described each element of the avoided cost formula in detail. He discussed incremental fixed transportation costs, variable transportation costs, variable storage costs, commodity costs, carbon taxes, environmental adders, distribution system costs, and risk premium.

Devin confirmed that the four climate zones for avoided cost are Bellingham, Bremerton/Aberdeen/Longview, South Central WA, and Oregon

Devin confirmed the units for avoided cost are $/therm

**What kind of cost effective solutions are looked at for transportation costs? –** They are the average of any projects that would solve shortfalls in the most recent IRP

**Is Cascade still using Social Cost of Carbon w/ 3% Discount Rate for its base case Carbon Analysis? –** This is correct. The Company will also be modeling the impacts of several other potential carbon forecasts.

***3rd Presentation – DSM Forecast*** (Monica Cowlishaw and Amanda Sargent), Slide #47

* New Conservation Potential Assessment
* Historical program performance
* Short term goals

**LoadMAP Sequence**: (Slide #52)

* Market profile
* Equipment
* Baseline Forecast
* Non-Equipment
* Potential
* Final Results
* Top Ten Measures reviewed

***4th Presentation – Bio-Natural Gas*** *(Chris Robbins*), Slide #67

* Discussion of the role of RNG in the IRP
* Cascade will evaluate RNG potential as part of resource mix
* Two projects in focus currently, City of Richland Landfill and Andgar in Bellingham

***5th Presentation – SENDOUT® Optimization Modeling****:*(Brian Robertson), Slide #71

* Review of Supply Resource Optimization Flow Chart
* Sendout Inputs review:
	+ Supply, Storage, Transportation, Constraints, Demand, Price Forecast, Weather, and Distribution System.

**Delivery Rights vs Receipt Rights**: (Slide #94)

* Cascade has more delivery rights than receipt rights.
* Allows for flexibility.

**Long Range Price Forecast:** (Slide #111)

* Blend of current market pricing and long-term fundamental price forecasts
* Various sources of forecasts use different levels of time (e.g. monthly, annually…)

***6th Presentation – Preliminary Resource Integration Results:*** (Ashton Davis), Slide #124

**Preliminary Results:** (Slide #125)

* Load forecast is finalized.
* Listed assumptions such as all contracts evergreen.
* Identified potential shortfalls in GTN citygates starting in 2023.
* Current modeling does not show Washington shortfalls.

**Brian Robertson then went over the 2018 IRP Remaining Schedule**:

September 11 - TAG #5 Slides distributed

September 18 - TAG #5

October 5 - Draft of 2018 IRP out

November 2 - Comments due

November 14 - TAG #6, if needed

December 14 - IRP filing in Washington

Mark commented that Cascade is open to a workshop if needed. The meeting was adjourned.