2025 Natural Gas Integrated Resource Plan

Technical Advisory Committee Meeting No. 1 Agenda

Wednesday, February 14, 2024
Virtual Meeting

Topic	Time (PTZ)	Staff
Introductions	9:00	Tom Pardee
January Peak Event	9:10	Tom Pardee
Work Plan	9:30	Tom Pardee
RNG Acquisition	9:50	Michael Whitby
Break	10:20	
Customer Impacts	10:30	Tom Pardee
Modeling Update	11:00	Michael Brutocao
State Policy Update	11:30	Tom Pardee
Planned Scenarios	11:55	Tom Pardee

Microsoft Teams meeting

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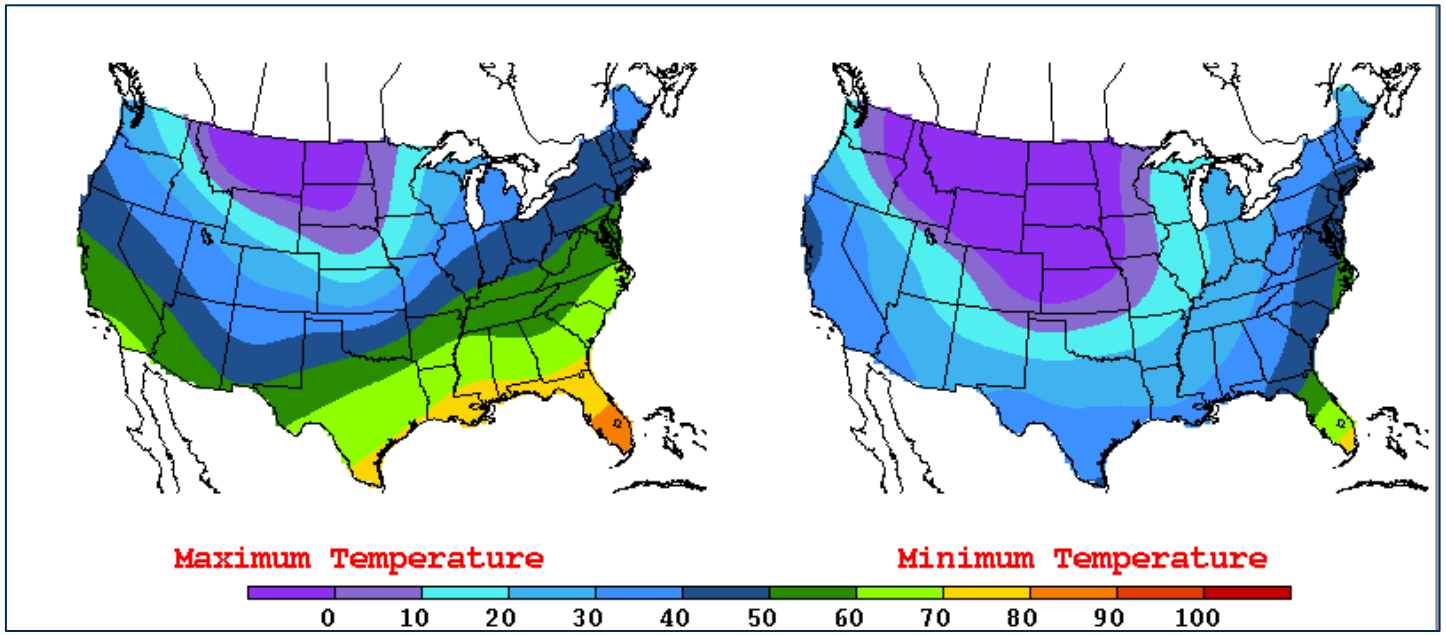
Gas market winter update

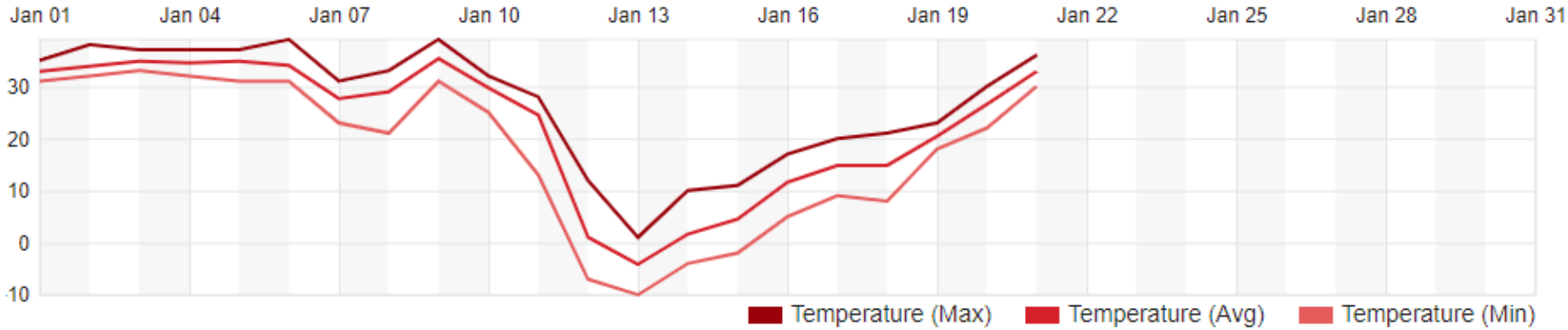
February 14, 2024

After a mild Nov/Dec, winter finally arrives MLK weekend

Overnight lows 1/12-1/13

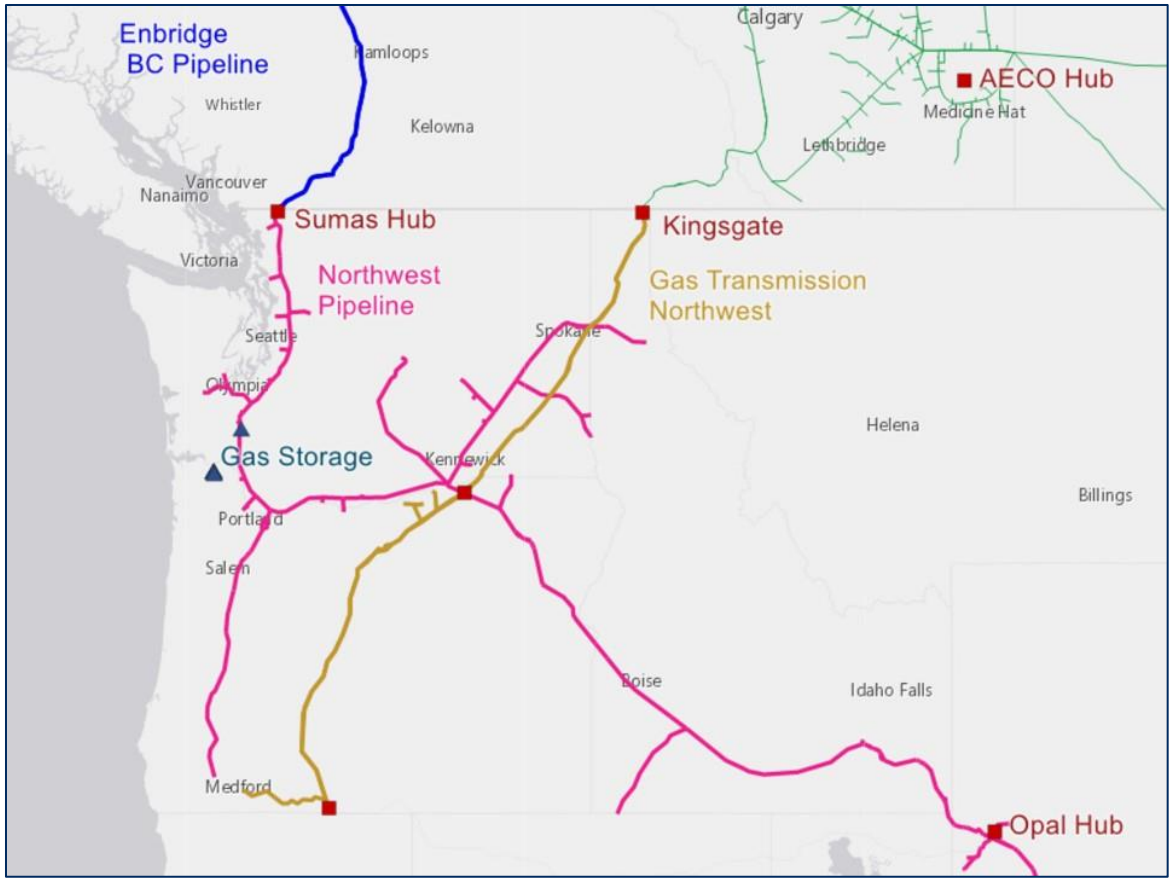
- Spokane: -10
- Calgary: -33
- Vancouver: 7
- Seattle: 15
- Portland: 15
- Boise: 10





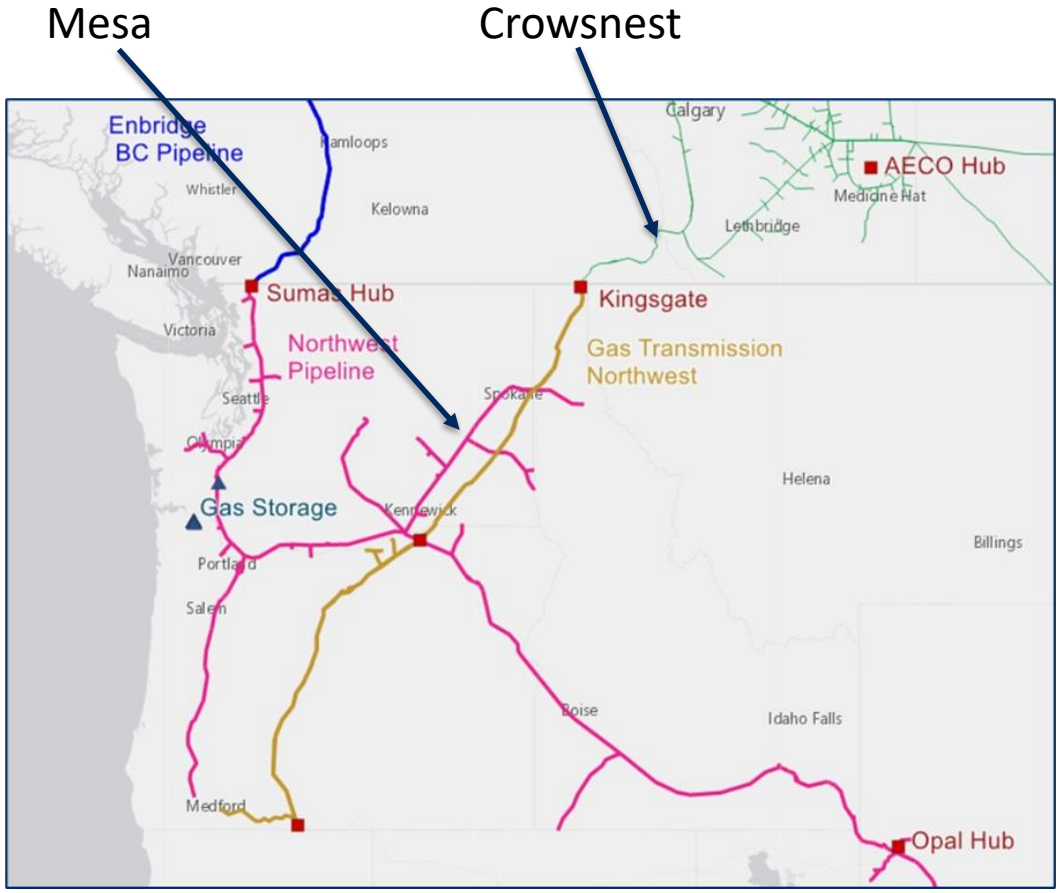
MLK Weekend

- Extremely cold temperatures region wide.
- Avista LDC sets peak load records on consecutive days 1/12 (Fri),1/13 (Sat).
- The two main pipeline systems (GTN, NWP) serving the region experienced infrastructure failures on successive days.



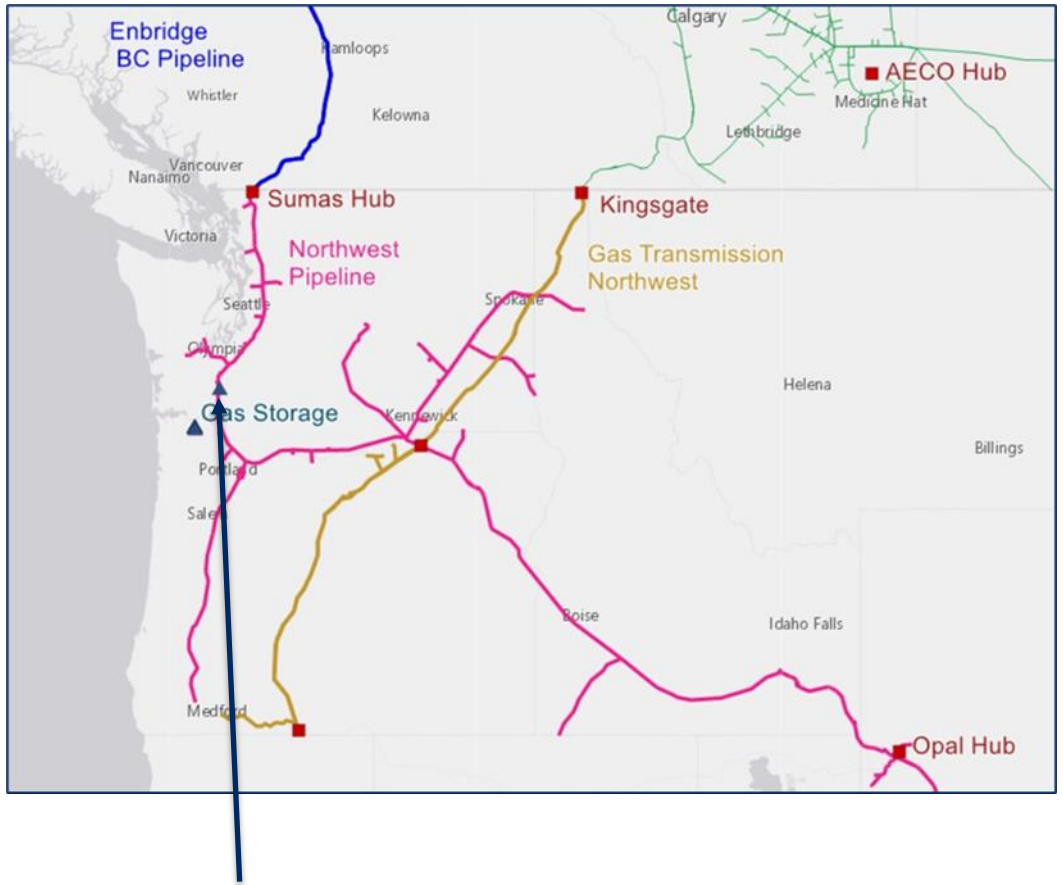
GTN – Compressor failure

- Crowsnest compressor fails morning of 1/12/24.
- GTN issues Force Majeure. Posts capacity reduction of 800k dth south of Kingsgate. (25% of GTN capacity)
- Avista is first LDC offtake customer from GTN south of Kingsgate and had higher impacts due to this
- Pressure on GTN starts to fall early afternoon on 1/12.
- GTN issues request for aid.
- Avista LDC declares gas EOP and requests that customers conserve gas.
- Northwest pipeline reverses flow at Mesa compressor to boost pressure on GTN.
- Avista monitors pressure throughout the night. By late morning on 1/13 pressure was climbing.
- Avista ends gas EOP around noon on 1/13.

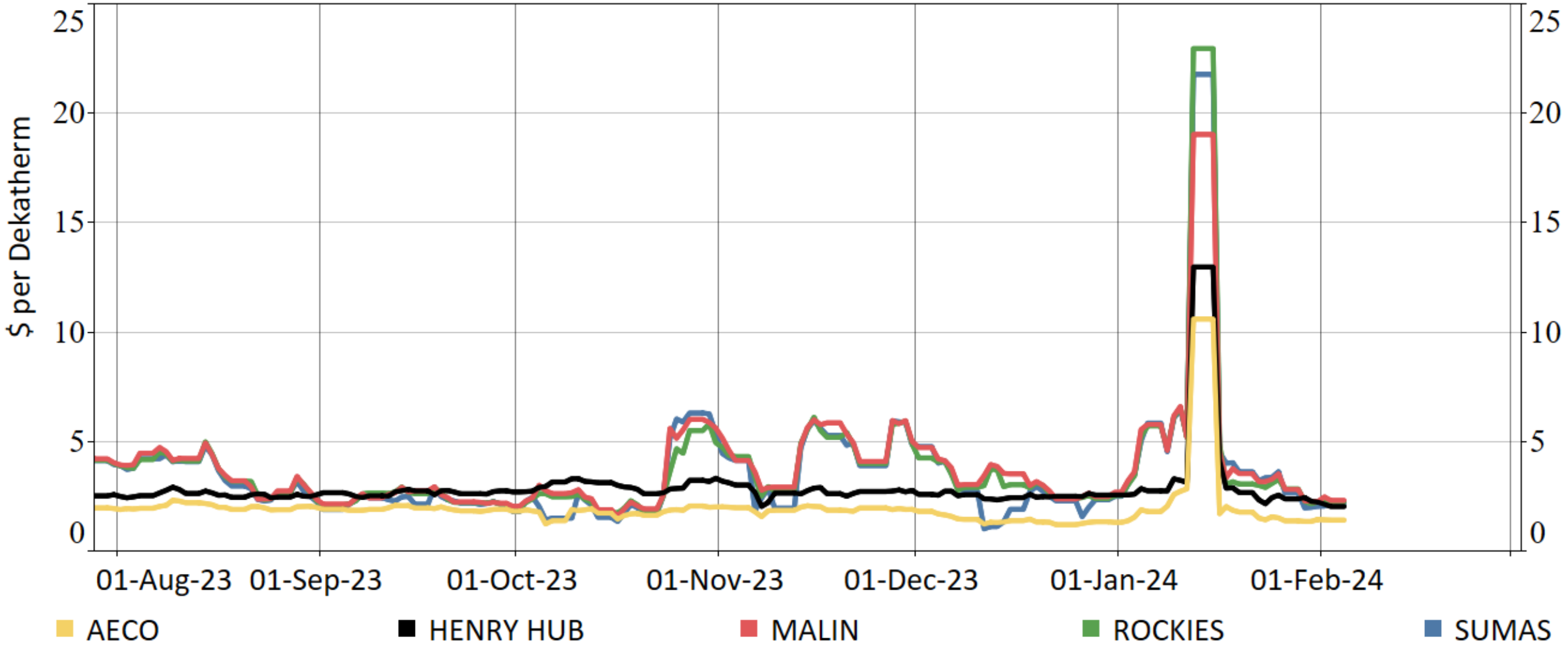


Jackson Prairie – Gas Supply impact

- At approximately 1 PM on 1/13 operators at JP lost communication with the facility. Withdrawal flows dropped from 1.1 bcf/d to zero. Pressure in I-5 corridor starts to drop.
- NWP activates Northwest Mutual assistance agreement. Requests regional stakeholder shed non-essential load and bring on available supply to preserve pressure.
- Around 3 PM, on-site crews manually open valves to allow free flow of 0.5 bcf/d.
- At approximately 6:30 PM operators regained communications link to JP. Flows ramped back up to 1.1 bcf/d. NWP terminated the NMAA.

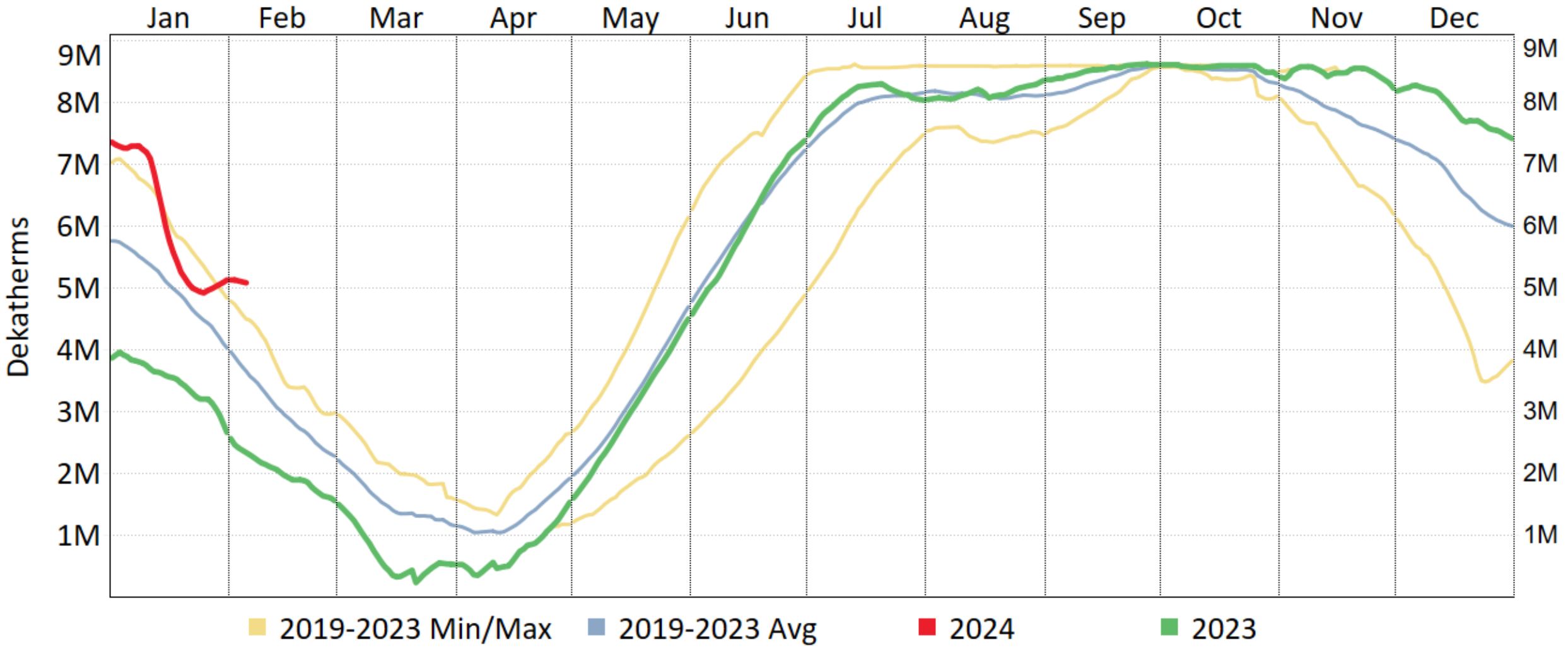


Day Ahead Prices



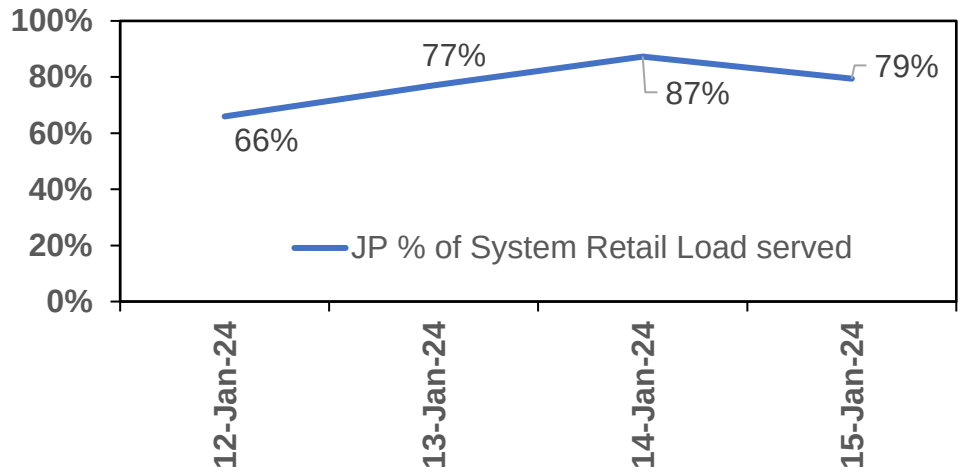
Avista JP Storage

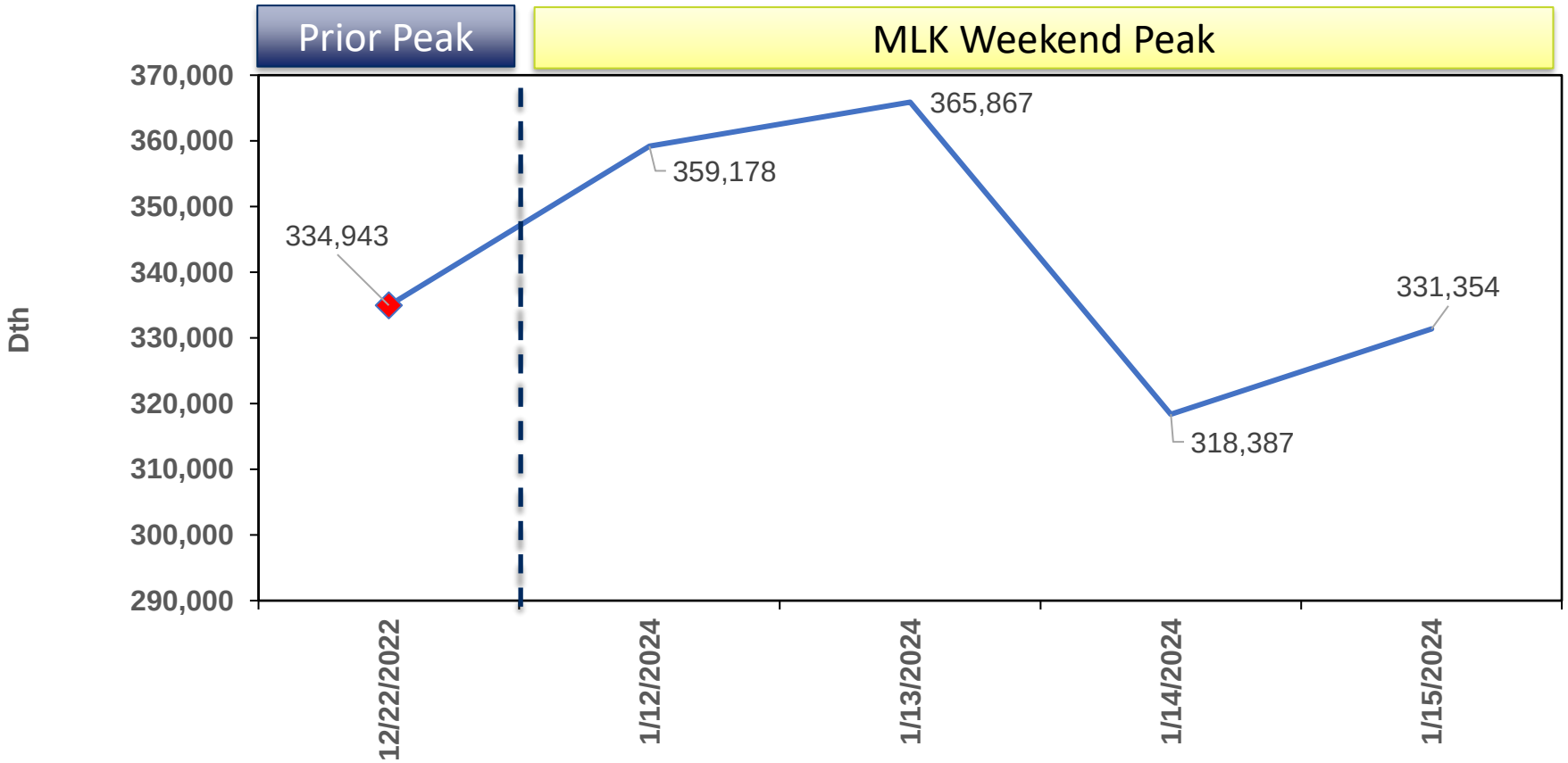
- Avista withdraws 1.32 Bcf over 5 days (1/12-1/16)
- JP total withdrawal 4.77 Bcf of 25 Bcf capacity



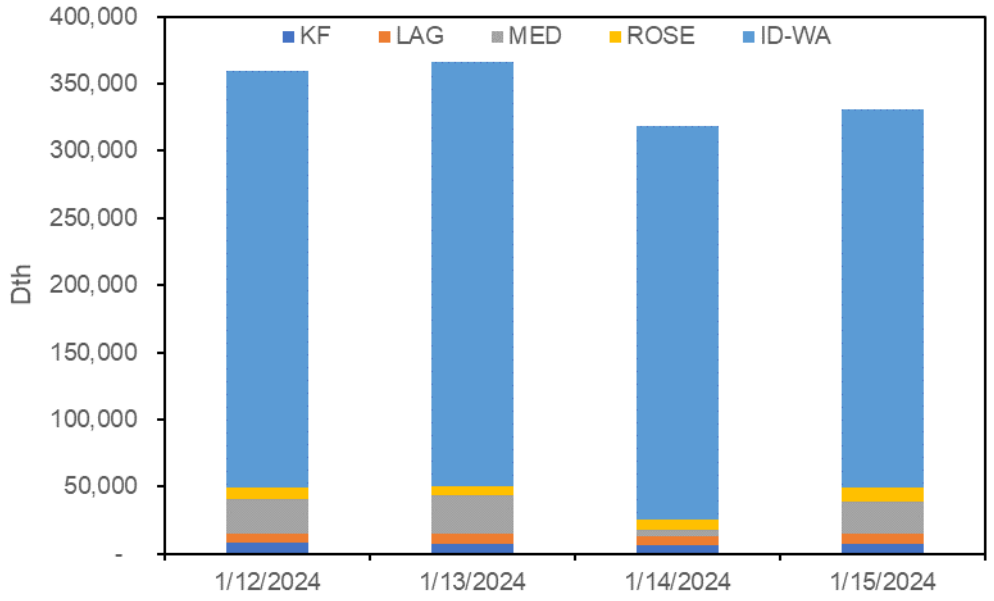
*Min, Max, and Averages since 2019

Peak Demand

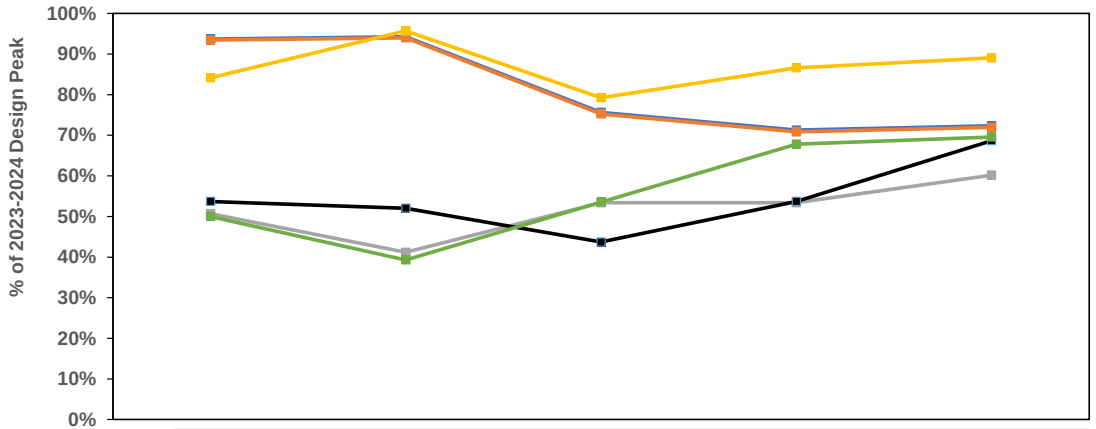

100%
80%
60%
40%
20%
0%
77%
87%
79%
66%
JP % of System Retail Load served
12-Jan-24
13-Jan-24
14-Jan-24
15-Jan-24


Prior Peak
MLK Weekend Peak
Dth
370,000
360,000
350,000
340,000
330,000
320,000
310,000
300,000
290,000
334,943
359,178
365,867
318,387
331,354
12/22/2022
1/12/2024
1/13/2024
1/14/2024
1/15/2024

Demand by Area



	1/12/2024	1/13/2024	1/14/2024	1/15/2024
Total Dth:	359,178	365,867	318,387	331,354



	1/12/2024	1/13/2024	1/14/2024	1/15/2024	1/16/2024
ID	94%	94%	76%	71%	72%
WA	93%	94%	75%	71%	72%
KF	51%	41%	53%	53%	60%
LaGrande	84%	96%	79%	87%	89%
Med	54%	52%	44%	54%	69%
Rose	50%	39%	54%	68%	70%

Work Plan

TAC 1 – 2025 Gas IRP

February 14, 2024

Schedule and Topics

- **TAC 1: Wed. February 14, 2024: 9:00 am to 12:00 pm (PTZ)**
  - January Peak Event
  - Work Plan
  - RNG Acquisition
  - Customer Impacts
  - Modeling Update
  - State Policy Update
  - Planned Scenarios for Feedback
- **TAC 2: Wed. April 24, 2024: 10:30 am to 12:00 pm (PTZ)**
  - Feedback from prior TAC (10 min.)
  - Action Items from 2023 IRP (30 min.)
  - Chosen Model Methodology and modeling overview (50 min.)
- **TAC 3: Wed. 15 May 2024: 10:30 am to 12:00 pm (PTZ)**
  - Feedback from prior TAC (10 min.)
  - Distribution System Modeling (45 min.)
  - Non-Pipe Alternatives (NPA) in Distribution Planning (20 min.)
  - Oregon Staff Recommendation on NPA (15 min.)
- **TAC 4: Wed. 5 June 2024: 10:30 am to 12:00 pm (PTZ)**
  - Feedback from prior TAC (10 min.)
  - Future Climate Analysis Update (45 min.)
  - Historic weather comparison (15 min.)
  - Peak Day Methodology (20 min.)
- **TAC 5: Wed. 26 June 2024: 10:30 am to 12:00 pm (PTZ)**
  - Feedback from prior TAC (10 min.)
  - GHG assumptions and Climate pricing (40 min.)
  - Current natural gas resources (40 min.)
- **TAC 6: Wed. 17 July 2024: 10:30 am to 12:00 pm (PTZ)**
  - Feedback from prior TAC (10 min.)
  - Load Forecast – AEG (80 min.)

Schedule and Topics

- **TAC 7: Wed. 7 Aug. 2024: 10:30 am to 12:00 pm (PTZ)**
  - Feedback from prior TAC (10 min.)
  - Natural Gas Market Overview and Price Forecast (40 min.)
  - New Resource Options Costs and Assumptions (40 min.)
- **TAC 8: Wed. 28 Aug. 2024: 10:30 am to 12:00 pm (PTZ)**
  - Feedback from prior TAC (10 min.)
  - Conservation Potential Assessment (AEG) (30 min.)
  - Demand Response Potential Assessment (AEG) (20 min.)
  - Conservation Potential Assessment (ETO) (30 min.)
- **TAC 9: Wed. 18 Sep. 2024: 10:30 am to 12:00 pm (PTZ)**
  - Feedback from prior TAC (10 min.)
  - NEI Study (Placeholder if study is conducted) (30 min.)
  - Avoided Costs Methodology (20 min.)
  - All assumptions review (30 min.)
- **TAC 10: Wed. 6 Nov. 2024: 9:00 am to 12:00 pm (PTZ)**
  - Scenario Results (30 min.)
  - Scenario Risks (30 min.)
  - PRS Overview of selections and risk (30 min.)
  - Per Customer Costs by Scenario (15 min.)
  - Cost per MTCO2e by Scenario (15 min.)
  - Open Questions (60 min.)
- **Sep. 2024 -** Virtual Public Meeting- Natural Gas & Electric IRP
  - Recorded presentation
  - Daytime comment and question session (12pm to 1pm- PTZ)
  - Evening comment and question session (6pm to 7pm- PTZ)

Work Plan Summary

- This plan outlines the process Avista will follow to develop its 2025 Gas IRP for filing with the Idaho, Oregon, and Washington Commissions by April 1, 2025. Avista uses a transparent public process to solicit technical expertise and stakeholder feedback throughout the development of the IRP through a series of Technical Advisory Committee (TAC) meetings and public outreach to ensure its planning process considers input from all interested parties prior to Avista's decisions on how to meet future customer gas needs. Avista posts all meetings announcements, meeting minutes, videos, final IRP documents and data on its website at https://www.myavista.com/about-us/integrated-resource-planning. Avista will communicate with its TAC members through email and Microsoft Teams for any meeting information and data sharing outside of TAC meetings. Avista will provide all information related to TAC meeting content prior to, or shortly after, each TAC meeting if any updates to presentations or data have been made. Final data and documents will be made available upon filing of the IRP.

- The 2025 IRP process will explore the use of new modeling techniques. The models under consideration include PLEXOS, as used in the 2023 IRP, but it is also considering internally developed tools are under exploration. Costs of models have been steadily increasing and have created an opportunity to evaluate alternative modeling options to help contain costs to customers while providing the same level of analysis and considerations necessary in an IRP. Avista may use Avista's Electric IRP's PRiSM for certain resource selection options but intends to investigate alternative options to PLEXOS for the ability to provide this functionality in a timely manner for all jurisdictions. Avista will share outcomes of modeling comparisons prior to a decision to move toward a selected model.

- Avista contracted with Applied Energy Group (AEG) to assist with key activities including the energy efficiency and demand response potential studies. AEG will also provide the IRP with a long-term energy forecast using end use techniques to improve estimates for building and transportation electrification scenarios. Avista also intends to align the IRP's load forecast and resource options with this study. The Energy Trust of Oregon (ETO) will continue to provide results for the Avista Oregon territories and will be directly input into the model as a cost and load savings.

- Avista intends to use both detailed site-specific and generic resource assumptions in the development of the 2025 IRP. The assumptions will utilize Avista's research of similar gas producing technologies, engineering studies, vendor estimates and market studies. Avista will rely on publicly available data to the maximum extent possible and provide its cost and operating characteristic assumptions and model for review and input by stakeholders. The IRP may model certain resources as Purchase Agreements rather than Company ownership if third party ownership is likely to be lower cost. Future Requests for Proposals (RFP) will ultimately decide final resource selection and ownership type based on third party resource options and potential self-build resources specific to Avista's service territory.

Work Plan Summary (cont.)

- Avista intends to create a Preferred Resource Strategy (PRS) using market and policy assumptions based on final rules from the Climate Commitment Act (CCA) for Washington. In Oregon the Climate Protection Plan (CPP) will be included as a scenario as the Department of Environmental Quality moves to re-establish the program in 2024. Conversations with the TAC as to methods and logic to include in scenarios will be discussed including beginning the program in 2025 for the PRS. Final CPP rules, that may be the same, will not be known until after the modeling and process of the 2025 IRP is completed. A similar outcome is possible with the Climate Commitment Act (CCA). A public initiative providing sufficient signatures was submitted to the Legislature where it can be repealed, altered or voted on in the November 2024 election. A further outcome includes the possibility of joining the California cap and trade program. This will also alter program rules of the CCA to conform to the California cap and trade program rules more closely. Finally, a least cost planning methodology will be used in Idaho. For Washington resource selection, Avista will solve its PRS to include least reasonable cost for meeting state energy policies including energy costs, societal externalities such as Social Cost of Greenhouse Gas , and the non-energy impacts of resource on public health (air emissions), safety, and economic development . Resource selection will solve for state clean energy requirements and Avista's energy and capacity planning standards. Avista will track certain customer metrics the PRS creates to assist in measuring customer equity.

- The plan will also include a chapter outlining the key components of the PRS with a description of which state policy is driving each resource need. The IRP will include a limited number of scenarios to address alternative futures in the gas market and public policy, such as limited RNG and building electrification. TAC meetings help determine the underlying assumptions used in the IRP including market scenarios and portfolio studies. Although, Avista will also engage customers using a public outreach and an informational event as well as provide transparent information on the IRP website. The IRP process is technical and data intensive; public comments are encouraged as timely input and participation ensures inclusion in the process resulting in a resource plan submitted according to the proposed schedule in this Work Plan to meet regulatory deadlines. Avista will make all data available to the public *except* where it contains market intelligence or proprietary information. The planned schedule for this data is shown in Exhibit 1. Avista intends to release slides and data five days prior to its discussion at Technical Advisory Committee meetings and expects any comments within two weeks after the meeting.

Sections in IRP

1. **Introduction and Planning Environment**
   a. Customers
   b. Integrated Resource Planning
   c. Planning Model
   d. Planning Environment
2. **Demand Forecasts**
   a. Demand Areas
   b. Customer Forecasts
   c. Electrification of Natural Gas Customers
   d. Use-per-Customer Forecast
   e. Weather Forecast
   f. Peak Day Design Temperature
   g. Load Forecast
   h. Scenario Analysis
   i. Alternative Forecasting Methodologies
   j. Key Issues
3. **Demand Side Resources**
   a. Avoided Cost
   b. Idaho and Washington Conservation Potential Assessment
   c. Pursuing Cost-Effective Energy Efficiency
   d. Washington and Idaho Energy Efficiency Potential
   e. Demand Response
   f. Building Electrification
4. **Current Resources and New Resource Options**
   a. Natural Gas Commodity Resources
   b. Transportation Resources
   c. Storage Resources
   d. Incremental Supply-Side Resource Options
   e. Alternative Fuel Supply Options
   f. Project Evaluation - Build or Buy
   g. Avista's Natural Gas Procurement Plan
   h. Market-Related Risks and Risk Management
5. **Policy Issues**
   a. Avista's Environmental Objective
   b. Natural Gas Greenhouse Gas System Emissions
   c. Local Distribution Pipeline Emissions - Methane Study
   d. State and Regional Level Policy Considerations
   e. Idaho
   f. Oregon
   g. Washington
   h. Federal Legislation
   i. Customer Market study
   j. Key Takeaways
6. **Preferred Resource Strategy**
   a. Planning Model Overview
   b. Stochastic Analysis
   c. Resource Integration
   d. Carbon Policy Resource Utilization Summary
   e. Resource Utilization
   f. Demand and Deliverability Balance
   g. New Resource Options and Considerations
   h. Energy Efficiency Resources
   i. Preferred Resource Strategy (PRS)
   j. Monte Carlo Risk Analysis
   k. Estimated Price Impacts
7. **Alternate Scenarios**
   a. Alternate Demand Scenarios
   b. Deterministic – Portfolio Evaluation and Scenario Results
   c. Demand
   d. PRS Scenarios
   e. Electrification Scenarios
   f. Supply Scenarios
   g. Other Scenarios
   h. Washington Climate Commitment Act Allowances
   i. Oregon Community Climate Investments
   j. Natural Gas Use
   k. Synthetic Methane
   l. Renewable Natural Gas
   m. Emissions
   n. Cost Comparison
   o. Regulatory Requirements
8. **Distribution Planning**
   a. Distribution System Planning
   b. Network Design Fundamentals
   c. Computer Modeling
   d. Determining Peak Demand
   e. Distribution System Enhancements
   f. Conservation Resources
   g. Distribution Scenario Decision-Making Process
   h. Planning Results
   i. Non-Pipe Alternatives
9. **Equity Considerations**
   i. Overview
   j. Equity Metrics
10. **Action Plan**
    a. Avista's 2025 IRP Action Items
    b. 2025-2026 Action Plan

Major Timeline

Exhibit 1: Major 2025 Gas IRP Assumption Timeline	
Task	**Target Date**
Market Price Assumptions CCA/Other GHG Pricing Assumptions	August 2024 June 2024
Natural Gas price forecast	August 2024
New Resource Options Cost & Availability	August 2024
AEG Deliverables Final Energy Forecast Energy Efficiency and Demand Response Potential Assessment	August 2024
Due date for study requests from TAC members	July 30, 2024
Determine portfolio & market future studies Finalize resource selection model assumptions	July 2024 September 2024

Next Steps

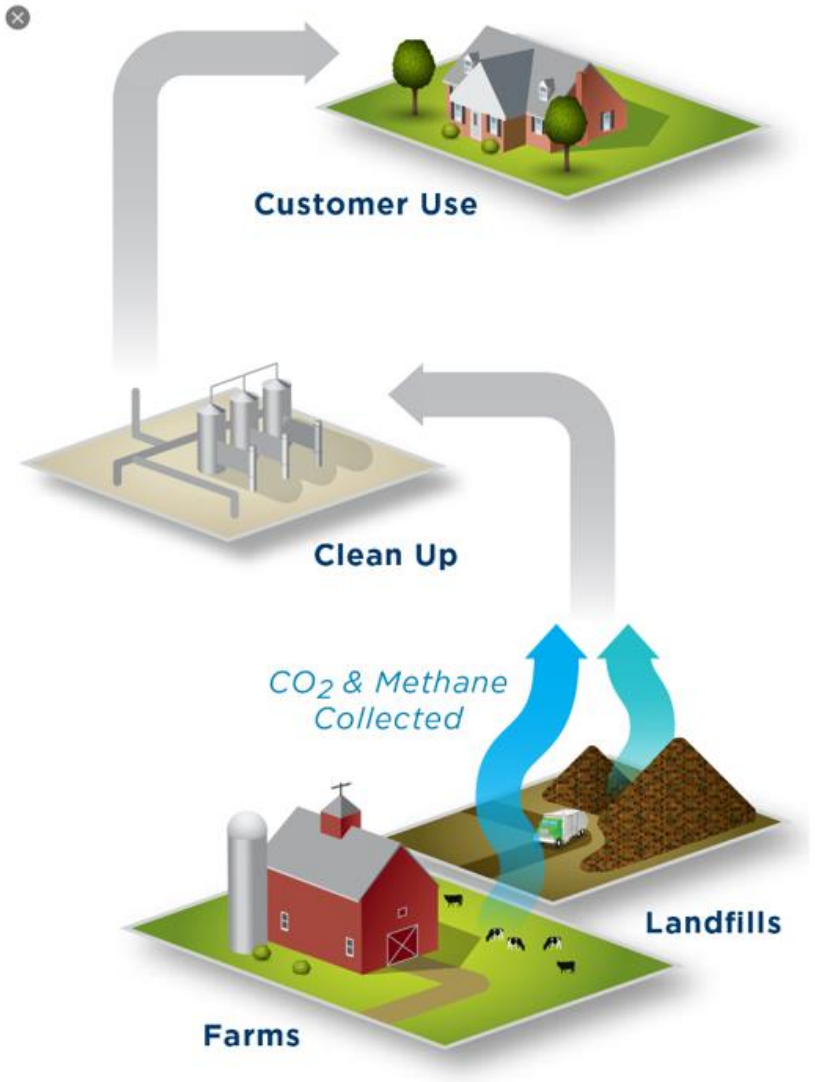
- Feedback from TAC of areas missing or additional topics needed to add to the workplan
  - Please submit areas of concern by March 15th, 2024
- File Plan by April 1, 2024

Renewable Natural Gas Acquisition

TAC 1 – 2025 Gas IRP

February 14, 2024

Procurement Process



RNG is a drop-in replacement for Natural Gas
Keep the pipes Change the fuel
Regardless of procurement strategy

Primary pathways to RNG procurement:

Buy:

- Avista has commenced an annual RFP cycle to test the market for least cost RNG project investments and RNG offtake opportunities

Build:

- Avista has considered developing RNG capital investment projects as self-build projects at a feedstock host sites

Procurement - Build

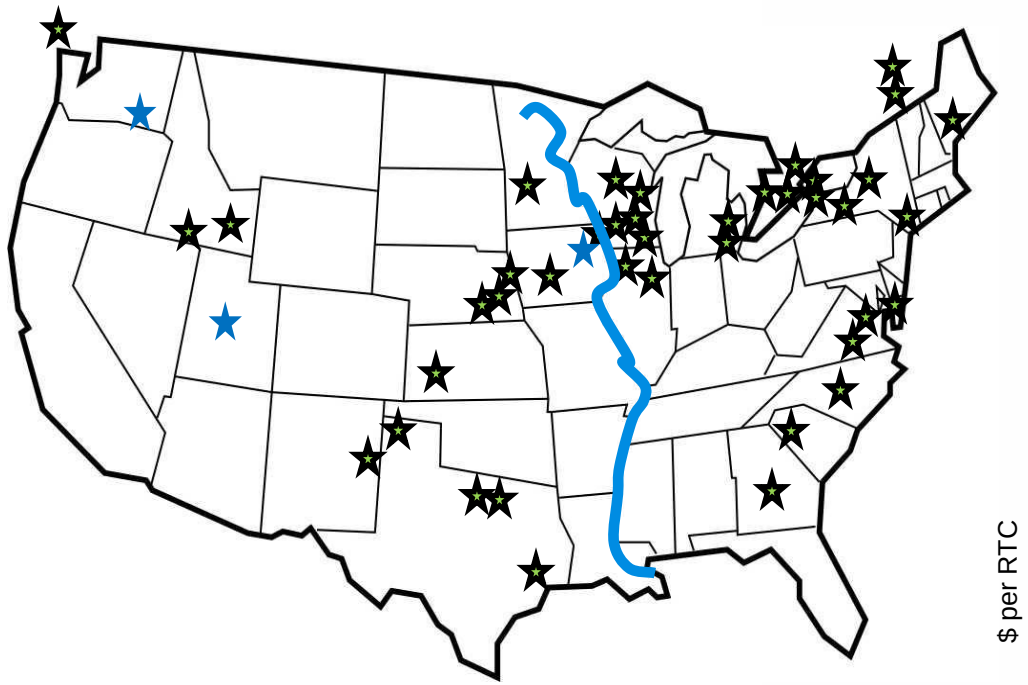
- **Avista has considered developing RNG projects under Oregon SB 98 and Washington HB 1257. Through this effort Avista has developed an understanding of the costs and risks associated RNG development. Some observations and challenges include:**
  - Cost varies by feedstock type and distance to interconnection point.
  - Utilities desiring to develop RNG projects are fully dependent on a feedstock host site with an owner that is willing to collaborate and cooperate and be patient with the development lead times & the regulatory process.
  - The regulatory process, timing, and uncertainty of cost recovery is undesirable as compared to “buy” alternatives.
  - Private developers are nimble, may build at a lower cost and can access all markets.
  - Higher risk profile

Procurement - Buy

- **Avista has commenced an annual RFP process in 2022 seeking:**
- Bundled or unbundled RNG RTC supply
- RNG Projects – Investment/partnering opportunities (Build)
- Long Term (15 year) RNG Offtake opportunities (Buy)

- **Some observations from the RFP process:**
- RNG Developers are offering lower coast as compared to Marketers/Brokers
- Nearly all RFP proposals have been for unbundled RNG environmental attributes only proposals.
- Projects are distributed across North America with only two in the PNW.
- RNG developers are nimble, may build at a lower cost and can access all markets.
- Lower risk profile

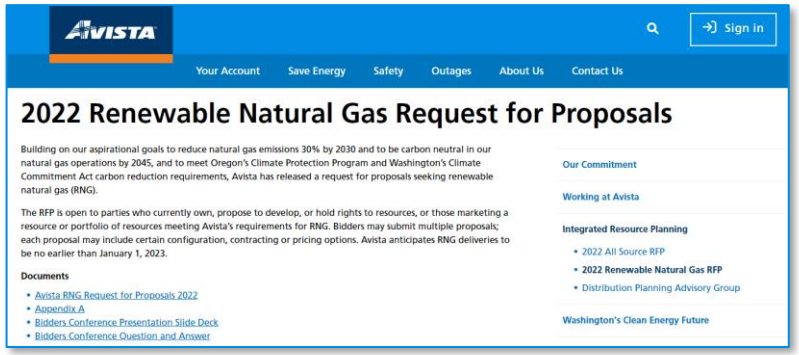
2022 Request for Proposals for Renewable Natural Gas

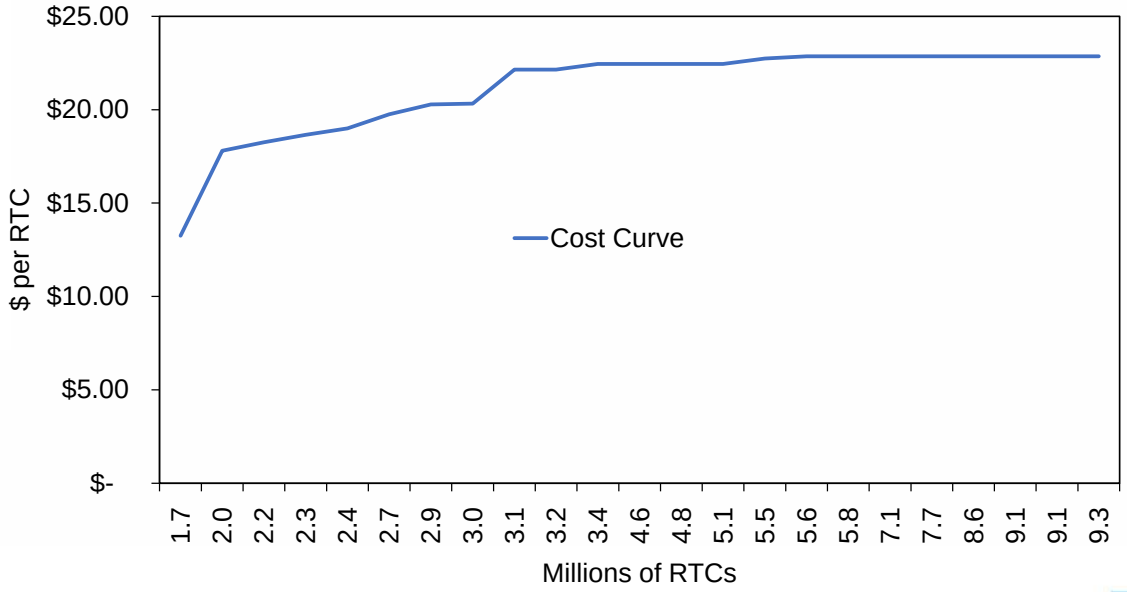


15 Respondents

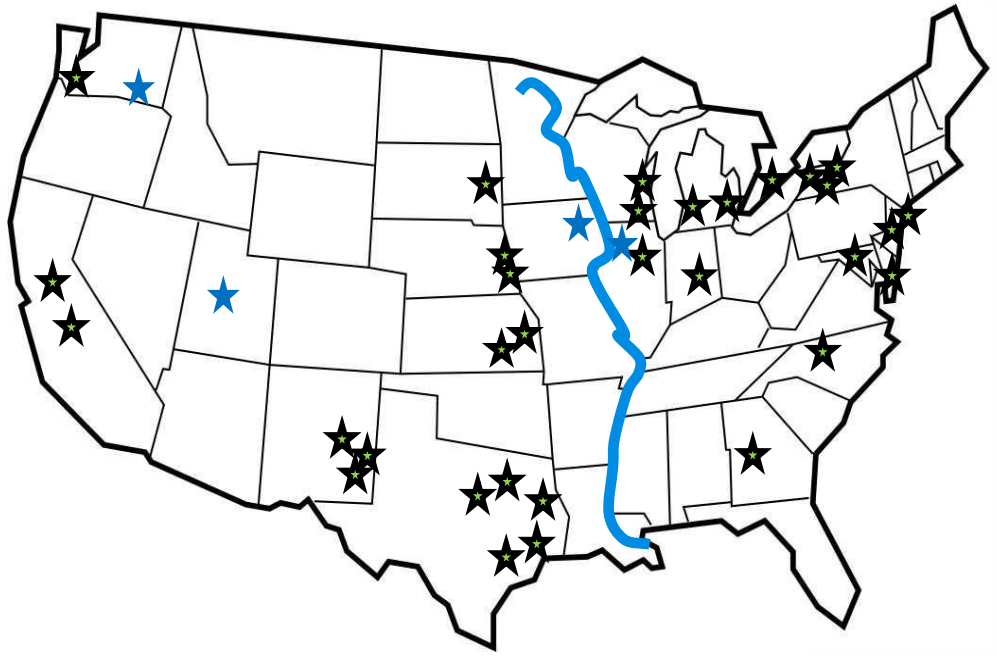
47 Projects

7.8 – 9.5 M RTCs





2023 Request for Proposals for Renewable Natural Gas

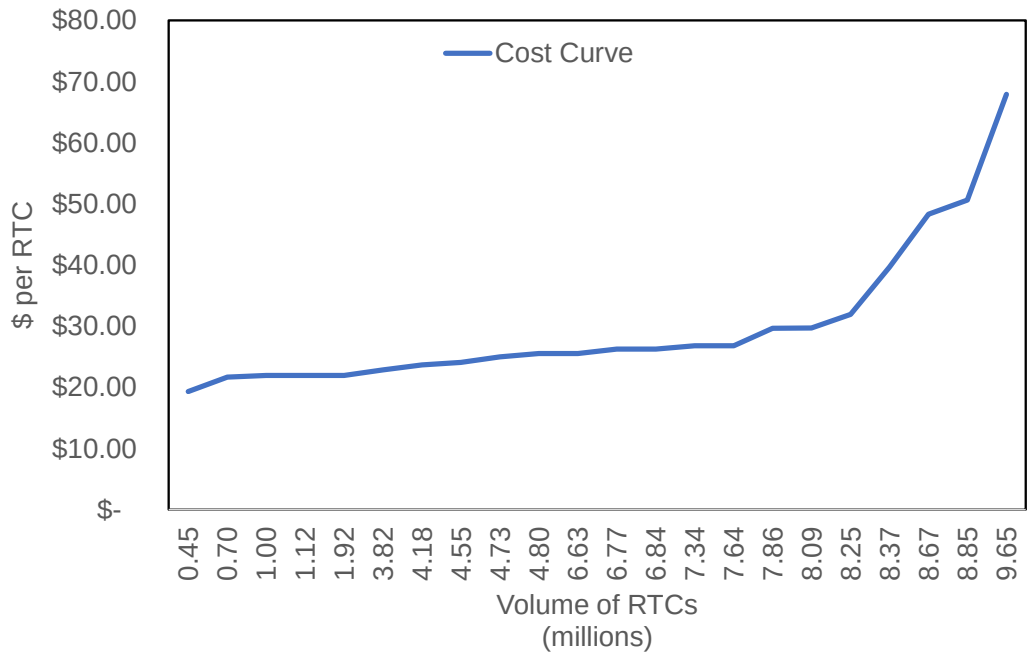


12 Respondents

22 + Projects

10 M RTCs – RNG

14 M RTCs – Alt Fuels



2022-2023 Offtake Contracts for RNG

Avista has executed four RNG contracts with Pine Creek Renewable Natural Gas

Horn Rapids Landfill RNG - Richland, Washington

- 15 Year off-take contract
- Deliveries expected Q1 2024

Black Hawk County Landfill RNG - Waterloo, Iowa

- 15 Year off-take contract
- Deliveries expected Q4 2024

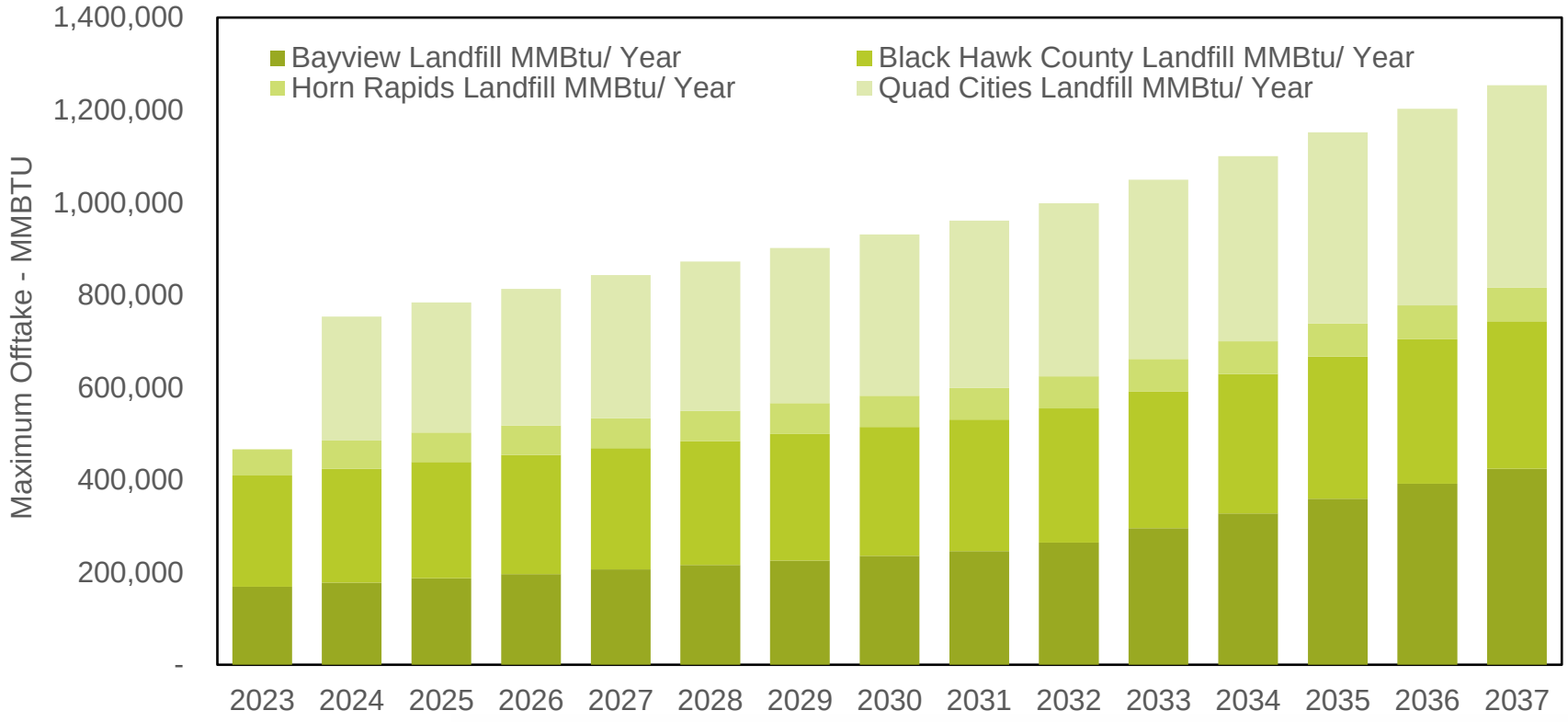
Bayview Landfill RNG – Elberta, Utah

- 15 Year off-take contract
- Deliveries expected Q1 2024

Quad Cities Landfill Facility RNG - Milan, Illinois

- 15 Year off-take contract
- Deliveries expected Q4 2024

Pine Creek RNG Offtake Supply Contracts



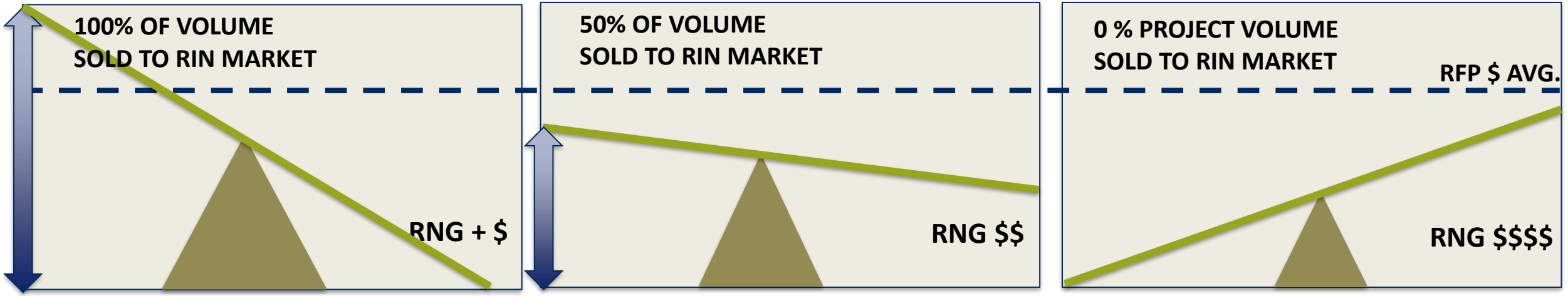
RNG Offtake Contract & Market Structure

- Contract Duration: 15 Years commencing in 2024 - 2025
- Contracts represent 50% & 100% of RNG Project Volumes:
- Environmental Attributes only (unbundled) purchased as Renewable Thermal Certificates (RTC)
- Attribute Tracking: tracked in M-RETS
- Developer RNG produces or mints and sells Environmental Attributes as RTC's and RIN's

RNG Offtake Market Structure

Volume of RIN's pointed to Transportation Market (EPA RSF) (% Flexible):

1. RIN's produce revenue
2. RNG developer administers RIN transactions and shares % of RIN revenue with Avista
3. RIN revenues subsidize Avista net RNG cost (RNG cap price - RIN Revenue = subsidized RNG cost)
4. Through this structure Avista customers enjoy RNG at below RNG market cost
5. The higher the value of the RIN the more Revenue



Customer Impacts

TAC 1 – 2025 Gas IRP

February 14, 2024

Customer Impact Considerations

Possible methods to add equity into the 2025 Gas IRP:

1) Add an Equity Chapter
2) Include metric results in the IRP Equity chapter and others, including:
   - GHG emissions
   - Rates
   - Energy Burden
   - Potential for other air emissions
3) Map out Avista “named communities”
4) Distribution equity: Non-Pipe Alternatives (NPA) for any distribution upgrade
   - This topic will be discussed in detail in TAC 2 with distribution planning
5) NEI Study?

Energy Justice Core Tenets with IRPs

- **Recognition:**
  - Identify Named Communities
  - Quantify Energy Burden
- **Procedural:**
  - Open Technical Advisory Committee Meetings
  - On-line Customer Oriented Planning Sessions
- **Distribution:**
  - Performance measures
  - Account for Non-Energy Impacts
- **Restorative:**
  - Energy Efficiency Programs
  - Non-Pipe Alternative
    - Distribution Planning

NEI Study Request Overview

Avista is seeking assistance to identify societal non energy impacts (NEI) for resource decisions in the natural gas distribution business. As Avista and other regional utilities will be seeking alternative natural gas fuel supplies over the coming decades to comply with state clean energy policies. Avista seeks to understand costs and benefits to resource decisions going beyond reduction in greenhouse gas emissions.

Avista seeks to understand NEI's for the following resource alternatives:

- Renewable Natural Gas
- Hydrogen & Synthetic Methane
- Natural Gas

Study Overview

Area of Study	Generalized Approach
Public Health	Air emissions contributed due to consumption of hydrocarbons consumed during the production of the fuel. Such as PM2.5, SO_2, NO_X, and GHG. Also include difference in methane or other GHG as compared to traditional natural gas.
Safety	Fatalities and injuries resulting from operations of production
Land Use	Consider the footprint of facilities that are above and beyond the standard calculations considered as part of alternative facility construction for the required energy. Displacement of land that was beyond the facility's footprint may also be considered.
Water Use	Identify water usage and impact of usage on process with return of a product back to a clean product (i.e. fracking water not always useful after usage)
Economic	Induced economic impact to the facilities construction and operation, including job growth.
Community Odor Pollution	Aromatic quality of the air in the community including mercaptan and organic decomposition. This should also consider the air quality of processes to create fuels.
Process Bi-products	Value in the creation of biproducts such as carbon black, biochar, fertilizers, carbon fiber, or graphite.
Local Distribution Pipeline	Impacts related increase or decrease in requirement to the Local Distribution Company (LDC) pipeline network, includes qualify of gas and volume impacts

Study Summary

- For each fuel type discussed below a cost estimate in a US $ per dekatherm equivalent for each NEI is required
- If the NEI impact is related to construction, these benefits may be levelized over the life of the project when calculating the $ per dekatherm equivalent.
- For processes requiring electricity for production, NEI's for the electric demand is not required, but the electric consumption shall be provided (i.e. kWh per mmBTU).

Modeling Update

TAC 1 – 2025 Gas IRP

February 14, 2024

Timeline: IRP Modeling Software

Prior to 2023

SENDOUT®

2023 IRP

PLEXOS®

2025 IRP

?

Potential 2025 IRP Modeling Software

SENDOUT®

- “SENDOUT is used by energy companies as the foundation for gas supply planning and asset valuation analytical processes. Hitachi Energy gas analytics solution set incorporates scenario and stochastic analysis and simulates forward curves and related trading behavior. The software suite provides an assessment of gas portfolio costs, reliability, risks, and opportunities, revealing the impact of potential operating, weather, and price conditions.” [1]

PLEXOS®

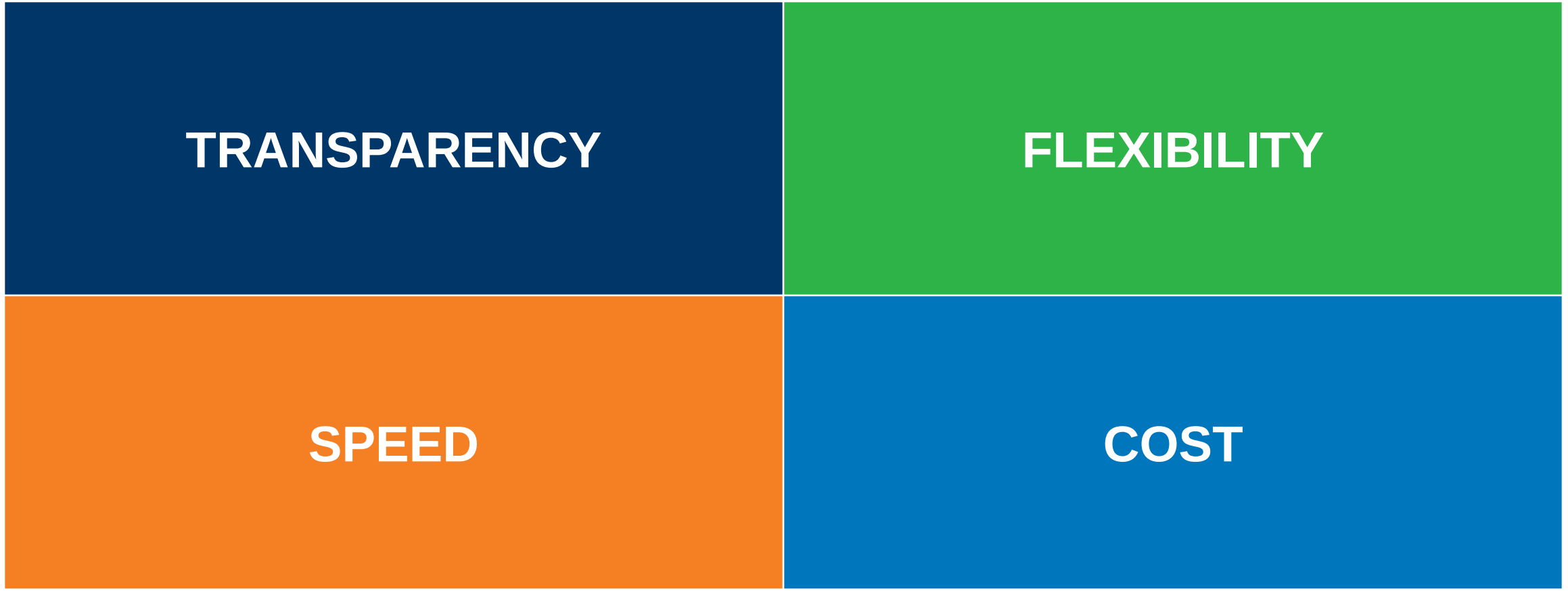
- “PLEXOS® is a powerful simulation engine that provides analytics and decision-support to modellers, generators, and market analysts—offering flexible and precise simulations across electric, water, gas and renewable energy markets.” [2]

Avista CROME - What’sBest!®

- “What's*Best!* is an add-in to Excel that allows you to build large scale optimization models in a free form layout within a spreadsheet. What's*Best!* combines the proven power of Linear, Nonlinear (convex and nonconvex/Global), Quadratic, Quadratically Constrained, Second Order Cone, Semi-Definite, Stochastic, and Integer optimization with Microsoft Excel -- the most popular and flexible business modeling environment in use today.” [3] Avista would use this software functionality to build and solve CROME (Comprehensive Resource Optimization Model in Excel)

[1] https://www.hitachienergy.com/products-and-solutions/energy-portfolio-management/enterprise/sendout
[2] https://www.energyexemplar.com/hubfs/Brochures/PLEXOS%20Gas%20-%20Brochure%20-%20A4.pdf
[3] https://www.lindo.com/index.php/products/what-sbest-and-excel-optimization

Selection Criterion



TRANSPARENCY

Avista CROME - What'sBest!®

- Modeled in Microsoft Excel
- Accessible platform used by large and diverse population
- Inputs, assumptions, constraints, logic, and results are accessible without license
- Requires license to solve
- Documentation not complete

PLEXOS®

- Increasingly common software among gas and electric utilities
- Requires license to view, solve, and read documentation

SENDOUT®

- Updates are no longer available
- LDC use throughout the northwest is decreasing
- Requires license to view, solve, and read documentation

FLEXIBILITY

Avista CROME - What'sBest!®

- Ability to model new concepts is not constrained
- Data files are limited to size of spreadsheet
- Instant output of model results in required usable format
- Understanding of calculations and methods used within the program

PLEXOS®

- Receives regular updates
- Workarounds available to model unique scenarios and resources
- Large database files produced
- Data needs manipulation to understand and provide in usable format

SENDOUT®

- Not easily flexible to include climate programs and emission factors
- Large database files produced
- Data needs manipulation to understand and provide in usable format

SPEED

Avista CROME - What'sBest!®

- Initial testing indicates sufficient speed to meet IRP deadlines
- Ability to run multiple instances per license

PLEXOS®

- Sufficient speed to meet 2023 IRP deadlines
- Ability to run on multiple computers with upgrade to base modeling software
- Cloud-based service available

SENDOUT®

- Sufficient speed to meet IRP deadlines prior to 2023
- Ability to run on multiple computers
- Has not been tested with new policies (CCA, CPP) and unique resources

COST

Avista CROME - What'sBest!®

- Software is purchased and only cost would be to add licenses as needed
- Relatively inexpensive when compared to alternatives
- Likely least cost option when considering software upgrades

PLEXOS®

- Annual subscription-based software
- Relatively expensive
- Time to familiarize new and infrequent users to software and modeling interface

SENDOUT®

- Software is purchased and no additional costs
- Time to familiarize new and infrequent users to software and modeling interface

*Additional computer hardware, training and computer costs are not included

Timeline: IRP Modeling Software

Prior to 2023

SENDOUT®

2023 IRP

PLEXOS®*

2025 IRP

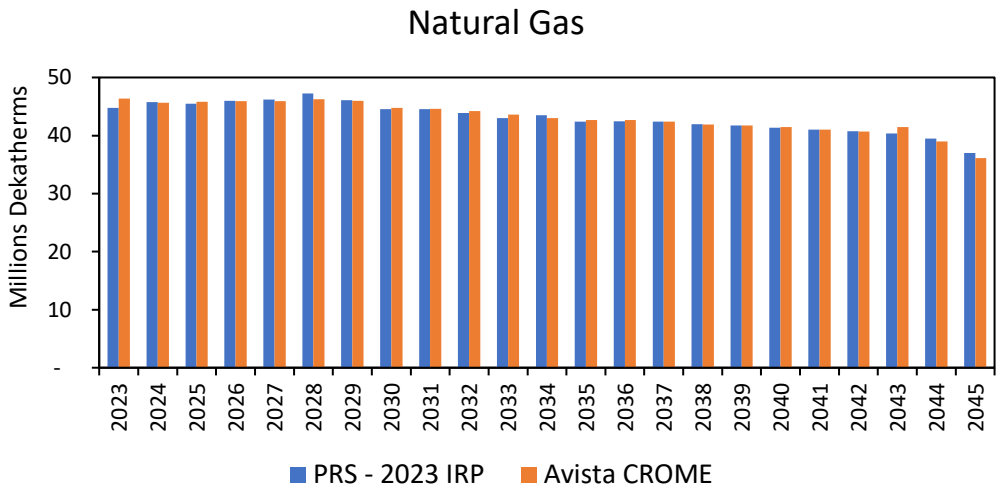
2025 IRP

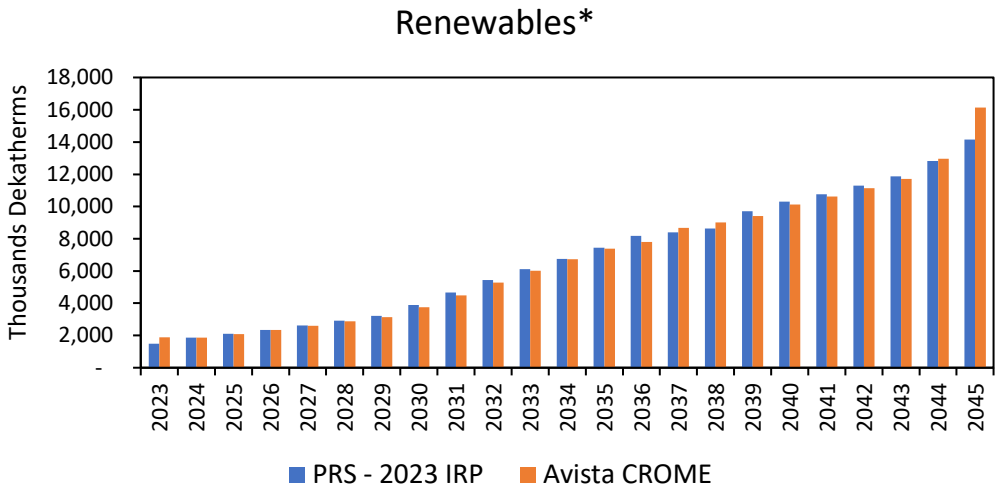
PLEXOS

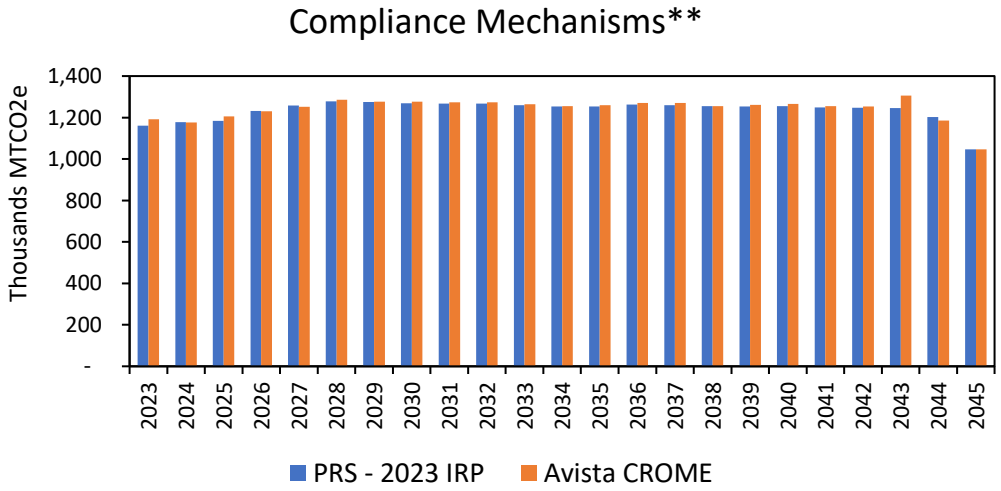
Other

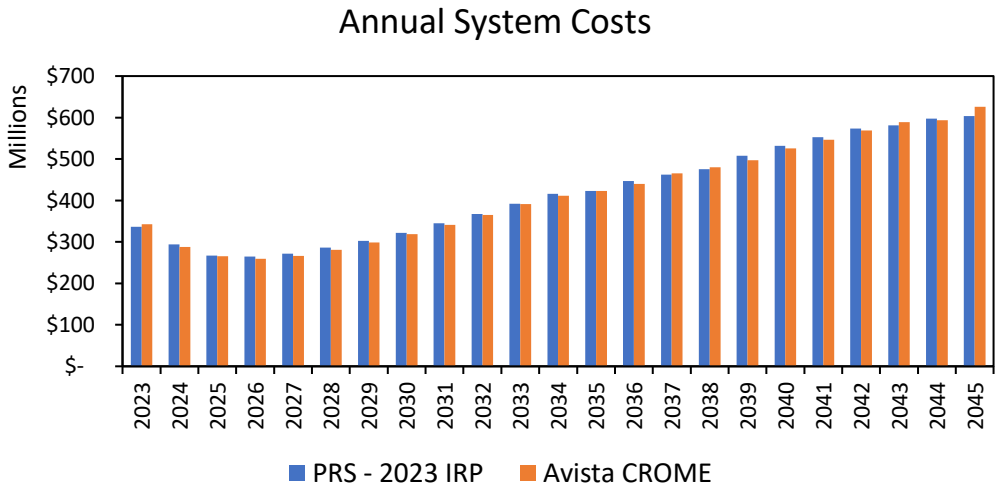
*Need to decide on extending contract in late March 2024

Initial Deterministic Model Comparison





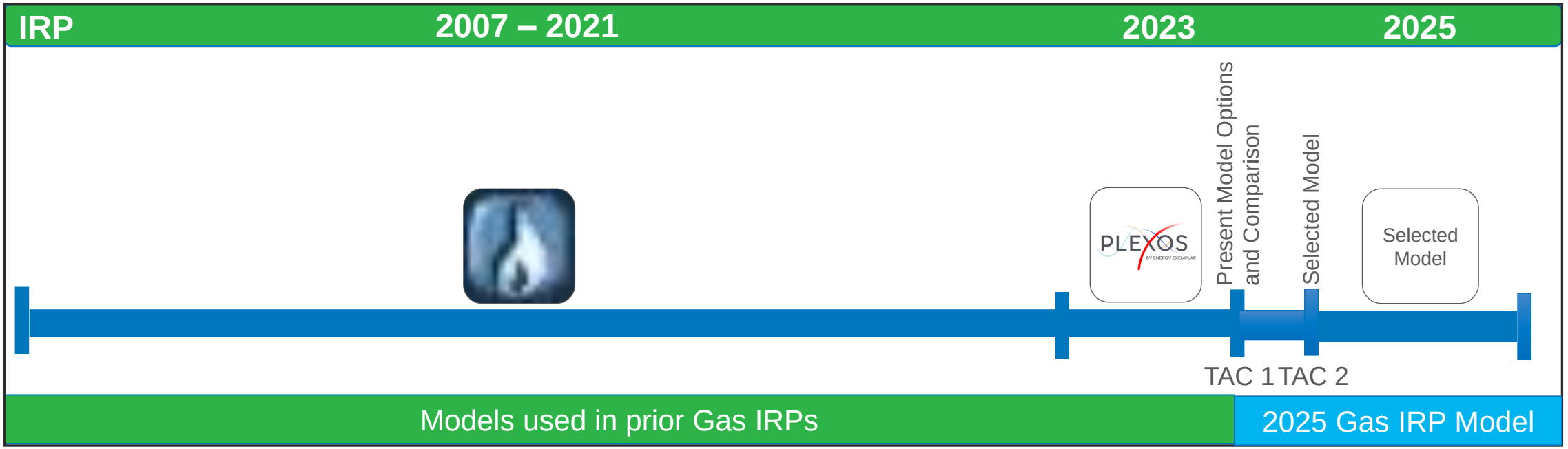




*Includes RNG, H2, and Synthetic Methane
** Includes Allowances and CCIs

Next Steps

- Continue validating CROME built with What's Best
- Chosen model methodology update - TAC 2



State Policy Update

TAC 1 – 2025 Gas IRP

February 14, 2024

Building Codes in Washington

- In November 2023, the building code updates were voted into code by the SBCC
  - Under the new rules, a builder will need five credits for a home of less than 1,500 square feet. That's double the prior requirement. For a home between 1,500 and 5,000 square feet, they will need eight credits, up from five
  - More credits are given for the use of an electric heat pump than a natural gas furnace
  - These codes are effective March 15, 2024
  - The standard reference design shall be a heat pump water heater meeting efficiency standards of Table C404.2 of chapter 51-11C WAC

CR102_WSEC_R_EPCA_complete_101823.pdf (wa.gov)

Space Heat Source Credits

TABLE R406.2

((~~FUEL NORMALIZATION~~)) ENERGY EQUALIZATION CREDITS

System Type	Description of Heating Sources	Credits	
		All Other	Group R-2[a]
1	For combustion heating system using equipment meeting minimum federal efficiency standards for the equipment listed in Table C403.3.2(5) or C403.3.2(6)	((~~3.0~~)) 0	0
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(2) and supplemental heating provided by electric resistance or a combustion furnace meeting minimum standards listed in Table C403.3.2(5)[b]	((~~0~~)) 1.5	0
3	For heating system based on electric resistance only (either forced air or zonal)	((~~1.0~~)) 0.5	-0.5
4[c]	For a heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(2) or C403.3.2(9) **or** Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590	((~~1.5~~)) 3.0	2.0
5	For heating system based on electric resistance with: 1. Inverter-driven ductless mini-split heat pump system installed in the largest zone in the dwelling **or** 2. With 2 kW or less total installed heating capacity per dwelling	((~~0.5~~)) 2.0	0

[a] See Section R401.1 and *residential building* in Section R202 for Group R-2 scope.

[b] The gas back-up furnace will operate as fan-only when the heat pump is operating. The heat pump shall operate at all temperatures above 38°F (3.3°C) (or lower). Below that "changeover" temperature, the heat pump would not operate to provide space heating. The gas furnace provides heating below 38°F (3.3°C) (or lower).

[c] Additional points for this HVAC system are included in Table R406.3.

Source: CR102_WSEC_R_EPCA_complete_101823.pdf (wa.gov)

CCA

- In November 2023, signatures were delivered under initiative 2117 to repeal legislation establishing the cap and invest program

Possible Outcomes of CCA	Potential Benefits	Potential Drawbacks
Legislature votes to repeal	Certainty of outcome without legal delay or ballot initiative to voters	Uncertainty of future climate program or what to do with funds from auctions
Draft and pass an alternative initiative	Gives the legislature a chance to fix program elements	-May not fix all program issues leading to risk in program -Subject to voter approval alongside original version of I-2117
Link to California	-Create a more robust marketplace for allowances, same trading system (potential cost/credit) -Washington would recognize projects located in the other jurisdictions	-More entities in the pool for allowances or offsets, new -Compliance period moves to every 3 years
Refuses to Act	People will decide in November 2024 election	Create uncertainties if program is repealed
Voters Repeal	Certainty of outcome without legal delay	Uncertainty of future climate program or what to do with funds from auctions

CPP

- On December 20, 2023 it was ruled the DEQ did not fully comply with notice requirements during the rulemaking process for the program, thereby invalidating the final rules and the program

- On January 22, 2024 the DEQ moves to re-establish the CPP
  - Process takes about 12 months (including public comment period)
  - DEQ will propose the rules for adoption to the Environmental Quality Commission (governing body)
  - The rules could change during the rulemaking process, including having new elements or shifting timelines per the DEQ

Next Steps

- Work with the TAC to develop scenarios to consider risks involved in different pathways for state policy and the various potential outcome

- Determine a base case for state policy for use in the Preferred Resource Selection (PRS) scenario

Planned Scenarios

TAC 1 – 2025 Gas IRP

February 14, 2024

Scenarios

Preferred Resource Case	***Our expected case based on assumptions and costs with a least risk and least cost resource selection. This scenario includes all known policies and orders from Idaho, Oregon and Washington***
Preferred Resource Case (Low/High) Prices	Same as PRS, but includes a scenario with a low-price curve for natural gas and a scenario with a high price curve for natural gas
Preferred Resource Case CCA Ceiling Prices	PRS assumptions with a high cost for allowances
Preferred Resource Case with CPP	PRS assumptions, but includes the CPP expectations going forward from 2025
Electrification (low,expected,high) conversion costs	A low case to show the risk involved with energy delivered through the natural gas infrastructure moving to the electric system with different levels of conversion costs
Hybrid Heating Case	A scenario to include hybrid heating for temperatures below 40 degrees Fahrenheit
High Customer Case	A high case to measure risk of additional customer and meeting our emissions and energy obligations
Limited RNG Availability	A scenario to show costs and supply options if RNG availability is smaller than expected
High RNG Costs	A scenario to measure resource selection with a higher-than-expected set of RNG costs by source
Interrupted Supply	A scenario to show the impacts and risks associated with large scale supply impacts and the ability for Avista to provide the needed energy to our customers
Carbon Intensity	Include carbon intensity of all resources from Preferred Resource Case including upstream emissions on natural gas
Natural Gas Only	A case to help compare costs of resource decisions from climate policy. This case assumes no alternative fuels or climate policy with natural gas, energy efficiency and demand response as the expected future resource options
Social Cost of Carbon	A scenario to value resources in all locations using the Social Cost of Carbon @ 2.5% and includes upstream emissions
Average Case	Non climate change projected 20-year history of average daily weather and excludes peak day