Avista Corp.

AVISTA

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September 9, 2021

Public Utility Commission, Oregon 201 High St. SE, Suite 100 Salem, OR 97301

RE: UM 2178 - Avista Utilities Natural Gas Fact Finding Initial Model, Inputs, and Presentation

Filing Center:

On September 7, 2021 Avista Corporation, d/b/a/ Avista Utilities, submitted its initial model, inputs, and presentation of results as requested in Docket UM 2178, the OPUC's Natural Gas Fact Finding effort regarding Executive Order 20-04. Following the submission, the Company identified a number of changes that needed to be made to the presentation of the initial model results. As such, attached is an updated presentation for the September 14, 2021 meeting.

If you have any questions regarding this filing, please contact Tom Pardee at 509-495-2159 or tom.pardee@avistacorp.com.

Sincerely,

|s|Shawn Bonfield

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Natural Gas Fact Finding: Initial Model Results

September 14, 2021

Agenda

- EO 20-04 Compliance Assumptions
- Methodology
- EO 20-04 Compliance Model Scenario Results
- OPUC Requested Sensitivities





EO 20-04 Compliance Model Assumptions

IRP Baseline Assumptions

- Results are for the State of Oregon only
- Demand from all Avista customer classes considered
- Avista 2021 Natural Gas IRP (LC-75) used as inputs and updated as available:
 - Customers (IRP, 2022 2045, estimated from 2046-2050)
 - Use per customer (3-year coefficients 2018-2020)
 - Weather (2001 through 2020)
 - Natural gas prices
 - Oregon's ownership of Jackson Prairie Storage (costs and benefits)
 - Transportation costs
 - Price Elasticity 0.81%



New Baseline Assumptions

- Policy scenario #4
 - 20% Community Climate Investments (CCI)
 - CCI offsets emissions to create a 0 emission product
 - 10% (2022-2024), 15% (2025-2027), 20% (2028+)
 - Cap reductions/trajectory:
 - goal of 45% by 2035 and 80% by 2050
- Supply types:
 - RNG (all types)
 - Supply and Cost estimates from AGF/ICF study, December 2019
 - Energy is excluded from emissions calculation
 - H2 (green)
 - Estimated at 20% of supply blend potential
 - Costs from multiple industry studies (Lazard's, S&P Global)
 - Energy is excluded from emissions calculation

Key Topic	Policy Scenario 1	Policy Scenario 2	Policy Scenario 3	Policy Scenario 4
Cap and Trajectory	Straight line to 80% by 2050	45% by 2035 50% by 2035 80% by 2050 90% by 2050		45% by 2035 80% by 2050
Trading Allowed?	Yes	Yes, excluding stationary sources	Yes	Yes
Regulated Sectors under the Cap	 Natural gas utilities Non-natural gas fossil fuel suppliers Large stationary sources with process emissions ≥ 25,000 	 Natural gas utilities Non-natural gas utilities Large stationary sources with process emissions ≥ 25,000 (includes gas supplied by increate pipeline companies to those above threshold) 		 Natural gas utilities Non-natural gas fossil fuel suppliers
Emissions not included under the Cap	 Fuels used for aviation Process emissions below threshold 	 Fuels used for aviation Process emissions below threshold 	 Fuels used for aviation; Emissions from fuel suppliers below threshold Process emissions below threshold 	 Fuels used for aviation Large stationary sources assume to be regulated under a separate best available emissions reduction approach
Natural Gas Point of Regulation	All natural gas regulated at utility, not at stationary source.	Natural gas regulated at stationary sources if emissions are above threshold. Otherwise, natural gas regulated at utility.	All natural gas regulated at utility, not at stationary source.	All natural gas regulated at utility, n at stationary source.
Use of CCIs	Up to 25% of compliance per year	Up to 5% of compliance per year	Up to 25% of compliance per year	Up to 20% of compliance per yea



OR Region Firm Customer Range, 2021-2045



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Source: 2021 IRP Customer Forecast

Total System Average Daily Load



Weather

- Most recent 20 calendar years of daily average weather for each Planning Area
- Peak day methodology Utilize coldest day for each of the past 30 years with a 99% probability supply can be fulfilled

Planning Area	99% Probability Avg. Temp
Klamath Falls	-9
La Grande	-11
Medford	11
Roseburg	14



Risks to Model and Costs

- New Policy/guidance
- Unknown amount of CCI's available
- RNG Potential/Costs
- H2 Potential/Costs/Green Power Availability
 - Water Availability/Rights
- Electrification
- Lost Industry in Oregon
- CPP rules are not complete





Methodology



Hydrogen - Green (Available to Avista)



-Hydrogen

The time to saturation of the five classes of technology depends on technology, industry, and external factors.

А	В	С	D	E
5 years	10 years	20 years	40 years	>40 years
< 5 years	5–15 years	15–25 years	25–45 years	>40 years
None	Minor	Unit operation	Plant section	Entire plant
New to U.S. only	New to U.S. only	New to U.S. only	New	New
>5%	>5%	2~5%	1–2%	<1%
Open	Open	Cautious	Conservative	Adverse
Forcing	Forcing	Driving	None	None
	A 5 years < 5 years None New to U.S. only >5% Open Forcing	AB5 years10 years5 years7<	ABC5 years10 years20 years5 years10 years20 years6710<	ABCD5 years10 years20 years40 years5 years10 years20 years40 years< 5 years



Source: Fisher-Pry Model of Technological Substitution

RNG Supply Curve (Available to Avista)



- Population: United States, Oregon
- Avista share of natural gas load

Figure 34. Combined RNG Supply-Cost Curve, less than \$20/MMBtu in 2040



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Source: AGF 2019 RNG Study

CCI* (Available to Avista)



Cost Curves



RNG is a combined cost curve for all project types RNG is assumed to have a population weighted based supply availability

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Avoided Demand by Program



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2021 Expected Case EE

-Does not include Interruptible customers or transport customers (No current tariff rider)

-Voluntary Program and DR are estimates

Least-Cost Resource Selection Methodology

MTCO2e emissions allowance	687,249 116 55			
Dekatherms of conventional natural gas equivalent	13,000,000			
	Available Supply	Price		
Conventional natural gas	15,000,000	\$3		
RNG	2,000,000	\$13		
Hydrogen	500,000	\$20		
CCI offset + Commodity	1,200,000	\$4 + \$3 = \$7		
	Example 1	Example 2	Example 3	Example 4
Load	13,000,000	14,000,000	15,000,000	16,500,000
Served with conventional natural gas	13,000,000	14,000,000	14,200,000	14,200,000
Served with RNG	0	0	800,000	2,000,000
Served with hydrogen	0	0	0	300,000
CCI offset	0	1,000,000	1,200,000	1,200,000
MTCO2e emissions	687,249	687,249	687,249	687,249

Allocating Revenue Requirement – Senate Bill 98

• Senate Bill 98 Section 5 (5):

"If the large natural gas utility's total incremental annual cost to meet the targets of the large renewable natural gas program exceeds five percent of the large natural gas utility's total revenue requirement for an individual year, the large natural gas utility may no longer be authorized to make additional qualified investments under the large renewable natural gas program for that year without approval from the commission."



Allocating Revenue Requirement – EO 20-04

	Example Case		EO 20-04 Compliance	
Baseline Revenue Requirement	\$	100,000,000	\$	100,000,000
Incremental Cost of RNG	\$	5,000,000	\$	10,000,000
Incremental Cost of Hydrogen	\$	-	\$	2,500,000
Incremental Cost of CCIs	\$	-	\$	2,500,000
Resulting Revenue Requirement	\$	105,000,000	\$	115,000,000
Allocation to SB 98	\$	5,000,000	\$	5,000,000
Allocation to EO 20-04	\$	-	\$	10,000,000

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EO 20-04 Compliance Model Scenario Results

Emissions Forecast

(emissions goal met)



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Supply Stack (energy goal met)



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Oregon Total Revenue Requirement



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Residential Customer Bill Impact



-Residential EO 20-04 - Per Customer - Residential Baseline - Per Customer



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Commercial Customer Bill Impact





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Industrial Customer Bill Impact





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Transportation Customer Bill Impact*





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OPUC Requested Sensitivities

Natural Gas Fact Finding Compliance Modeling Proposed Sensitivities

1 - Customer Growth

Sensitivity: Current IRP forecasted load growth through 2025; no new customers beginning from 2025 through 2030; -0.75% customer growth beginning in 2031 through the end of model's time horizon Growth is something we'll need to calculate from Sendout customers by area and class at a detailed level

2 - RNG Availability

Sensitivity: Limit RNG availability to the annual percentages set by SB 98 and found in ORS 757.396(1).

3 - More Aggressive Timeline on Climate Policy Sensitivity: CPP targets of 45% below baseline by 2030, 80% below baseline by 2040

4 - No CCI Sensitivity toggle: No use of CCIs

*In a Scenario, alternative supplies would be considered to fully meet energy and emissions goals

Customer Growth

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(emissions goals/energy demand met)





RNG Availability*

(emissions goal/energy demand short in 2034)



*We assume SB 98 to allow any renewable fuel

**In a Scenario, a resource would be added to determine least cost/least risk while serving demand

More Aggressive Timeline on Climate Policy

Emissions

MTCO2e

(emissions goals/energy demand short in 2038)





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**In a Scenario, a resource would be added to determine least cost/least risk while serving demand

Emissions

No CCI (emissions goals/energy demand met)







Avista Revenue Requirement



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35 *Energy and emissions for lost customers in "Customer Growth" sensitivity is not quantified and would be additional costs

NPVRR Comparison

\$2,500



*In a Scenario, a resource would be added to determine least cost/least risk while serving demand

**Alternative energy sources for lost customers and their costs/emissions are not included in the final NPVRR