Natural Gas Integrated Resource Plan

Technical Advisory Committee (TAC) # 5

December 15, 2022

Safe Harbor Statement

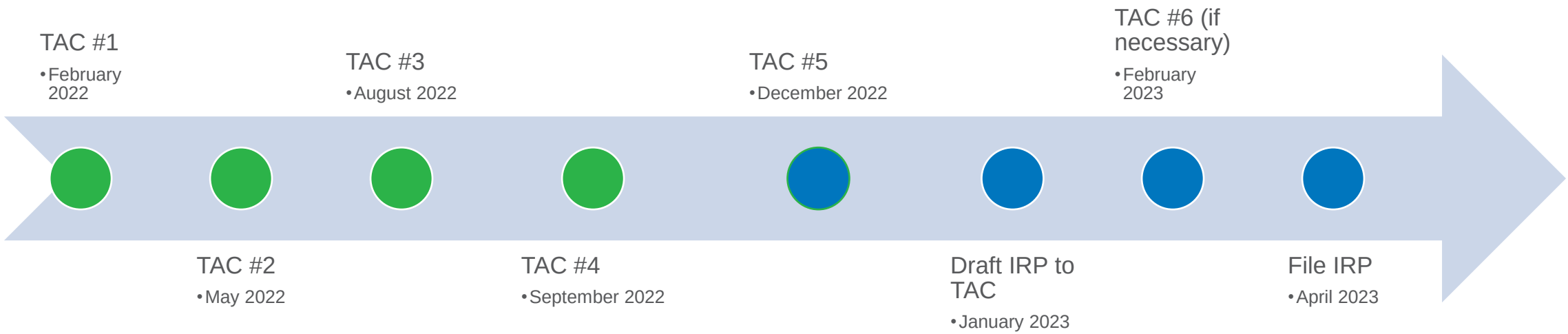
This document contains forward-looking statements. Such statements are subject to a variety of risks, uncertainties and other factors, most of which are beyond the Company's control, and many of which could have a significant impact on the Company's operations, results of operations and financial condition, and could cause actual results to differ materially from those anticipated.

For a further discussion of these factors and other important factors, please refer to the Company's reports filed with the Securities and Exchange Commission. The forward-looking statements contained in this document speak only as of the date hereof. The Company undertakes no obligation to update any forward-looking statement or statements to reflect events or circumstances that occur after the date on which such statement is made or to reflect the occurrence of unanticipated events. New risks, uncertainties and other factors emerge from time to time, and it is not possible for management to predict all of such factors, nor can it assess the impact of each such factor on the Company's business or the extent to which any such factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statement.

Agenda

Item	Time
Applied Energy Group – Demand Response	9:00am – 9:30am
Distribution	9:30am – 10:15am
Review Assumptions	10:15am – 10:30am
Break	10:30am – 10:40am
Preferred Resource Strategy and Scenario Results	10:40am – 11:30am
WA GRC Commitments - Action Plan - Next Steps	11:30am – 12:00pm

2023 – Avista Natural Gas IRP



Natural Gas Demand Response

Date: 12/15/2022
Prepared for: Avista Technical Advisory Committee

Program Options and Eligibility

DSM Option	States Eligible	Classes Eligible
Behavioral	WA	Res, Com
DLC Smart Thermostats - BYOT	WA, ID, OR	Res, Com
Time-of-Use	WA	Res, C&I
Variable Peak Pricing	WA	Res, C&I
Third Party Contracts	WA, ID, OR	C&I

Assumptions

Study Assumptions

- The programs in this study target the peak hour of the peak day (Dekatherms)
- Winter only

Program Impact and Cost assumptions

- Derived primarily from other Gas DR Programs
  - Smart Thermostat Program based on SoCalGas's Smart Therm Program
  - Third Party Contracts Program based on National Grid and ConEdison Programs
- Diverged where gaps in research exist
  - Customized for Avista's service territory
  - Pulled remaining assumptions from Electric DR Model and scaled down where appropriate

Advanced Metering Infrastructure (AMI) Assumptions

Some of the options require AMI

- DLC Options- No AMI Metering Required
- Dynamic Rates and Behavioral- require AMI for billing

Washington

- Utilized current Avista AMI saturation rates by sector and held constant

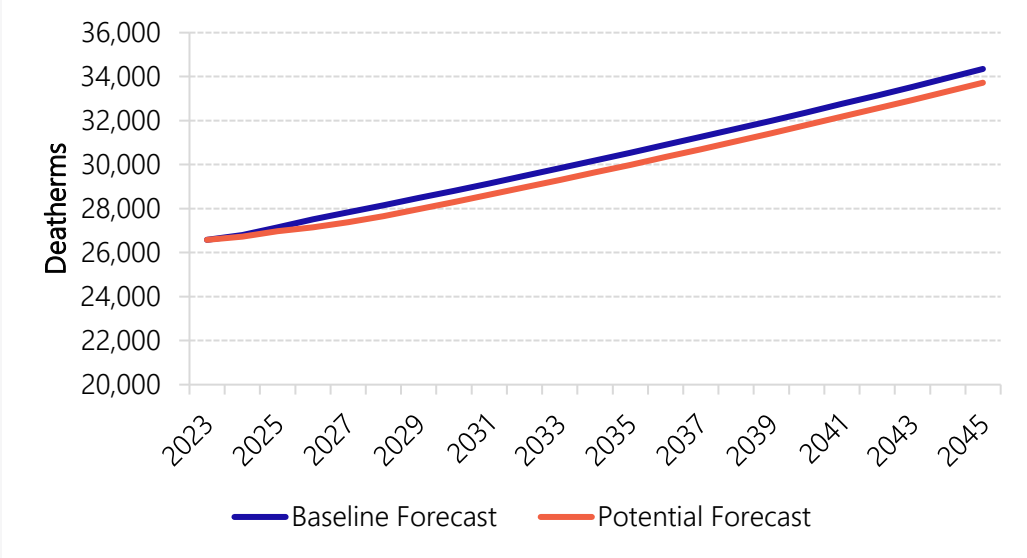
Idaho and Oregon

- No AMI Projected
- Dynamic Rates and Behavioral Programs not estimated

Achievable Potential

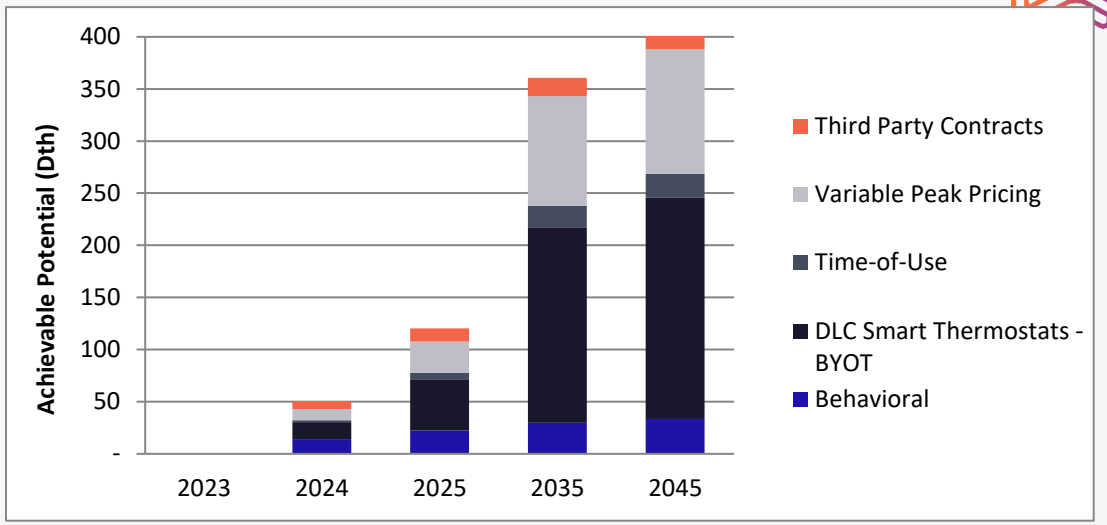
Overall Potential

	2023	2024	2025	2035	2045
Baseline Forecast	26,574	26,801	27,145	30,533	34,338
Potential	-	72	176	545	614
Potential (%)	0%	0%	1%	2%	2%
Potential Forecast	26,574	26,729	26,969	29,988	33,724



Achievable Potential - Washington

Winter Potential (Dth)	2023	2024	2025	2035	2045
Baseline Forecast	13,399	13,553	13,721	15,474	17,454
Achievable Potential	-	51	120	361	407
Behavioral	-	14	22	30	33
DLC Smart Thermostats - BYOT	-	16	49	188	212
Time-of-Use	-	2	6	21	23
Variable Peak Pricing	-	10	30	105	119
Third Party Contracts	-	8	13	17	19

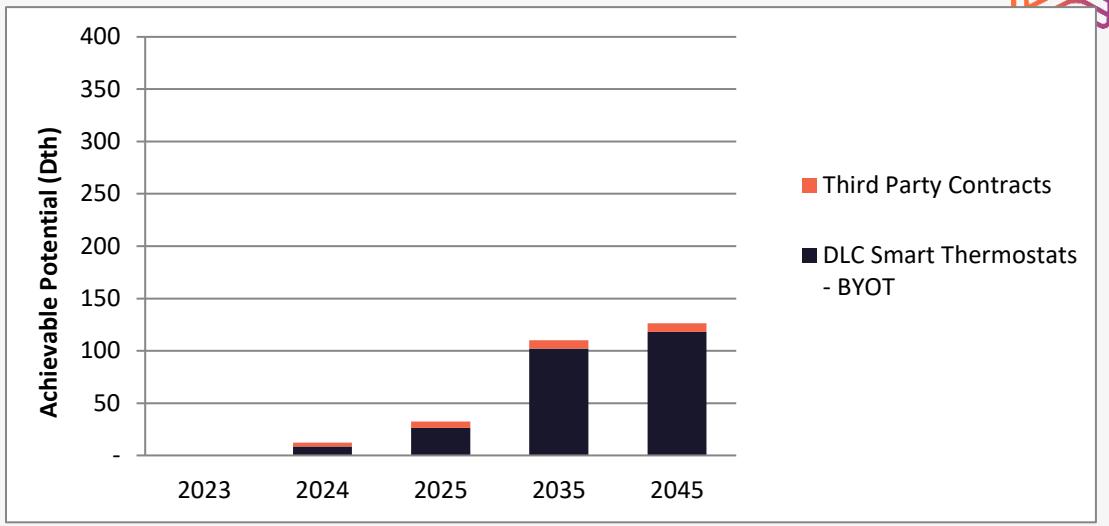


Key Findings:

- All five options available due to AMI saturation
- Largest potential option is DLC Smart Thermostats – BYOT (52% of potential)
- Next largest is VPP (29% of potential)

Achievable Potential - Idaho

Winter Potential (Dth)	2023	2024	2025	2035	2045
Baseline Forecast	6,877	6,909	7,026	8,077	9,273
Achievable Potential	-	12	32	110	126
Behavioral	-	-	-	-	-
DLC Smart Thermostats - BYOT	-	9	26	102	118
Time-of-Use	-	-	-	-	-
Variable Peak Pricing	-	-	-	-	-
Third Party Contracts	-	4	6	8	8

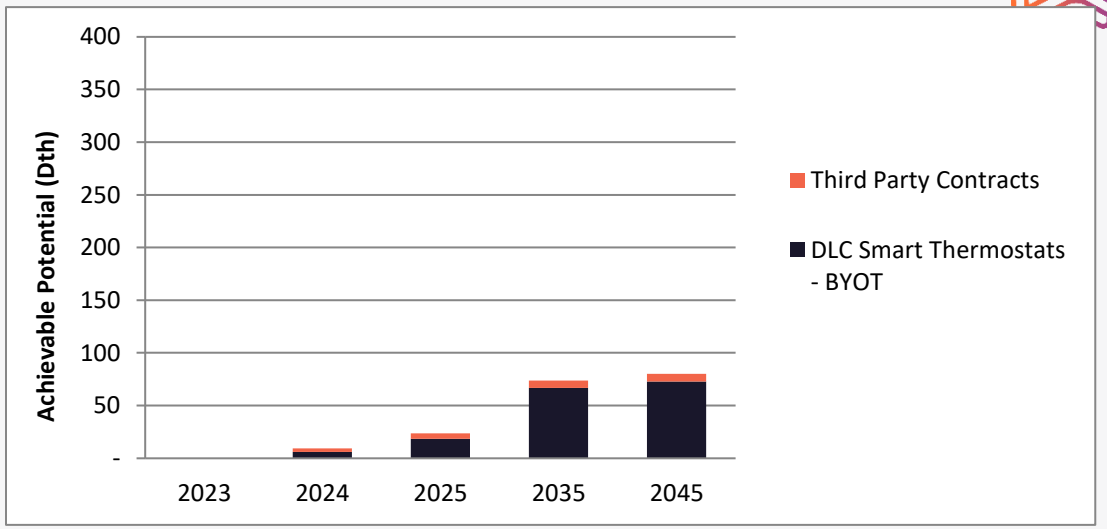


Key Findings:

- Rates and Behavioral options unavailable
- DLC Smart Thermostats – BYOT (94% of potential)
- Third Party Contracts (6% of potential)

Achievable Potential - Oregon

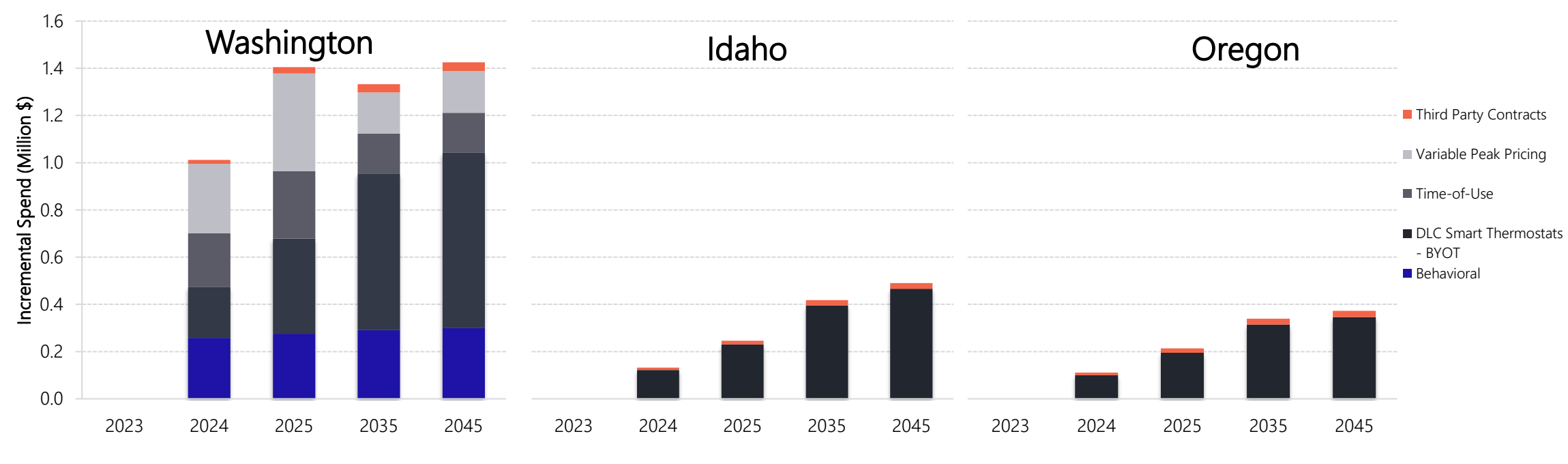
Winter Potential (Dth)	2023	2024	2025	2035	2045
Baseline Forecast	6,123	6,162	6,219	6,781	7,384
Achievable Potential	-	9	24	74	80
Behavioral	-	-	-	-	-
DLC Smart Thermostats - BYOT	-	6	18	67	73
Time-of-Use	-	-	-	-	-
Variable Peak Pricing	-	-	-	-	-
Third Party Contracts	-	3	5	7	7



Key Findings:

- Rates and Behavioral options unavailable
- DLC Smart Thermostats – BYOT (91% of potential)
- Third Party Contracts (9% of potential)

Program Costs by State



Gas DR Key Findings

Natural Gas DR is an emerging resource

- Small number of programs in existence
- Numerous questions surround applicability and reliability of Gas DR

Program Potential

- Smart Thermostats – Gas Heating
  - Largest savings potential – Available to all states
- Variable Peak Pricing
  - Largest potential among rates – WA only
- Third Party Contracts
  - 6% of overall potential – Third largest
  - Small amount of industrial gas customers
    - Not a lot of discretionary load to reduce

Thank You.

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AEG
APPLIED ENERGY GROUP

Modeled DR Inputs – Levelized

Idaho

Input into Plexos	Per Dth Price
Behavioral	$0
DLC Water Heating	$0
DLC Smart Thermostats - BYOT	$5,754
Time-of-Use	$0
Variable Peak Pricing	$0
Third Party Contracts	$137,045

Oregon

Input into Plexos	Per Dth Price
Behavioral	$0
DLC Water Heating	$0
DLC Smart Thermostats - BYOT	$5,767
Time-of-Use	$0
Variable Peak Pricing	$0
Third Party Contracts	$136,783

Washington

Input into Plexos	Per Dth Price
Behavioral	$11,849
DLC Water Heating	$0
DLC Smart Thermostats - BYOT	$5,756
Time-of-Use	$18,883
Variable Peak Pricing	$4,474
Third Party Contracts	$135,937

Distribution System Planning

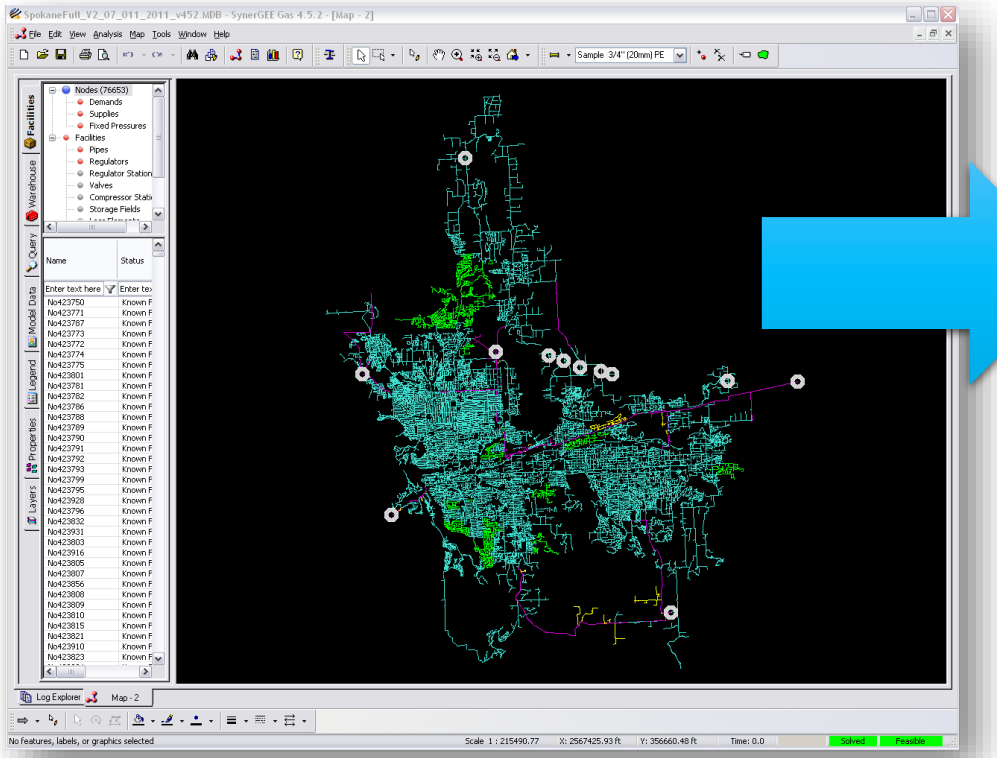
Natural Gas Technical Advisory Committee

December 15, 2022

Terrence Browne PE, Senior Gas Planning Engineer

Mission

- Using technology to plan and design a safe, reliable, and economical distribution system

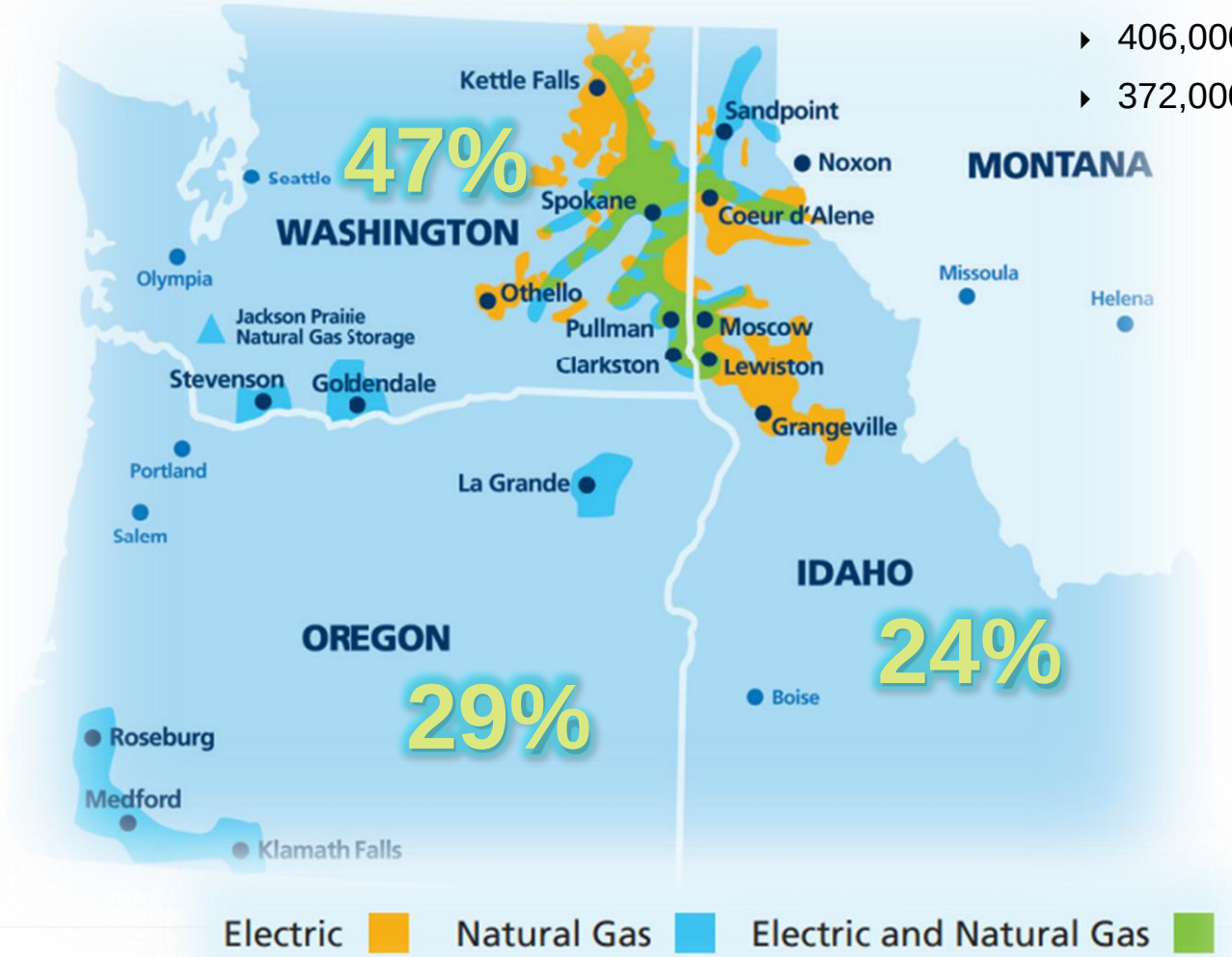


Gas Distribution Planning

- Service Territory and Customer Overview
- Scope of Gas Distribution Planning
- SynerGi Load Study Tool
- Planning Criteria
- Interpreting Results
- Monitoring Our System
- Areas Currently Monitoring for Low Pressure and Proposed Solutions
- Gate Station Capacity Review
- Avista’s Capability To Accommodate Hydrogen

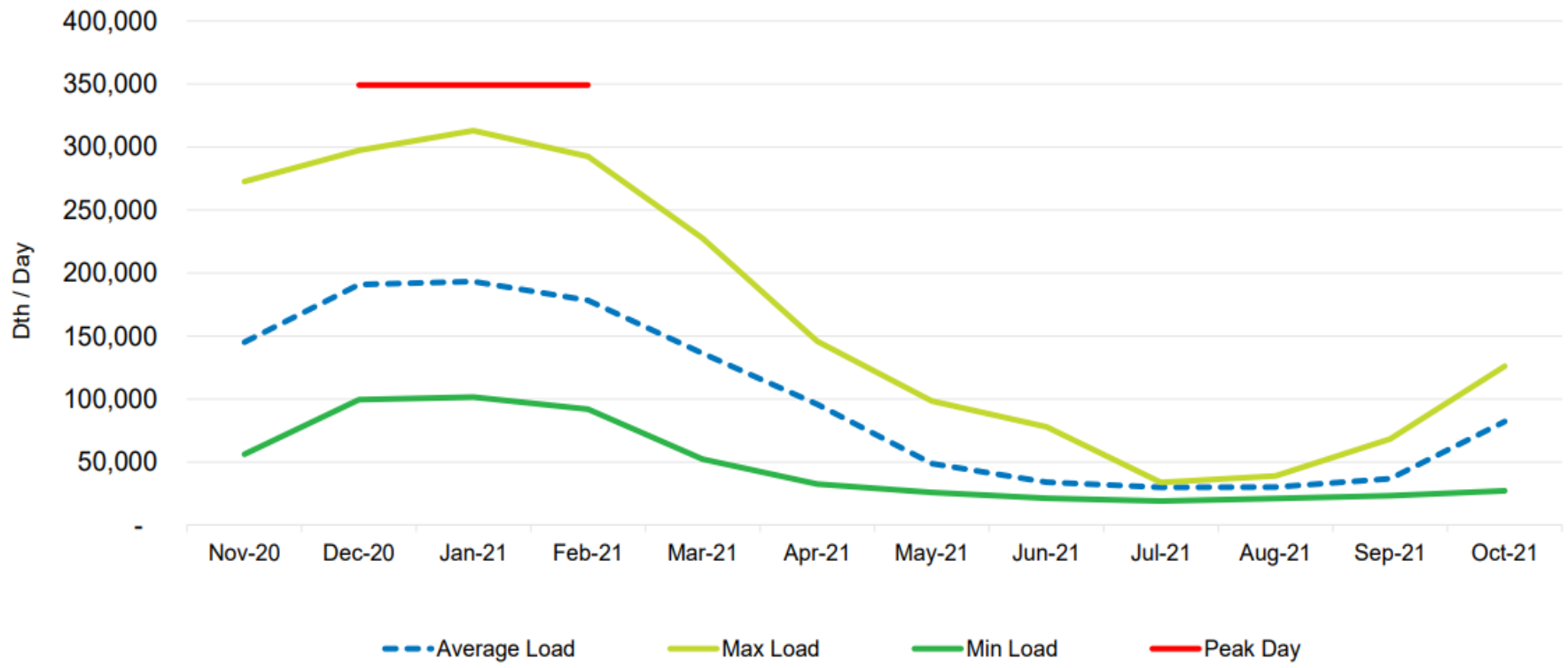
Service Territory and Customer Overview

- Serves electric and natural gas customers in eastern Washington and northern Idaho, and natural gas customers in southern and eastern Oregon
  - Population of service area 1.7 million
    - 406,000 electric customers
    - 372,000 natural gas customers



Winter Peaking Profile

LDC - Total System Average Daily Load

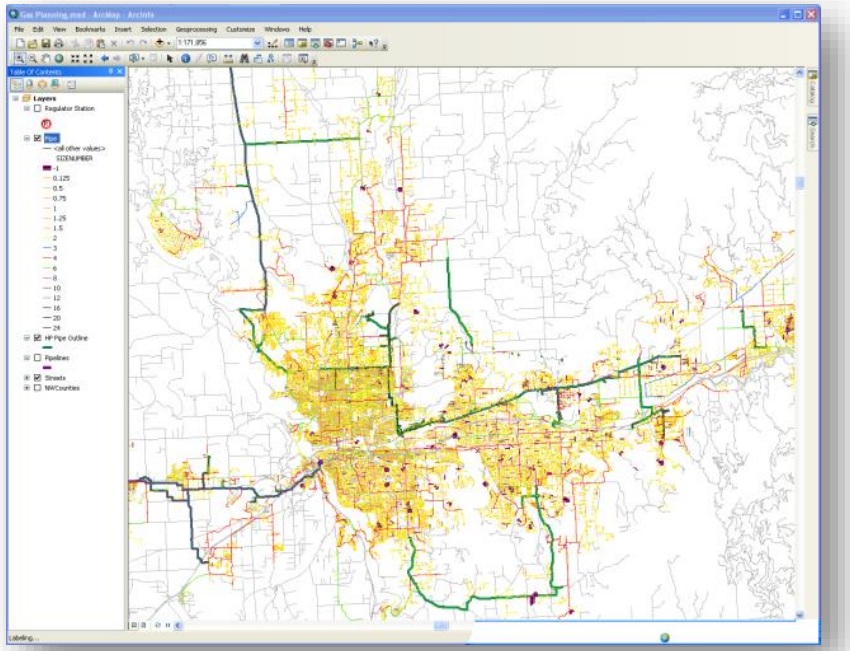


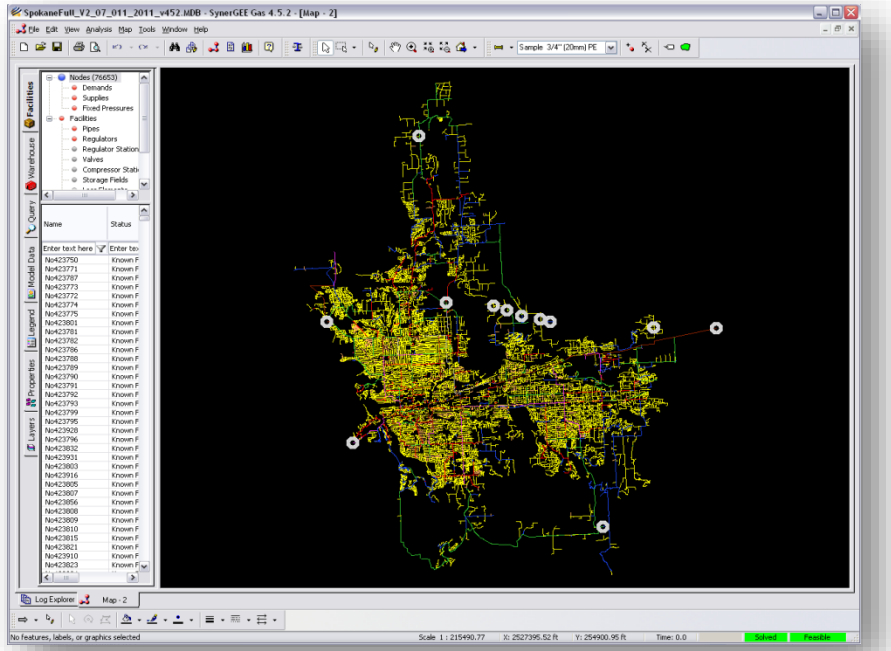
Technical Advisory Committee (TAC) # 1

February 16, 2022

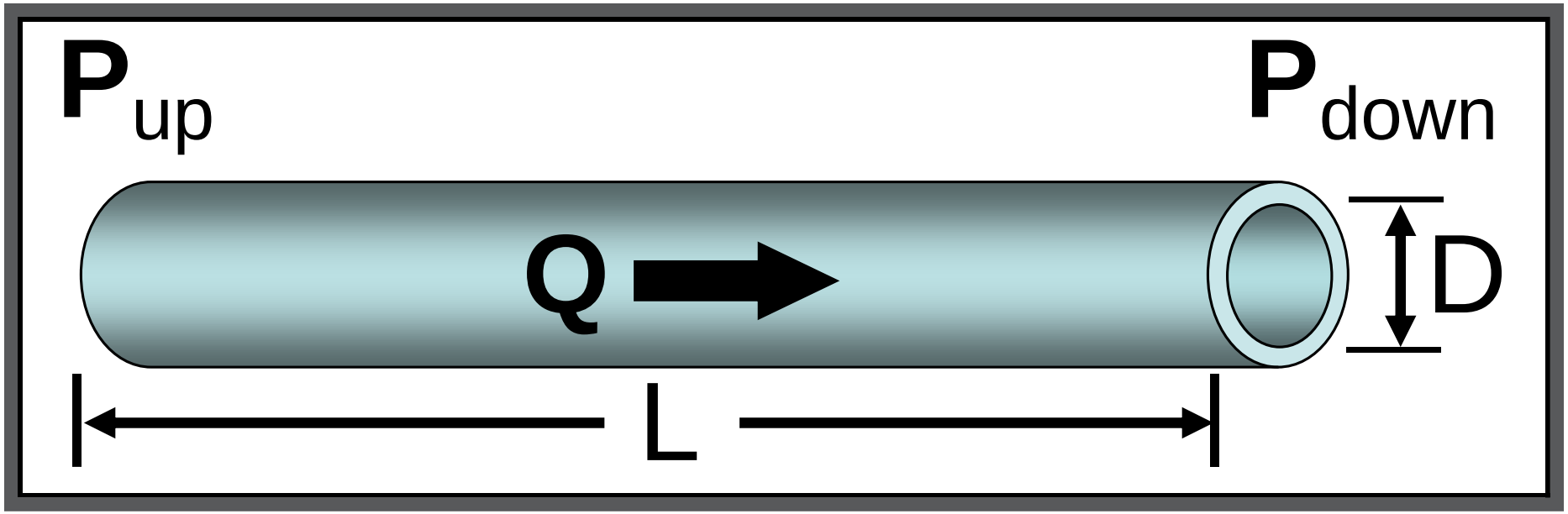
Our Planning Models

- 8,000 miles of distribution main
- 120 cities
- 40 load study models

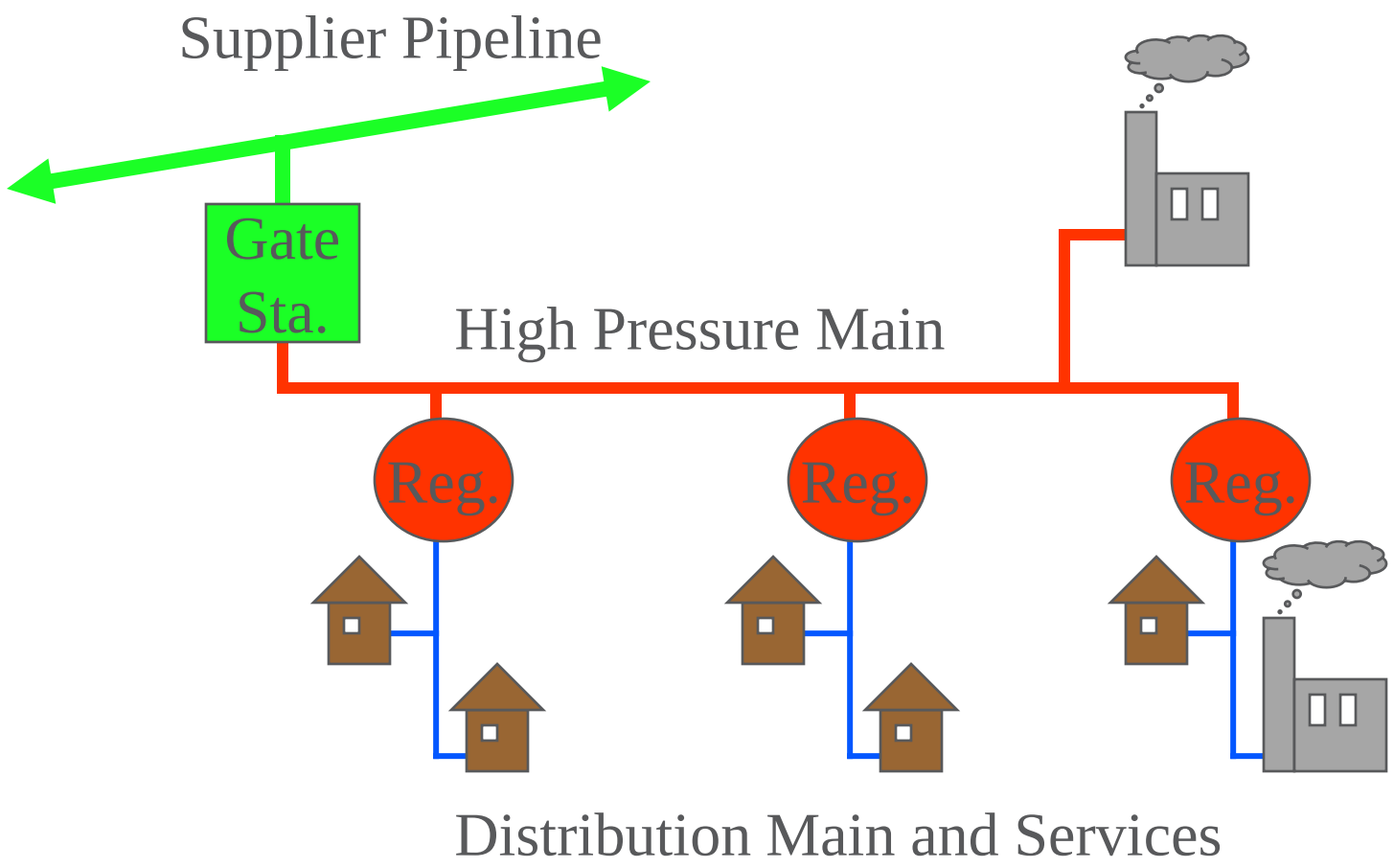




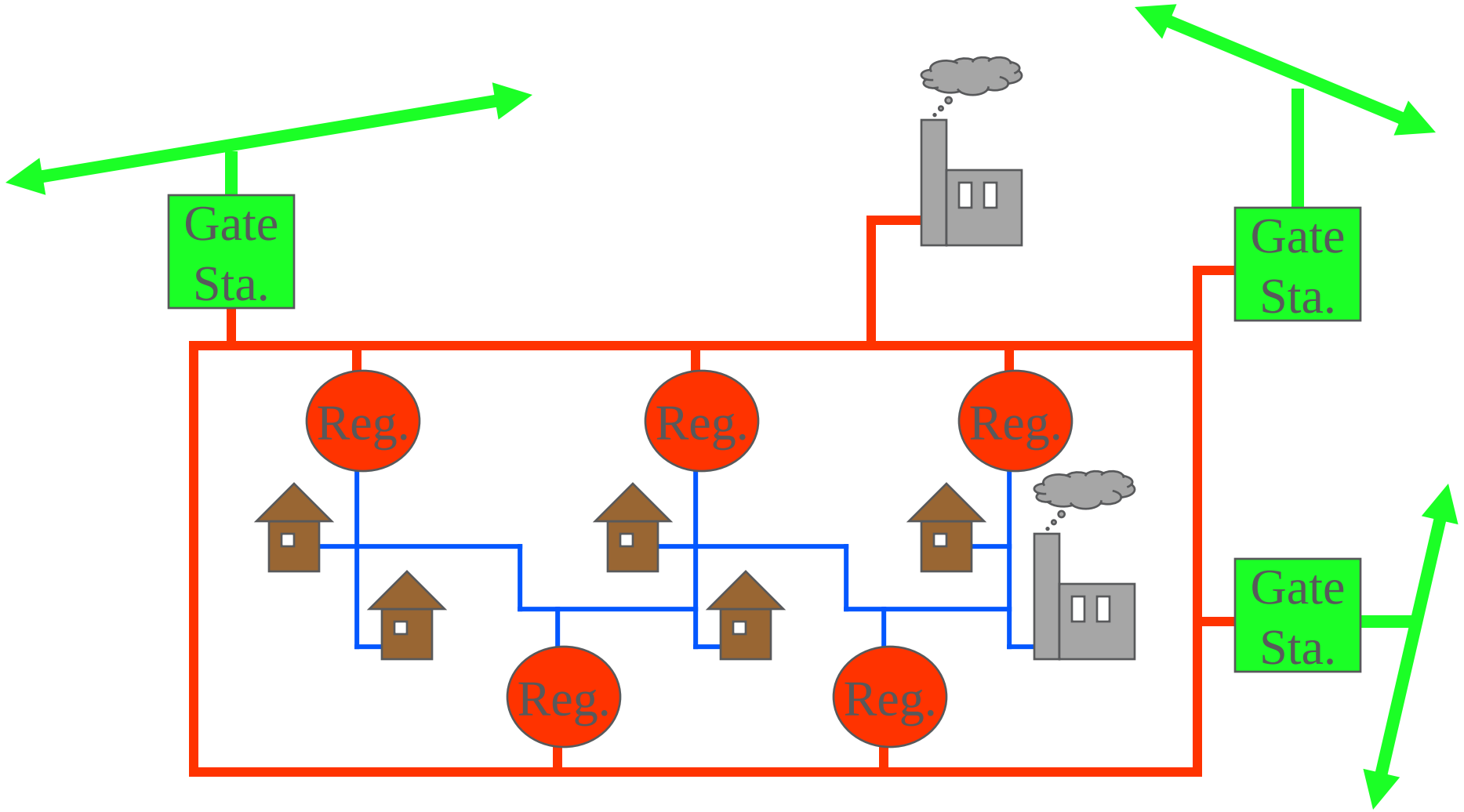
5 Variables for Any Given Pipe



Scope of Gas Distribution Planning

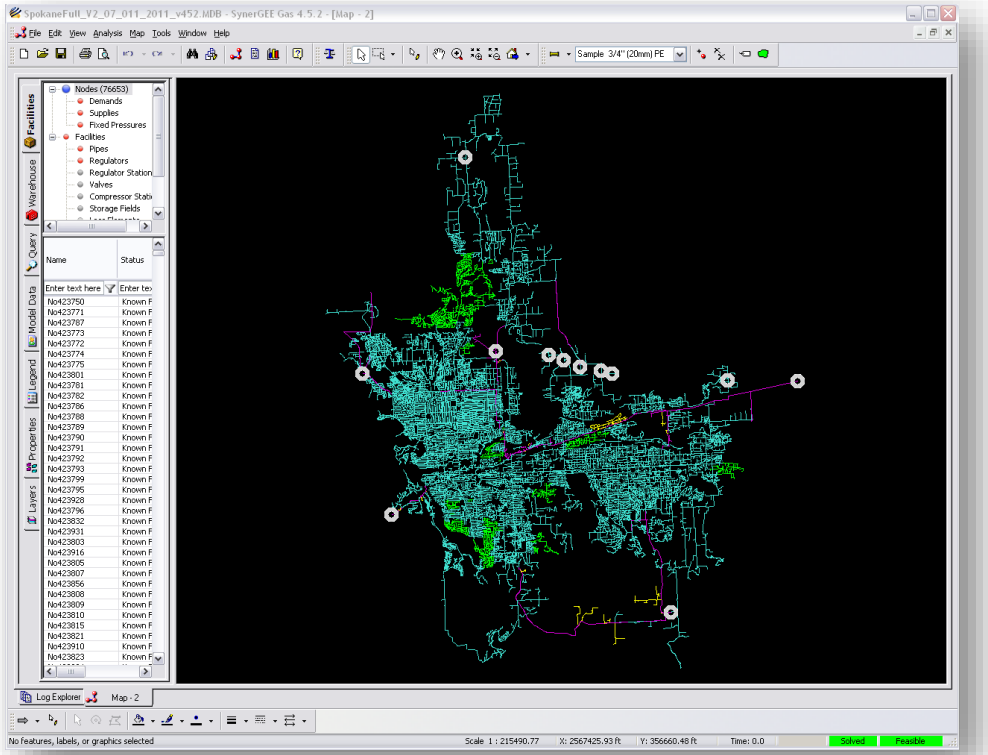


Scope of Gas Distrib. Planning cont.



SynerGi (SynerGEE, Stoner) Load Study

- Simulate distribution behavior
- Identify low pressure areas
- Test reinforcements against future growth/expansion
- Measure reliability



Preparing a Load Study

- Estimating Customer Usage
- Creating a Pipeline Network
- Join Customer Loads to Pipes
- Convert to Load Study

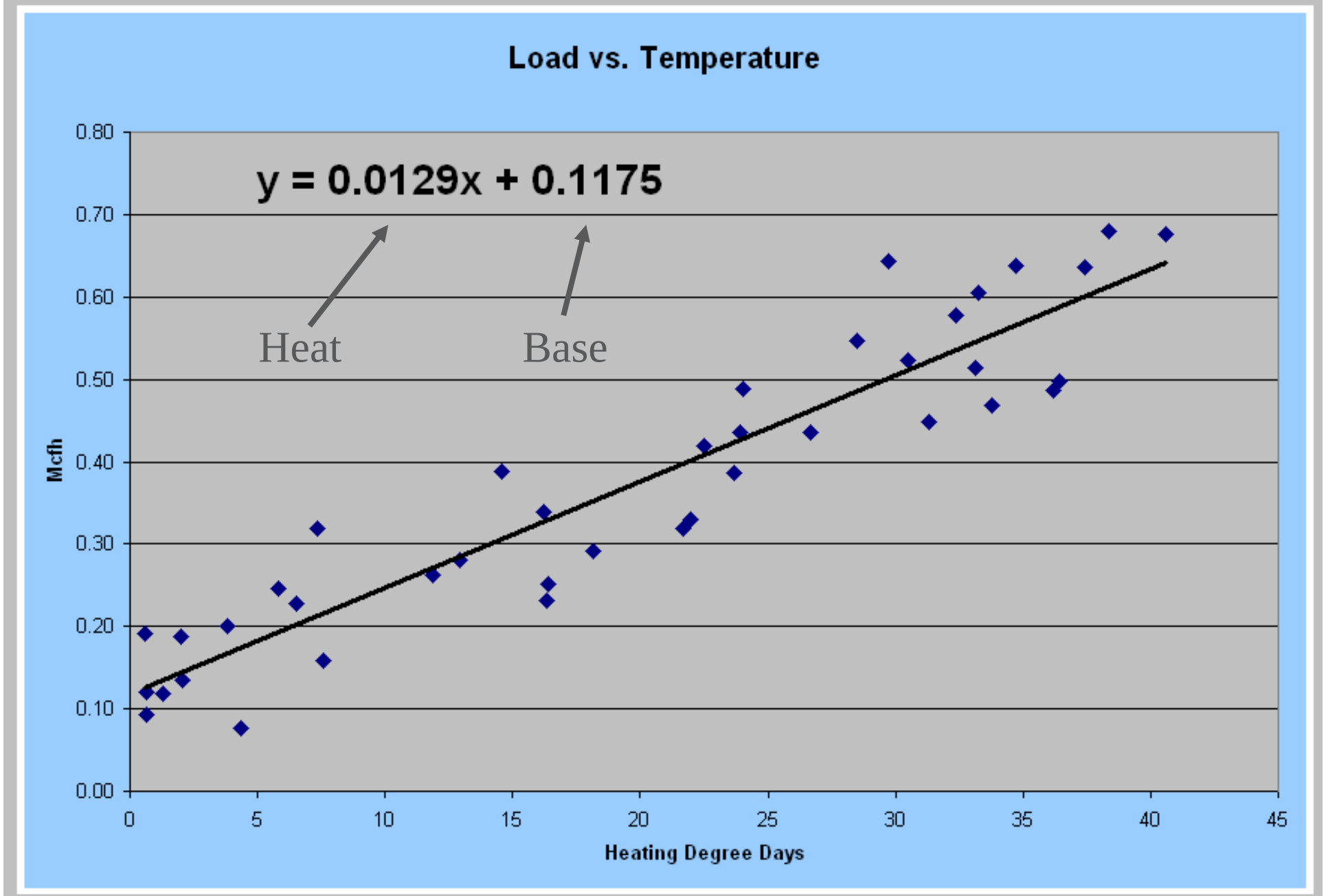
Estimating Customer Usage

- Gathering Data
  - Days of service
  - Degree Days
  - Usage
  - Name, Address, Revenue Class, Rate Schedule…

Estimating Customer Usage cont.

- Degree Days
  - Heating (HDD)
  - Cooling (CDD)
- Temperature - Usage Relationship
  - Load vs. HDD's
  - Base Load (constant)
  - Heat Load (variable)
  - High correlation with residential

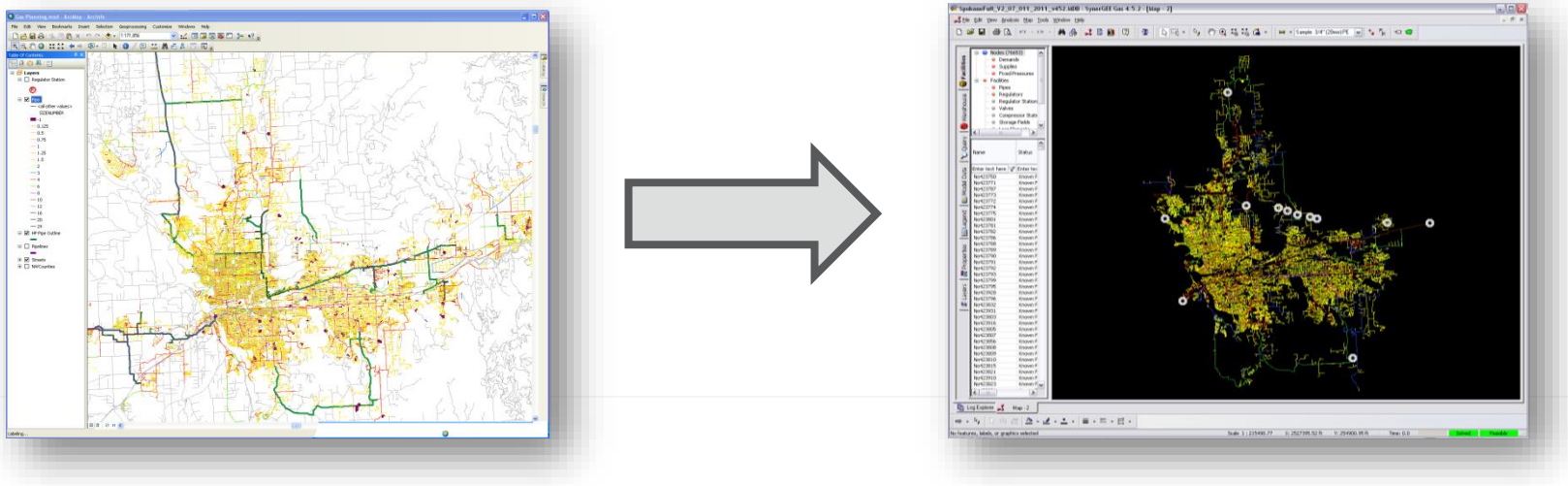
Avg. Daily Temperature ('Fahrenheit)	Heating Degree Days (HDD)	Cooling Degree Days (CDD)
85		20
80		15
75		10
70		5
65	***0***	***0***
60	5	
55	10	
50	15	
45	20	
40	25	
35	30	
30	35	
25	40	
20	45	
15	50	
10	55	
5	60	
4	61	
0	65	
-5	70	
-10	75	
-15	80	

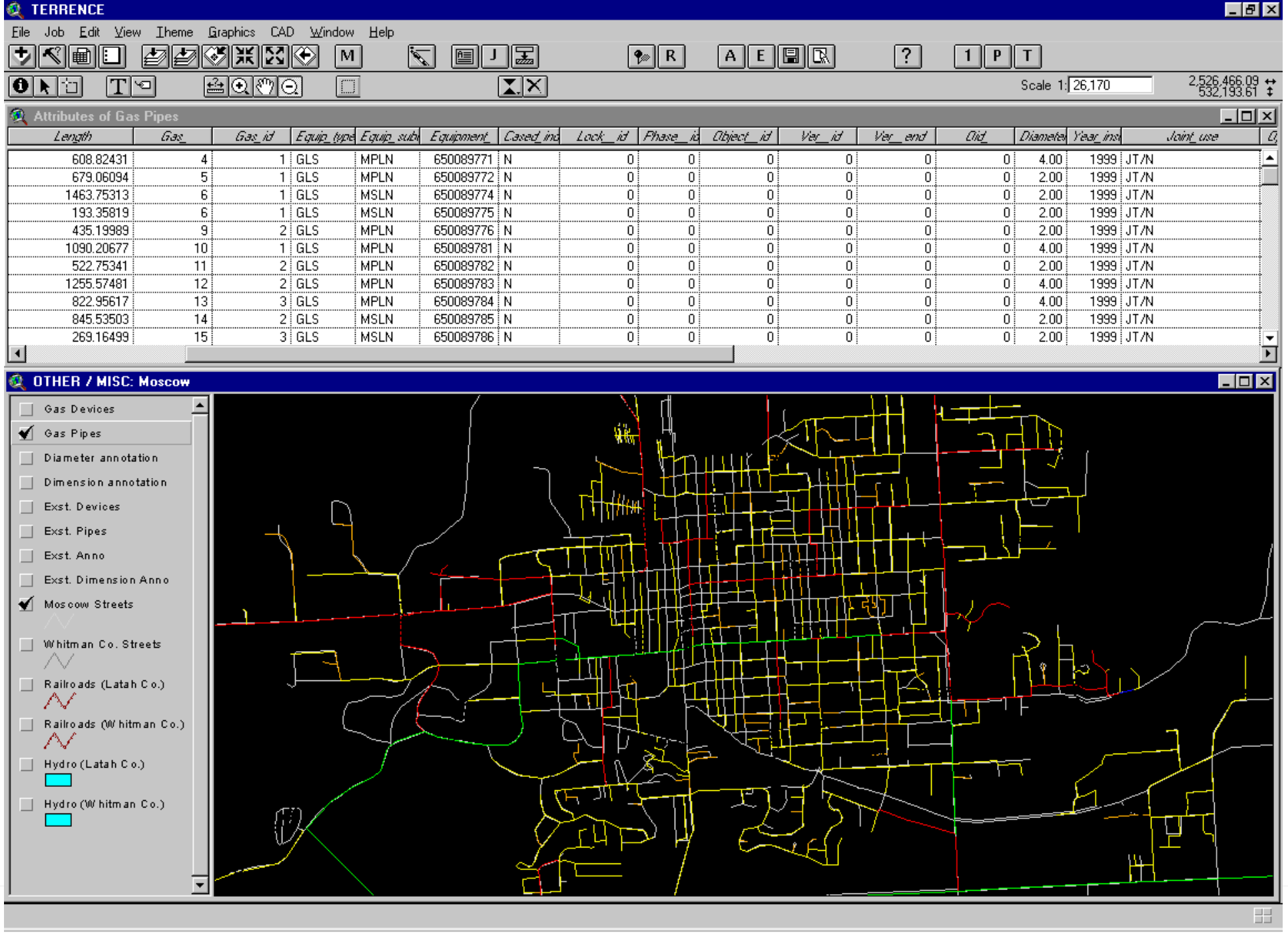


Summary | 109735 | 103678 | 114268 | 114279 | Chart1 | 133049 | 156920 | 161549 | 208478

Creating a Pipeline Model

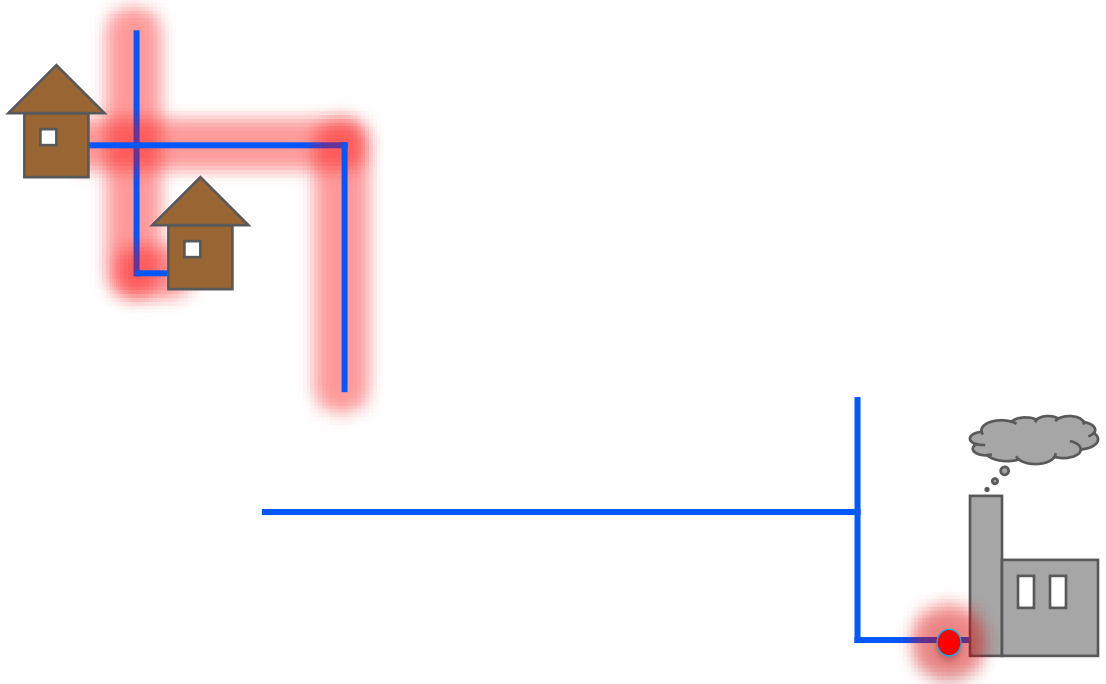
- Elements
  - Pipes, regulators, valves
  - Attributes: Length, internal diameter, roughness
- Nodes
  - Sources, usage points, pipe ends
  - Attributes: Flow, pressure




TERRENCE
File Job Edit View Theme Graphics CAD Window Help
Scale 1: 26,170
2,526,466.09
532,193.61
Attributes of Gas Pipes
Length Gas_ Gas_id Equip_type Equip_sub Equipment_ Cased_ind Lock__id Phase__id Object__id Ver__id Ver__end Old_ Diameter Year_inst Joint_use
608.82431 4 1 GLS MPLN 650089771 N 0 0 0 0 0 0 4.00 1999 JT/N
679.06094 5 1 GLS MPLN 650089772 N 0 0 0 0 0 0 2.00 1999 JT/N
1463.75313 6 1 GLS MSLN 650089774 N 0 0 0 0 0 0 2.00 1999 JT/N
193.35819 6 1 GLS MSLN 650089775 N 0 0 0 0 0 0 2.00 1999 JT/N
435.19989 9 2 GLS MPLN 650089776 N 0 0 0 0 0 0 2.00 1999 JT/N
1090.20677 10 1 GLS MPLN 650089781 N 0 0 0 0 0 0 4.00 1999 JT/N
522.75341 11 2 GLS MPLN 650089782 N 0 0 0 0 0 0 2.00 1999 JT/N
1255.57481 12 2 GLS MPLN 650089783 N 0 0 0 0 0 0 4.00 1999 JT/N
822.95617 13 3 GLS MPLN 650089784 N 0 0 0 0 0 0 4.00 1999 JT/N
845.53503 14 2 GLS MSLN 650089785 N 0 0 0 0 0 0 2.00 1999 JT/N
269.16499 15 3 GLS MSLN 650089786 N 0 0 0 0 0 0 2.00 1999 JT/N
OTHER / MISC: Moscow
Gas Devices
Gas Pipes
Diameter annotation
Dimension annotation
Exst. Devices
Exst. Pipes
Exst. Anno
Exst. Dimension Anno
Moscow Streets
Whitman Co. Streets
Railroads (Latah Co.)
Railroads (Whitman Co.)
Hydro (Latah Co.)
Hydro (Whitman Co.)

Join Customer Loads to a Model

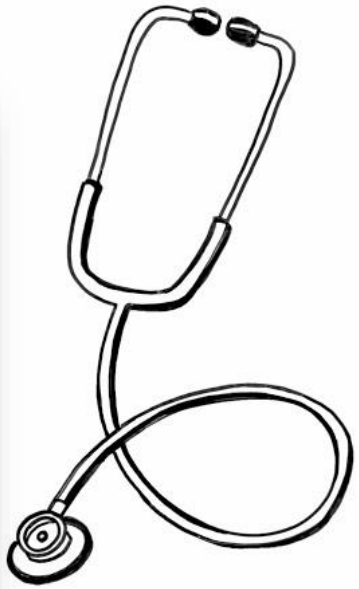
- Residential and commercial loads are assigned to ***pipes***
- Industrial or other large loads are assigned to ***nodes***
  - Model “firm” loads only for identifying reinforcements



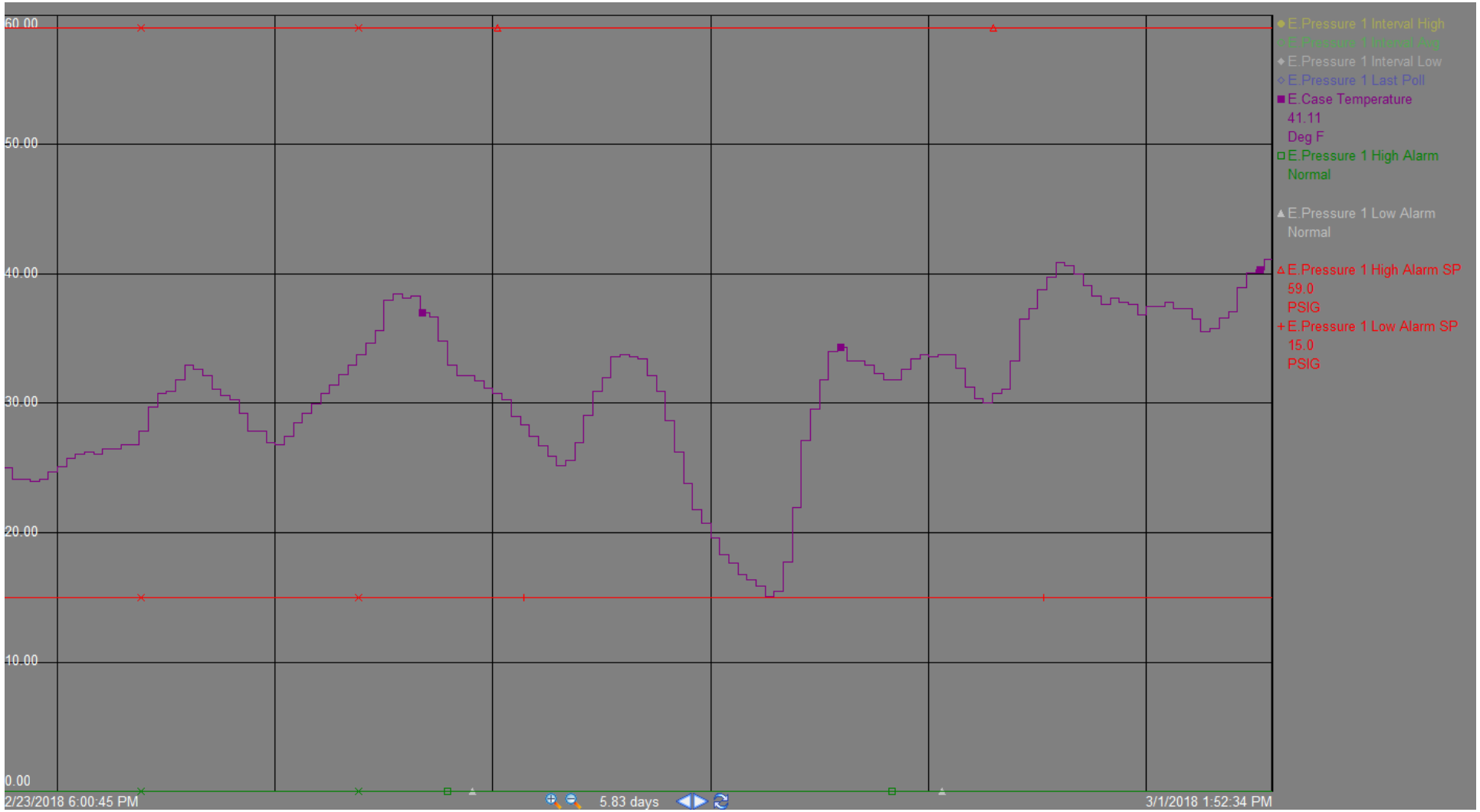
Balancing Model

- Simulate system for any temperature
  - HDD’s
- Solve for pressure at all nodes

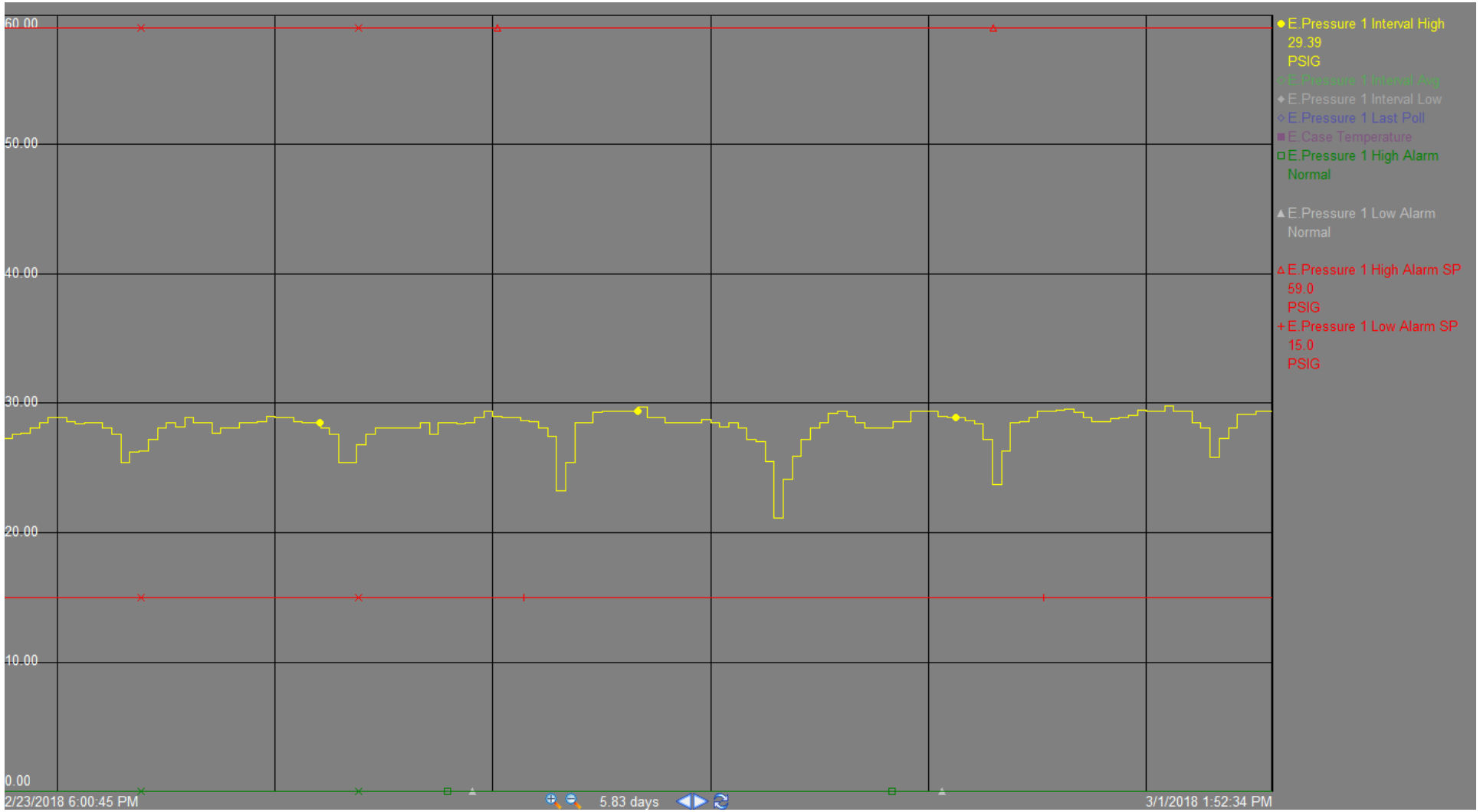
Validating Model



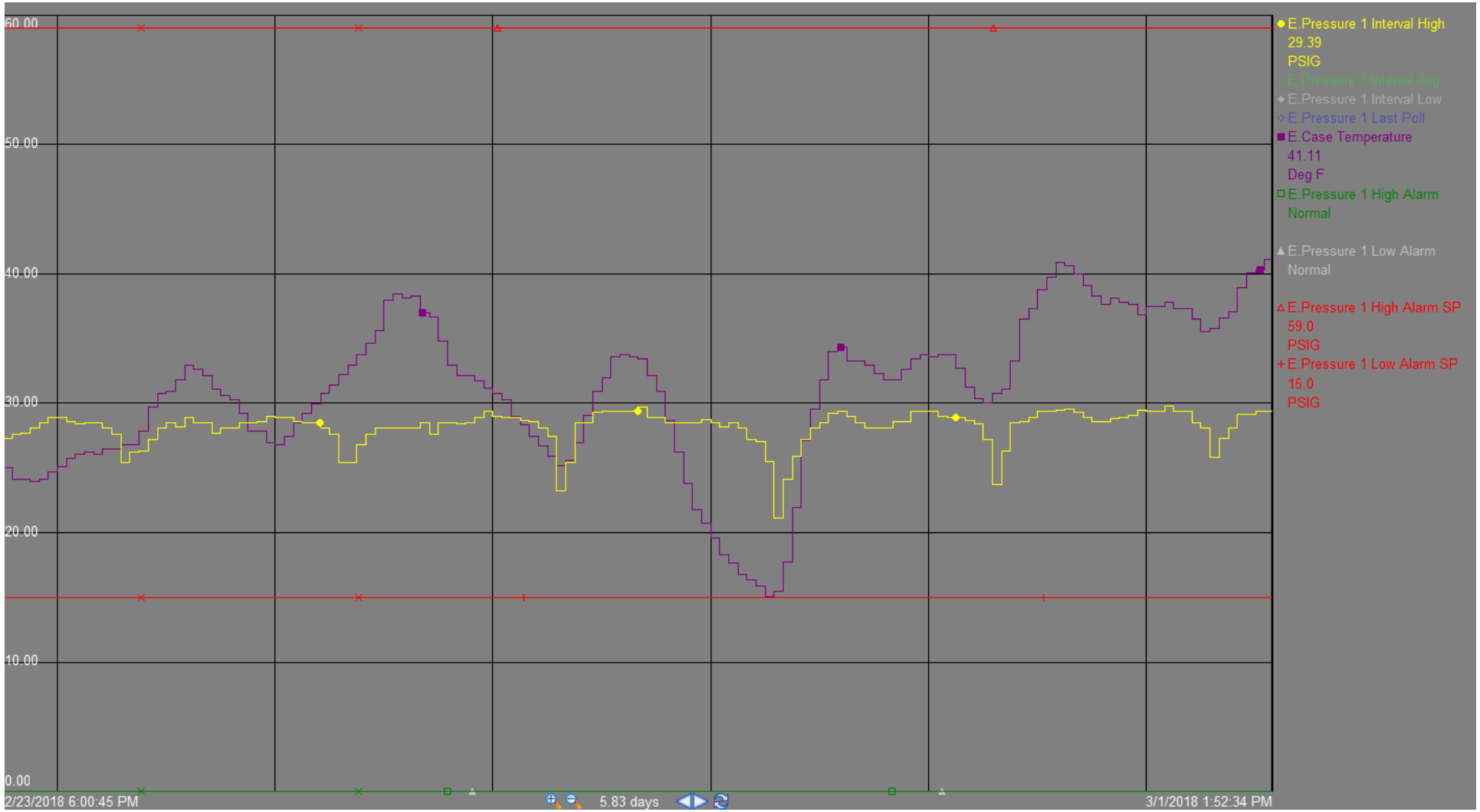
Validating Model cont.



Validating Model cont.



Validating Model cont.



Validating Model cont.

- Simulate recorded condition
- Electronic Pressure Recorders
  - Do calculated results match *field* data?
- Gate Station Telemetry
  - Do calculated results match *source* data?
- Possible Errors
  - Missing pipe
  - Source pressure changed
  - Industrial loads

Planning Criteria – 2022

- Reliability during design HDD
  - Spokane 76 HDD
  - Medford 49 HDD
  - Klamath Falls 72 HDD
  - La Grande 72 HDD
  - Roseburg 46 HDD

- Maintain minimum of 15 psig in system at all times
  - 5 psig in lower MAOP areas
  - 3 psig in Medford 6 psig systems

Planning Criteria – 2022

- Reliability during design HDD
  - Spokane **76 HDD** *(avg. daily temp. -11' F)*
  - Medford **49 HDD** *(avg. daily temp. 16' F)*
  - Klamath Falls **72 HDD** *(avg. daily temp. -7' F)*
  - La Grande **72 HDD** *(avg. daily temp. -7' F)*
  - Roseburg **46 HDD** *(avg. daily temp. 19' F)*

- Maintain minimum of 15 psig in system at all times
  - 5 psig in lower MAOP areas
  - 3 psig in Medford 6 psig systems

*Planning Criteria from 2021 Natural Gas IRP

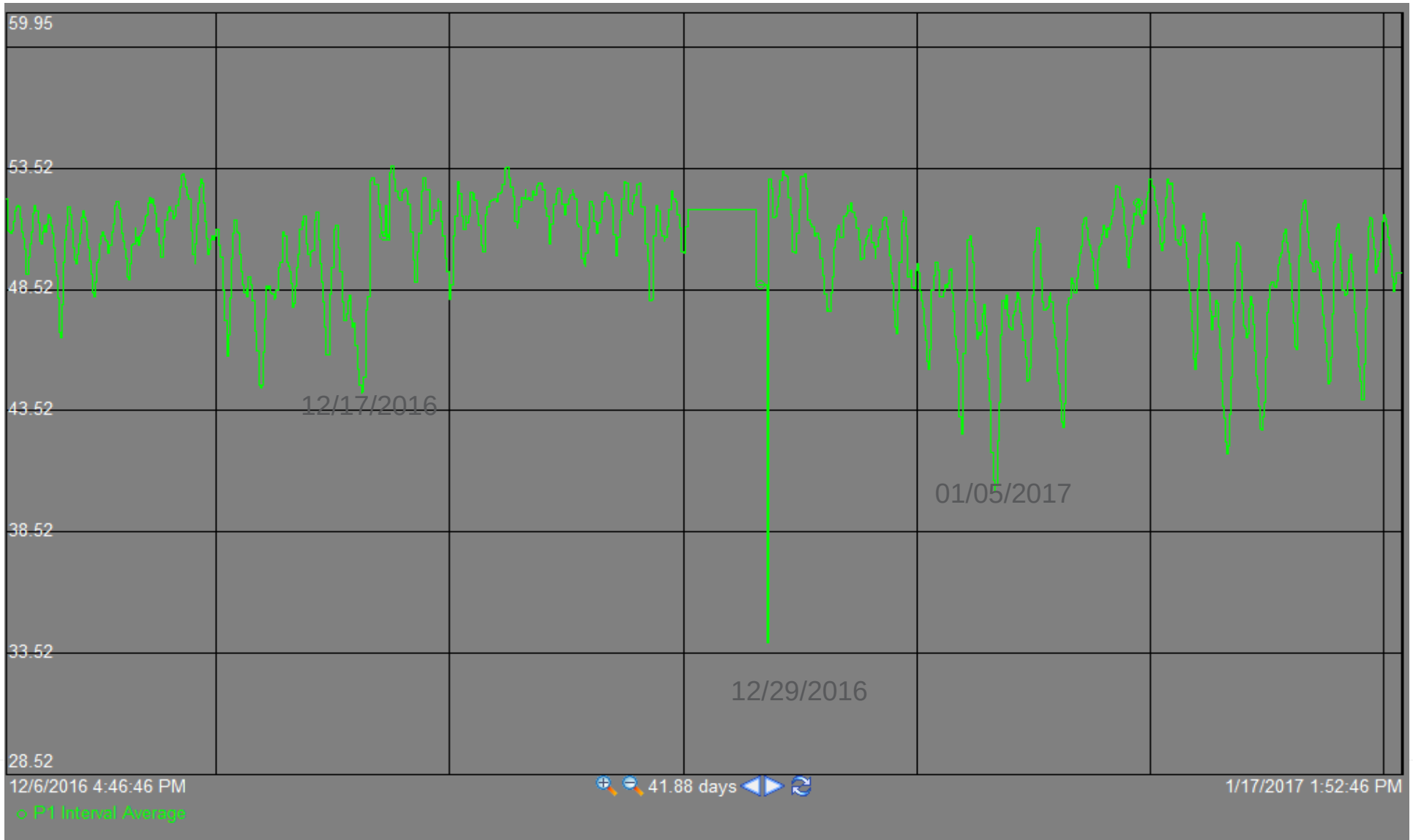
Interpreting Results

- Identify Low Pressure Areas
  - Number of feeds
  - Proximity to source
- Looking for Most Economical Solution
  - Length (minimize)
  - Construction obstacles (minimize)
  - Customer growth (maximize)

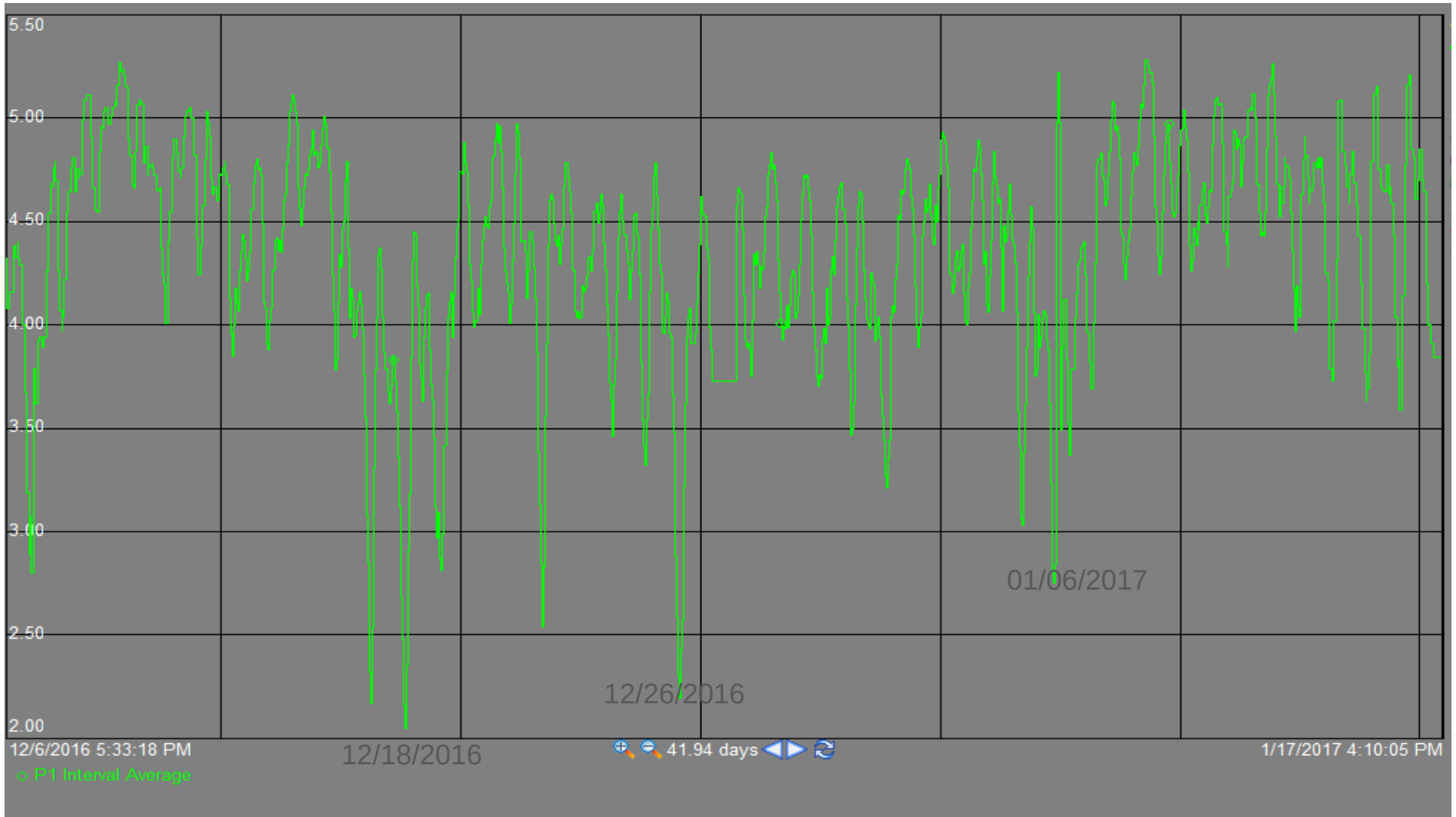
Monitoring Our System

- Electronic Pressure Recorders
  - Daily Feedback
  - Real time if necessary
- Validates our Load Studies

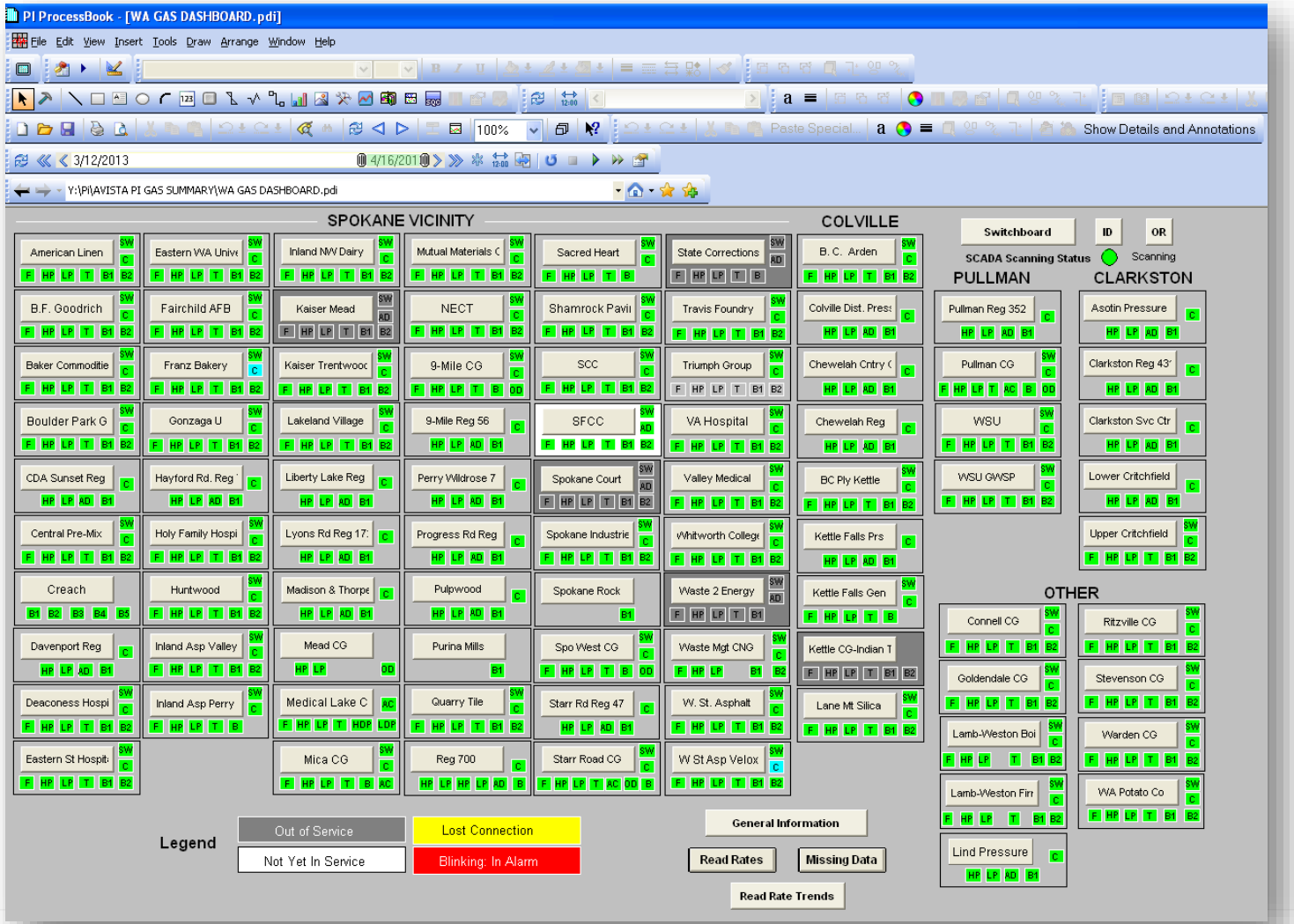
ERX #015: Loon Lake, WA



ERX #007: West Medford 6 psig System, OR



Real-time Pressure & Flow Monitoring



2022-2023 Winter

Gas Load And Weather Forecast Report

Page: 1
Date: 12/09/22 01:00 PM
Database: NUCPRD
gs_fore_temp

Date: 12/09/2022

Area: LAGRANDE

Date:		Hi	Lo	HDD	Load
TUE	12/06/22	31	19	37	4,615
WED	12/07/22	34	17	37	4,943
THU	12/08/22	33	27	35	4,865
FRI	12/09/22	35	27	32	4,485
SAT	12/10/22	40	34	28	3,926
SUN	12/11/22	39	31	30	3,783
MON	12/12/22	35	25	34	4,348
TUE	12/13/22	32	20	39	4,961
WED	12/14/22	30	19	42	5,163
THU	12/15/22	28	16	44	5,382
	Average:				4,647

Area: KLAMATH FALLS

Date:		Hi	Lo	HDD	Load
TUE	12/06/22	36	13	40	8,276
WED	12/07/22	25	19	42	9,272
THU	12/08/22	37	18	37	8,434
FRI	12/09/22	37	17	34	8,065
SAT	12/10/22	38	29	31	7,266
SUN	12/11/22	33	20	38	7,980
MON	12/12/22	32	14	41	8,949
TUE	12/13/22	27	13	46	9,563
WED	12/14/22	25	12	47	9,724
THU	12/15/22	27	11	46	9,543
	Average:				8,707

Area: MEDFORD

Date:		Hi	Lo	HDD	Load
TUE	12/06/22	47	26	29	31,904
WED	12/07/22	32	29	34	36,261
THU	12/08/22	44	30	28	28,159
FRI	12/09/22	45	33	24	29,178
SAT	12/10/22	47	36	23	27,792
SUN	12/11/22	44	32	28	29,737
MON	12/12/22	44	26	31	33,984
TUE	12/13/22	44	25	33	35,729
WED	12/14/22	45	26	32	35,414
THU	12/15/22	46	28	31	34,419
	Average:				32,258

Area: ROSEBURG

Date:		Hi	Lo	HDD	Load
TUE	12/06/22	46	33	26	8,443
WED	12/07/22	50	38	20	7,400
THU	12/08/22	48	36	23	8,309
FRI	12/09/22	46	38	22	7,229
SAT	12/10/22	45	36	23	6,995
SUN	12/11/22	45	35	26	8,001
MON	12/12/22	45	34	27	9,004
TUE	12/13/22	45	32	29	9,409
WED	12/14/22	46	30	29	9,583
THU	12/15/22	45	31	29	9,329
	Average:				8,370

Area: SPOKANE

Date:		Hi	Lo	HDD	Load
TUE	12/06/22	25	22	42	156,599
WED	12/07/22	29	19	39	148,068
THU	12/08/22	32	22	36	141,226
FRI	12/09/22	33	23	38	148,465
SAT	12/10/22	39	32	29	121,803
SUN	12/11/22	34	25	35	129,829
MON	12/12/22	27	15	43	159,574
TUE	12/13/22	22	14	47	176,241
WED	12/14/22	24	13	47	178,331
THU	12/15/22	22	10	49	183,111
	Average:				154,325

Area: LEWISTON

Date:		Hi	Lo	HDD	Load
TUE	12/06/22	35	24	36	20,619
WED	12/07/22	30	24	38	21,866
THU	12/08/22	38	29	31	20,803
FRI	12/09/22	36	27	33	1,641
SAT	12/10/22	39	30	31	18,372
SUN	12/11/22	37	32	30	17,277
MON	12/12/22	36	29	32	18,822
TUE	12/13/22	31	24	38	21,708
WED	12/14/22	28	21	41	23,192
THU	12/15/22	26	16	44	24,527
	Average:				18,883

Area: OTHER

Date:		Hi	Lo	HDD	Load
TUE	12/06/22	0	0	0	304
WED	12/07/22	0	0	0	303
THU	12/08/22	0	0	0	304
	Average:				304

2013-2014 Winter

Area:	LaGrande				
	Date	Hi	Lo	HDD	Load
SAT	12/7/2013	18	-4	58	6,615
SUN	12/8/2013	9	-9	65	6,695
MON	12/9/2013	21	-4	56	5,389
TUE	12/10/2013	29	16	42	4,897
WED	12/11/2013	30	15	42	4,689
THU	12/12/2013	35	20	37	4,131
FRI	12/13/2013	41	27	31	3,398
SAT	12/14/2013	38	22	35	3,618
SUN	12/15/2013	41	23	33	3,491
MON	12/16/2013	40	22	34	3,642

Area:	Klamath Falls				
	Date	Hi	Lo	HDD	Load
SAT	12/7/2013	21	-16	63	11,170
SUN	12/8/2013	6	-20	72	12,002
MON	12/9/2013	14	-17	66	11,474
TUE	12/10/2013	31	-6	52	9,299
WED	12/11/2013	36	7	43	8,799
THU	12/12/2013	39	9	41	8,191
FRI	12/13/2013	42	17	35	7,206
SAT	12/14/2013	45	15	35	6,887
SUN	12/15/2013	47	16	33	6,681
MON	12/16/2013	47	16	33	6,812

Area:	Medford				
	Date	Hi	Lo	HDD	Load
SAT	12/7/2013	32	11	44	40,462
SUN	12/8/2013	25	2	52	47,855
MON	12/9/2013	27	4	50	48,999
TUE	12/10/2013	38	9	41	44,095
WED	12/11/2013	42	17	35	35,943
THU	12/12/2013	42	20	34	35,273
FRI	12/13/2013	44	29	28	29,966
SAT	12/14/2013	48	26	28	27,507
SUN	12/15/2013	50	25	27	26,954
MON	12/16/2013	49	27	27	27,580

Area:	Roseburg				
	Date	Hi	Lo	HDD	Load
SAT	12/7/2013	27	18	43	11,843
SUN	12/8/2013	26	15	44	13,011
MON	12/9/2013	31	17	41	9,984
TUE	12/10/2013	34	19	38	10,867
WED	12/11/2013	40	28	31	9,197
THU	12/12/2013	40	30	30	8,730
FRI	12/13/2013	42	33	27	8,112
SAT	12/14/2013	43	30	28	7,686
SUN	12/15/2013	45	32	26	7,418
MON	12/16/2013	44	34	26	7,682

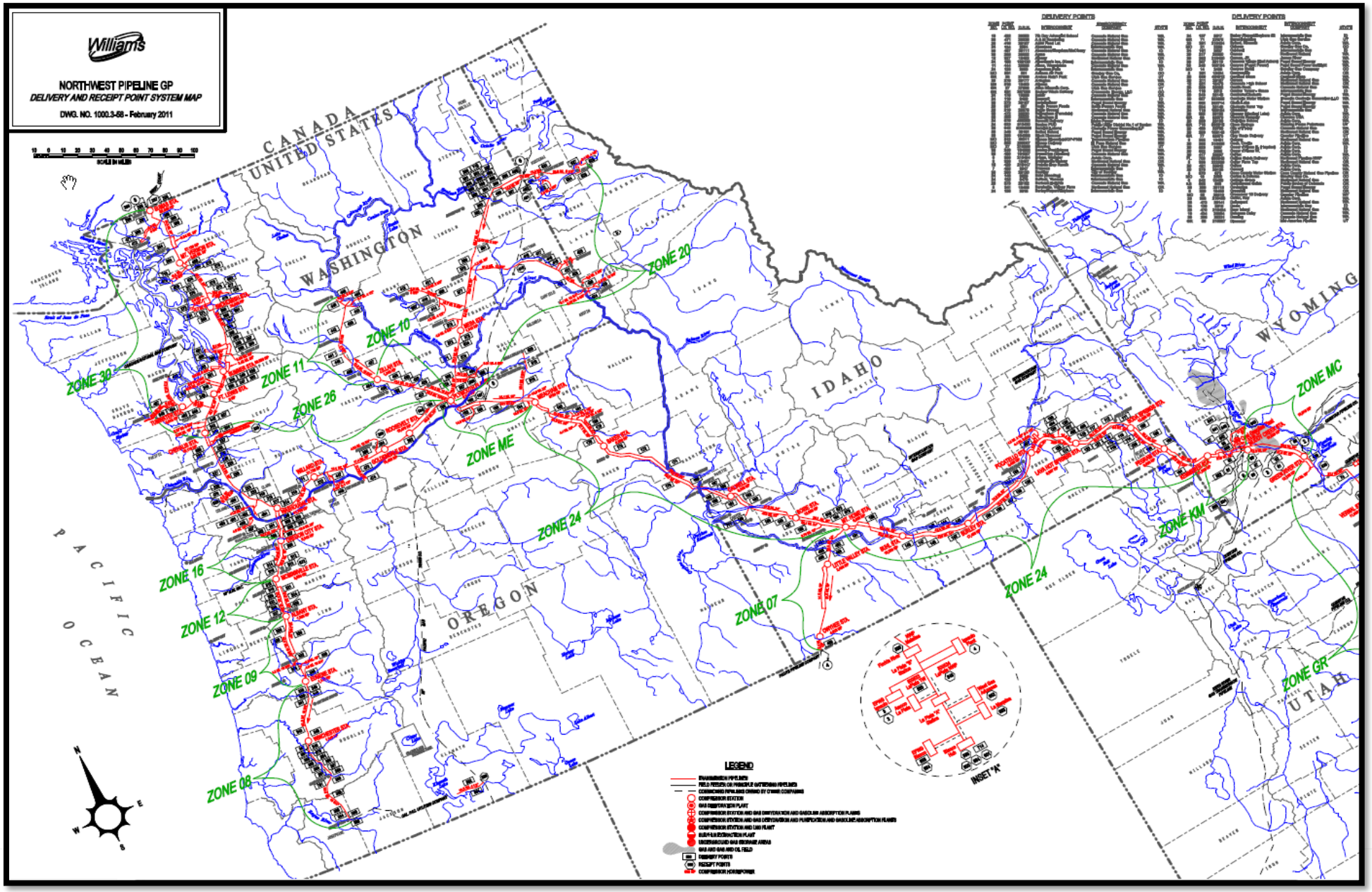
Area:	Spokane				
	Date	Hi	Lo	HDD	Load
SAT	12/7/2013	15	0	57	195,583
SUN	12/8/2013	15	-2	58	183,544
MON	12/9/2013	20	9	51	166,628
TUE	12/10/2013	25	12	46	156,433
WED	12/11/2013	29	15	43	145,441
THU	12/12/2013	31	20	39	134,506
FRI	12/13/2013	33	26	35	120,774
SAT	12/14/2013	35	27	34	114,257
SUN	12/15/2013	36	27	33	114,089
MON	12/16/2013	34	26	35	120,924

Area:	Lewiston				
	Date	Hi	Lo	HDD	Load
SAT	12/7/2013	18	2	55	31,016
SUN	12/8/2013	13	0	59	31,386
MON	12/9/2013	26	8	48	25,901
TUE	12/10/2013	28	22	40	21,715
WED	12/11/2013	31	17	41	22,022
THU	12/12/2013	34	21	37	19,886
FRI	12/13/2013	38	29	31	17,448
SAT	12/14/2013	36	27	33	17,579
SUN	12/15/2013	38	27	32	17,570
MON	12/16/2013	36	27	33	18,079

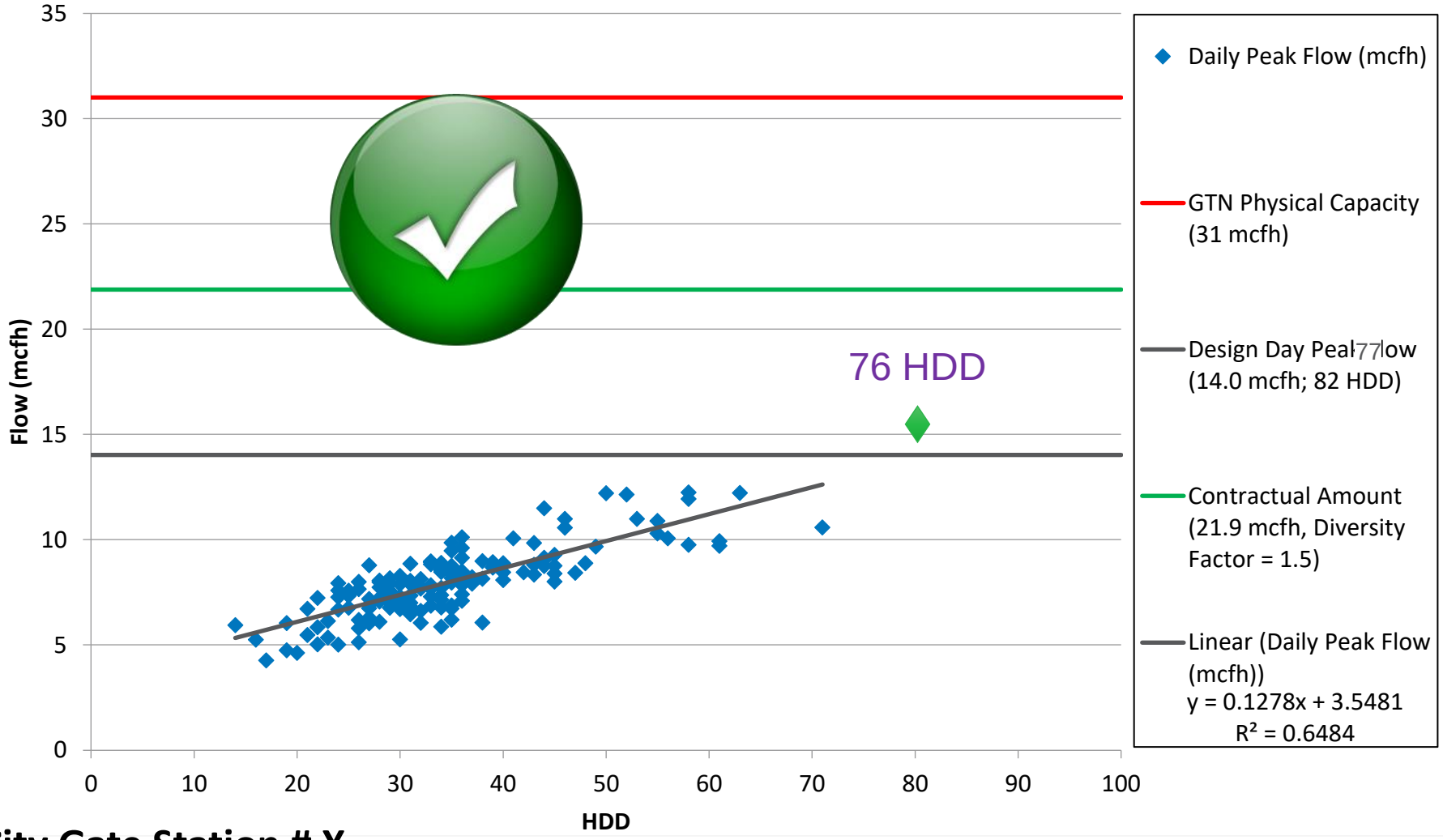
Areas Currently Monitoring for Low Pressure and Proposed Solutions*

- Jacksonville, OR
- Medford 6 psig system, OR
- Palouse, WA
- South Hill Spokane, WA
- *Notes:
  - List not comprehensive
  - projects are subject to change and will be reviewed on a regular basis

Gate Station Capacity Review

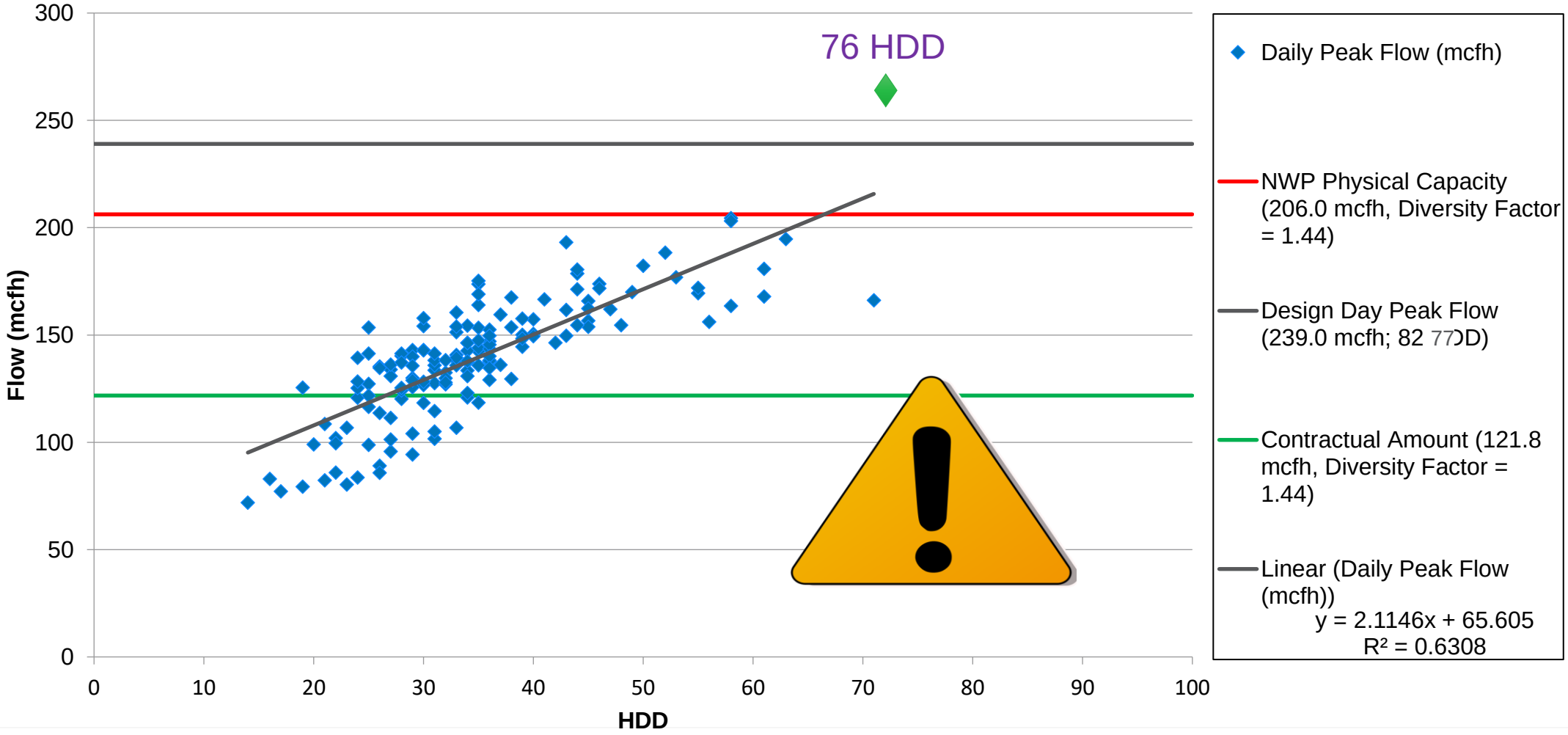


Gate Station Capacity Review (example)



City Gate Station # X

Gate Station Capacity Review (example)



City Gate Station # Y

City Gate Stations Currently Monitoring and Proposed Solutions*

- Sutherlin, OR: *rebuild/enhance in 2024+*
- Medford, OR: *work with pipeline to increase capacity*
- Klamath Falls – Keno, OR: *completed in 2020*
- Pullman, WA: *work with pipeline to increase capacity*
- *Notes:
  - List not comprehensive
  - projects are subject to change and will be reviewed on a regular basis

Avista's Capability To Accommodate Hydrogen

- Requirements (physical):
  - Meets existing tariff gas quality standards
  - Injection in a contained system with customer equipment that is capable of accepting a hydrogen blend
  - Metering at interconnect point for volume and gas quality
  - Pressure regulation at interconnect point

Avista's Capability To Accommodate Hydrogen

- Other
  - Interconnection application process
  - Interconnection agreement
- Where, when, & costs of upgrades required:
  - Each project will be different
  - Dependent on:
    - the proximity of the project to our distribution system
    - Size/scale of project

Questions and Discussion

Mission

Using technology to plan and design a safe, reliable, and economical distribution system

Review of Assumptions

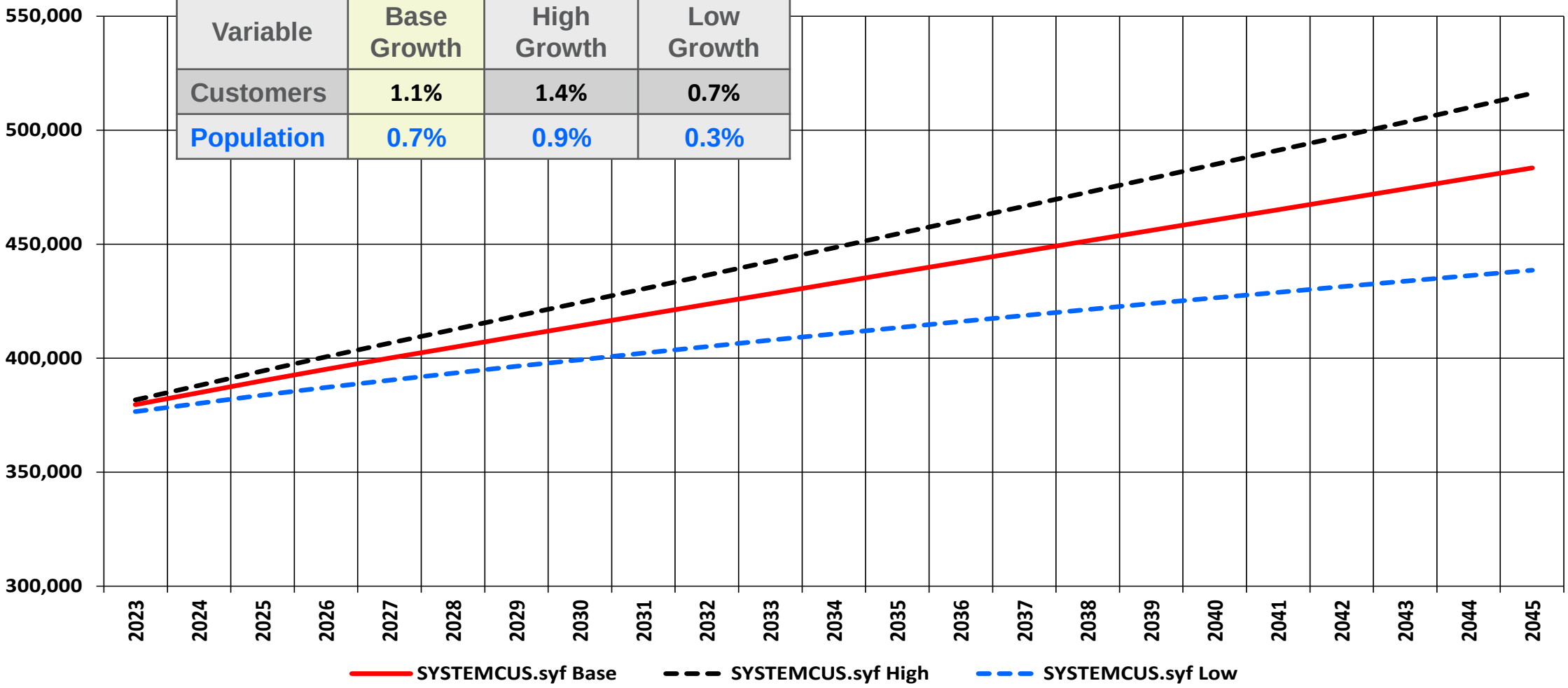
Tom Pardee

Expected Growth

- In 2022 Washington State Building Code Council passed a commercial building and residential customer building requirement starting July 1, 2023.
  - Requires the use of a heat pump as the primary heat source in new buildings
  - Does not require a specific fuel type
  - Does not require current customers to switch equipment at any time to electricity
- New residential and commercial customers in Washington starting July 2023 will be treated as hybrid heating where natural gas use begins at temperatures lower than 40 degrees Fahrenheit

System Firm Customer Range (2023-2045)

Variable	Base Growth	High Growth	Low Growth
Customers	1.1%	1.4%	0.7%
Population	0.7%	0.9%	0.3%



60

Weather Summary

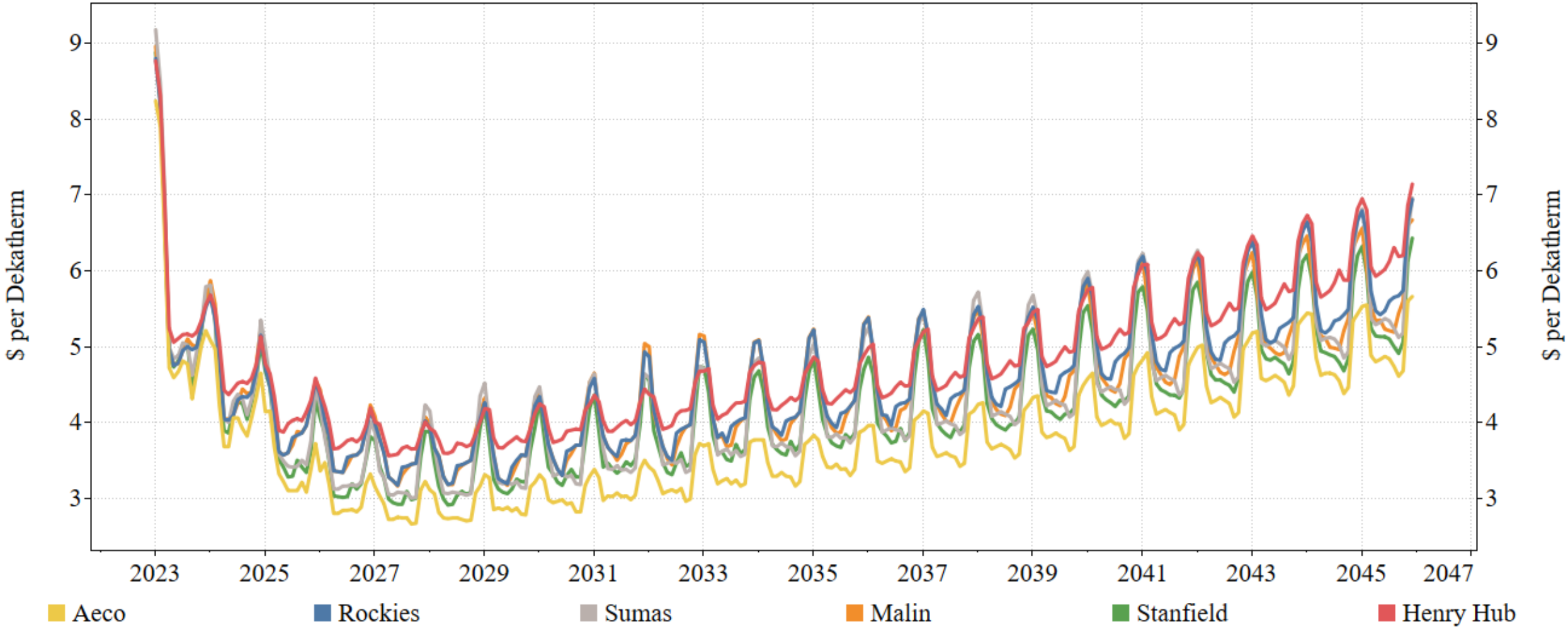
- Average daily weather by planning region for the prior 20 years including climate change weather data.
  - Example:
    - 2022 data is from 2002 – 2021
    - 2030 data is from 2010 – 2029
  - Median of daily values for all climate study results by area

- A peak event by planning region based on the past 30 years of the coldest average day, each year, combined with a 1% probability of a weather occurrence
  - Calculation now includes future projected peak values and is trended to the 2045 value from the historic coldest on record to smooth out volatility of peak day temperatures
  - Using the median values as peak day drastically reduces the temperatures for the design weather day
  - Taking the 95th percentage of climate models daily results and utilizing the highest annual value to include in the peak calculation reduces this risk of unserved customers

Peak Temp Changes
(degrees Fahrenheit)

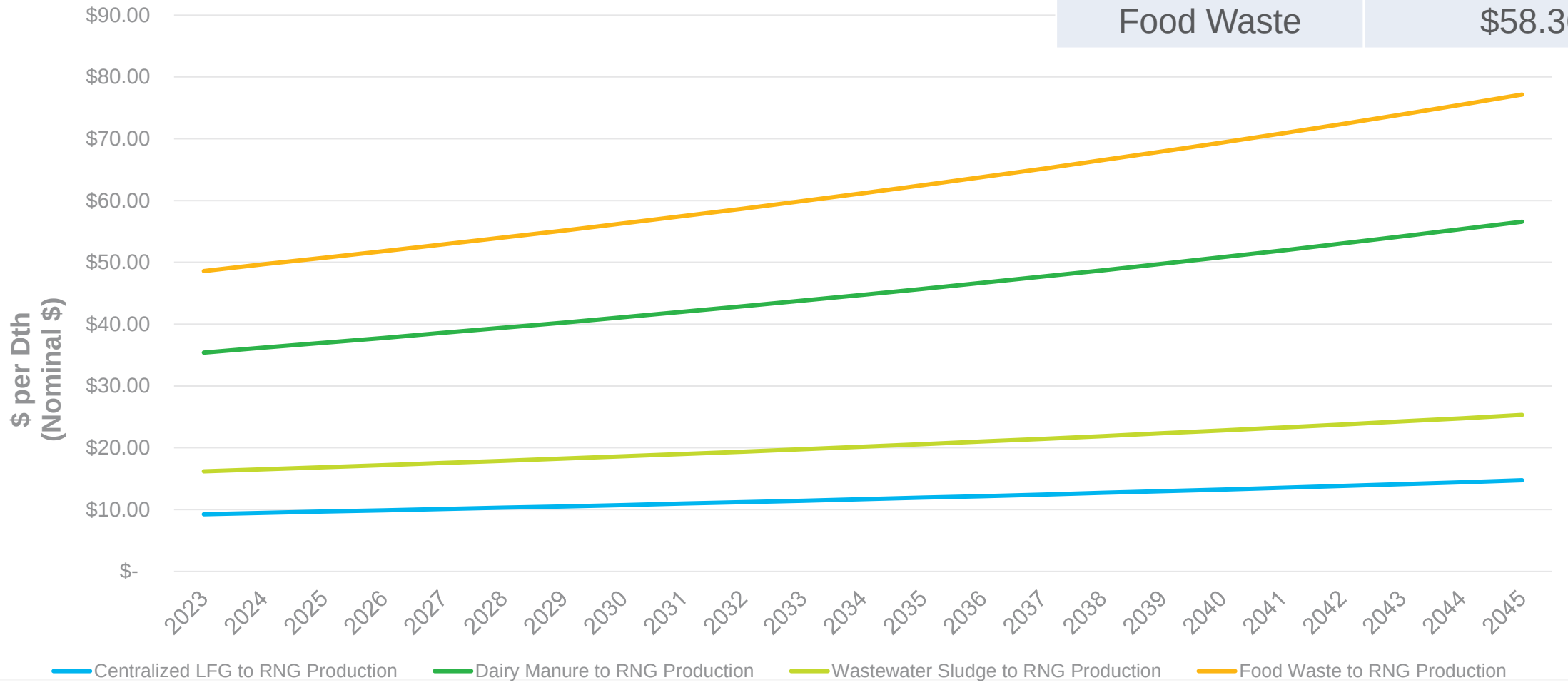
Planning Region	Trended Peak 2045
La Grande, Oregon	-8.0
Klamath Falls, Oregon	-5.1
Medford/Roseburg, Oregon	11.7
Spokane, ID/WA	-14.6

Expected Natural Gas Price Forecasts



RNG Cost Estimate by type

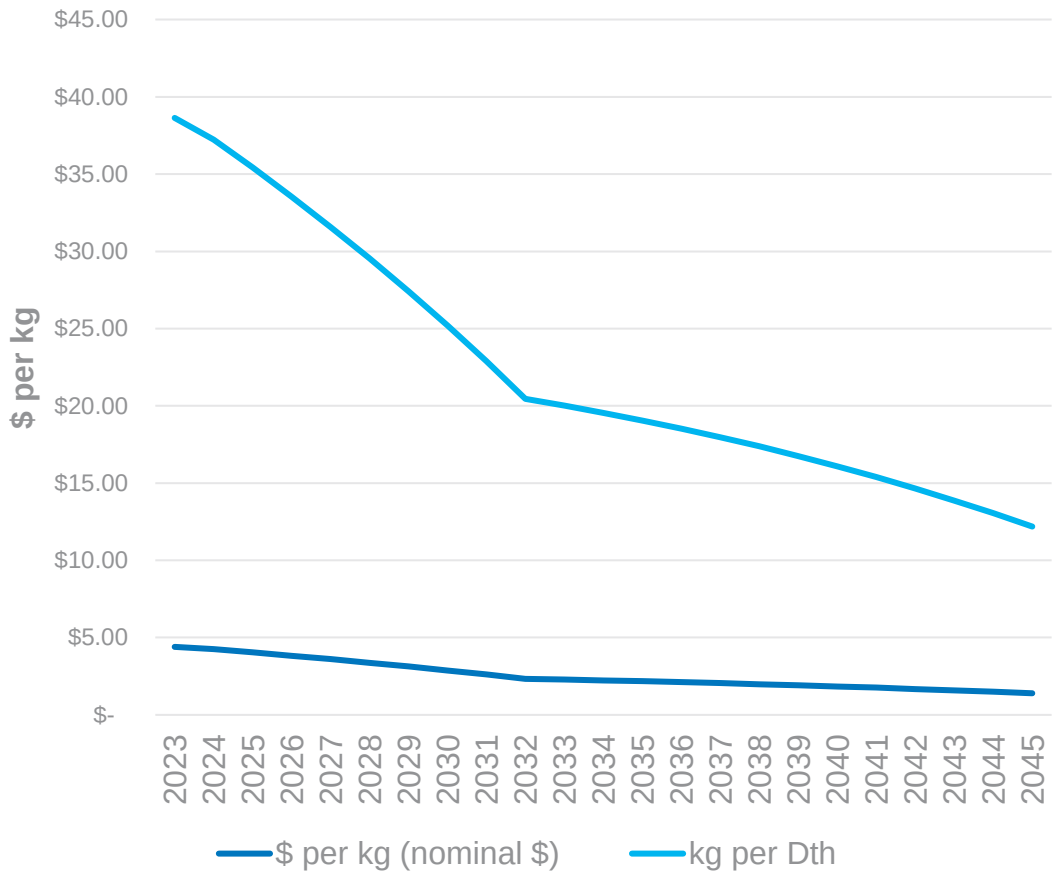
RNG Type	Levelized Price (Dth)
Landfill	$11.14
Dairy	$42.65
Wastewater	$19.29
Food Waste	$58.36



Source: Black and Veatch estimates

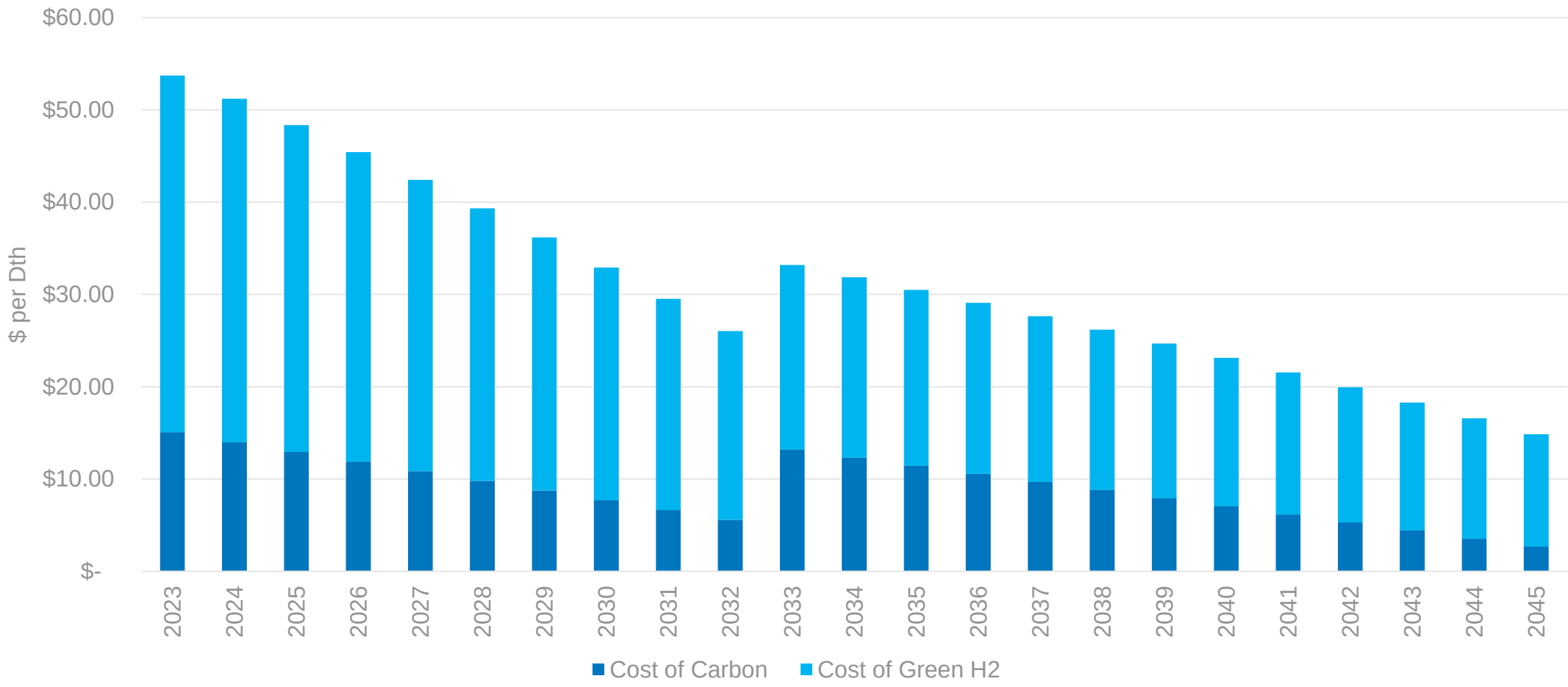
Green Hydrogen (H2)

- Hydrogen is the most abundant element in the universe
- The lightest element and wants to escape making it harder to contain
- Highly combustible
- Tax credits from IRA assumed at a levelized credit for the full $3 per kg incentive from green H2

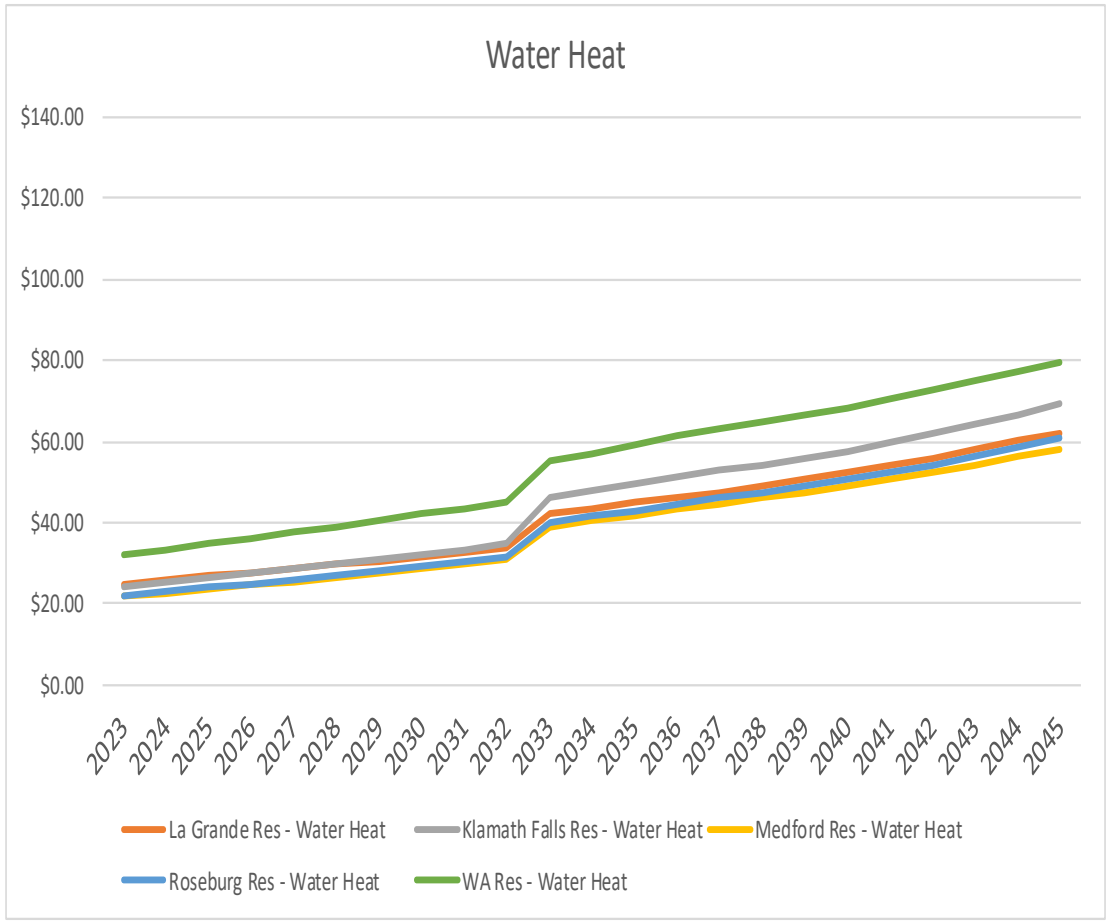


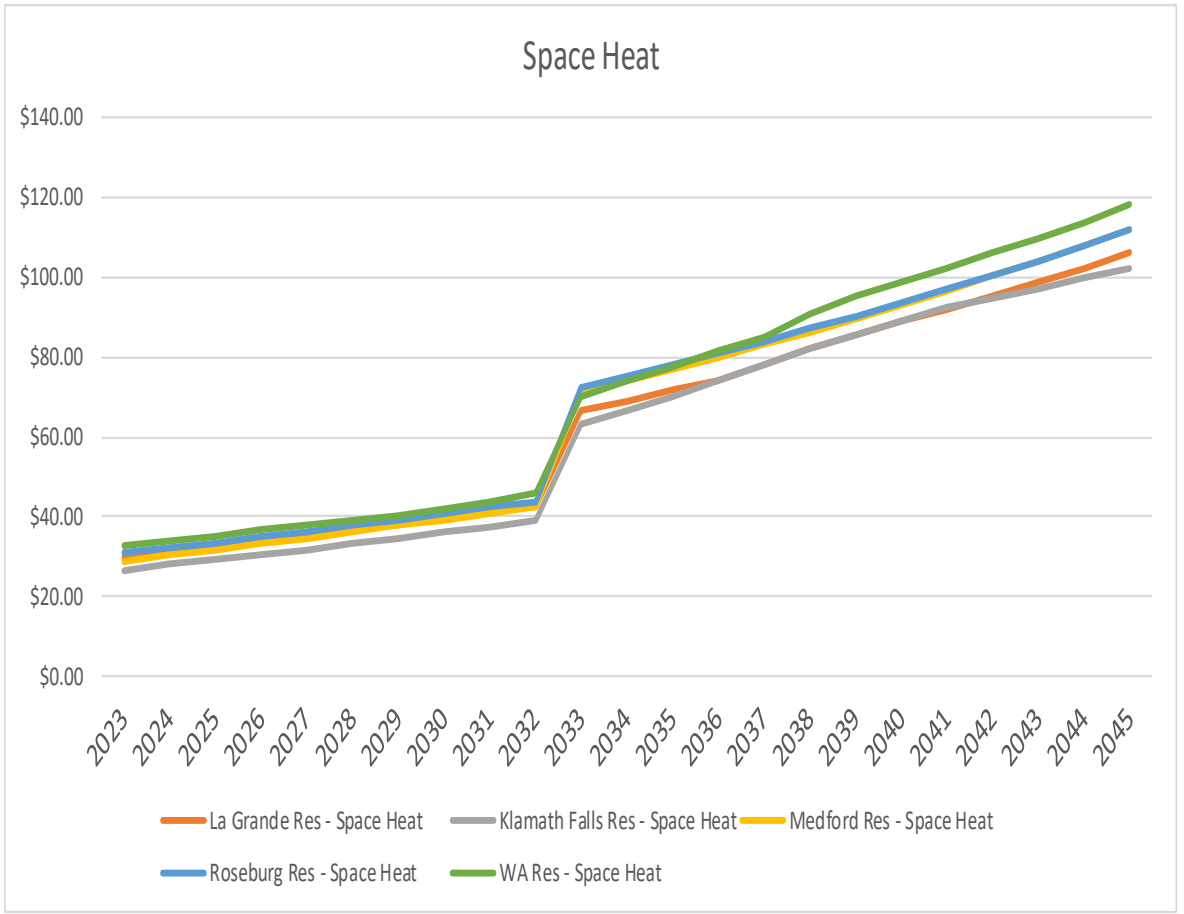
Synthetic Methane Costs

Levelized Price (year 1)	$35.78

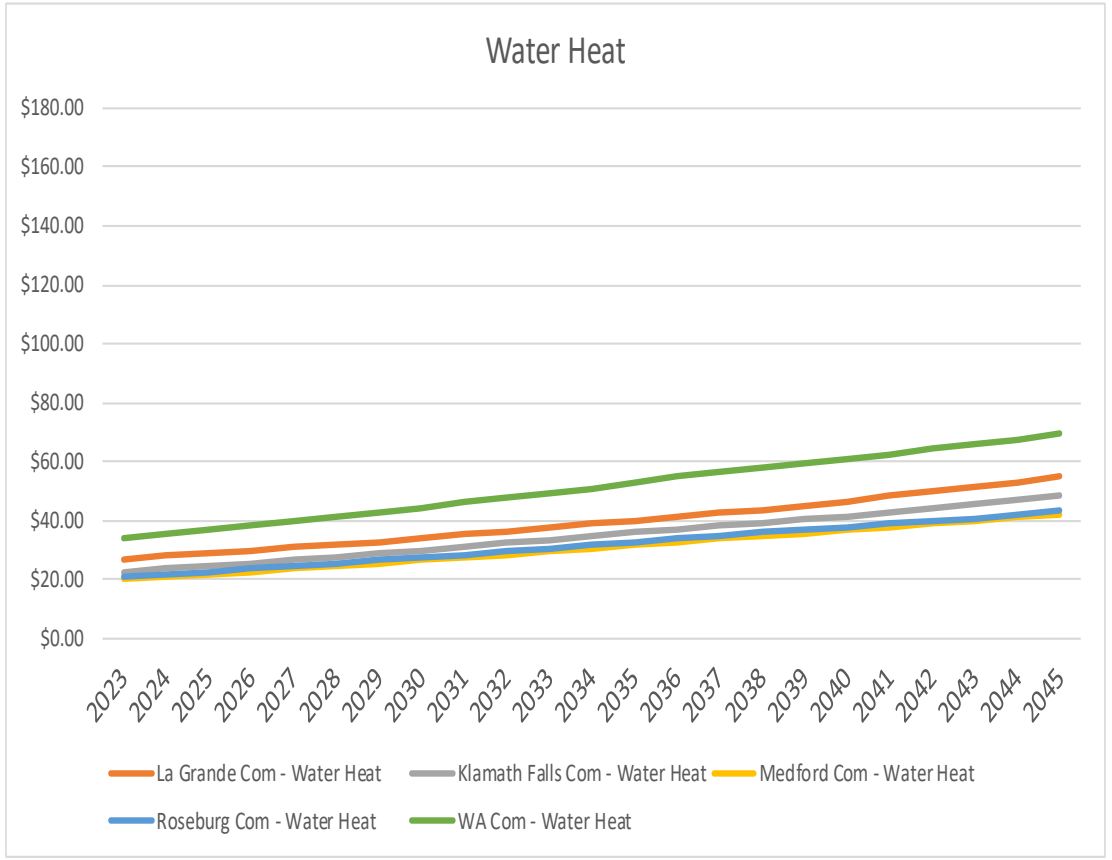


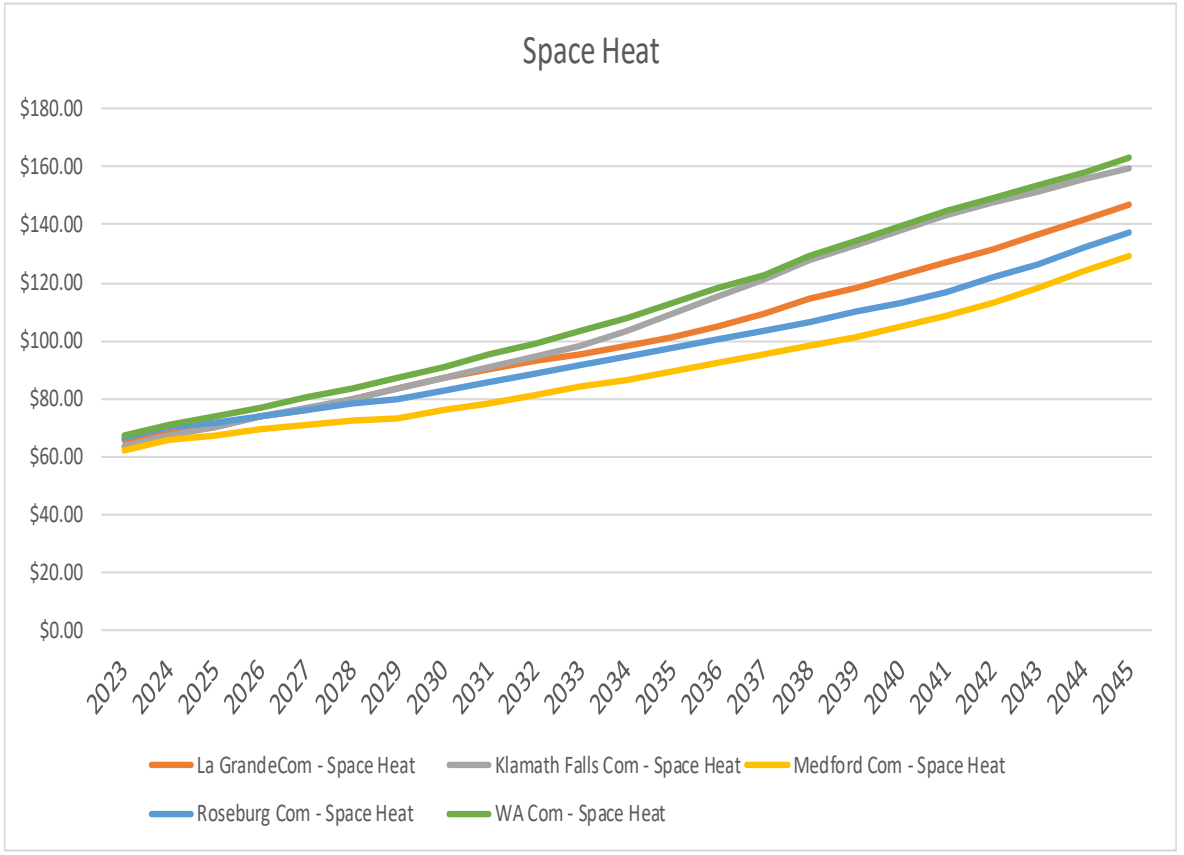
Residential Electrification Costs – Levelized (energy + conversion costs)



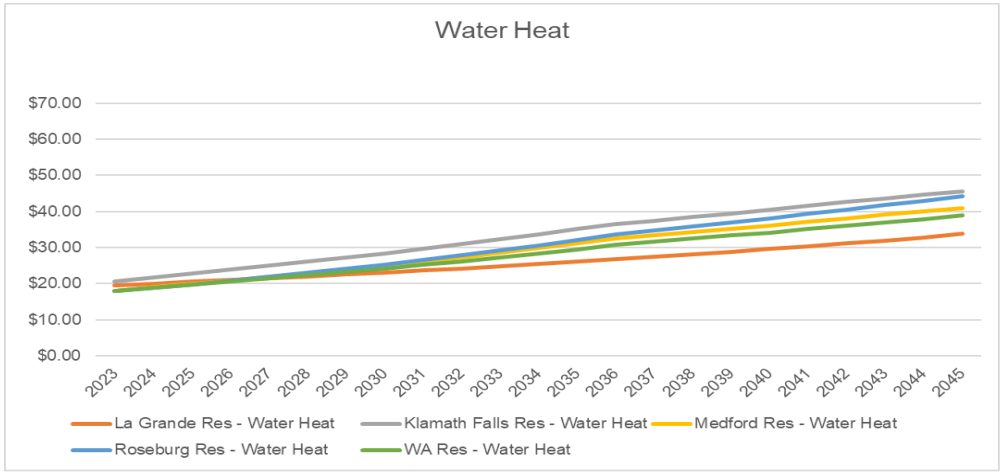


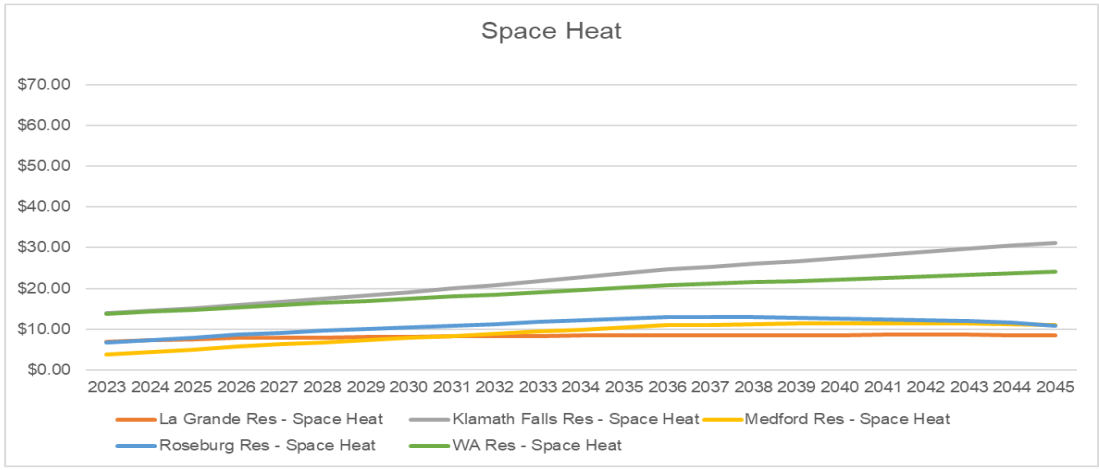
Commercial Electrification Costs – Levelized (energy + conversion costs)

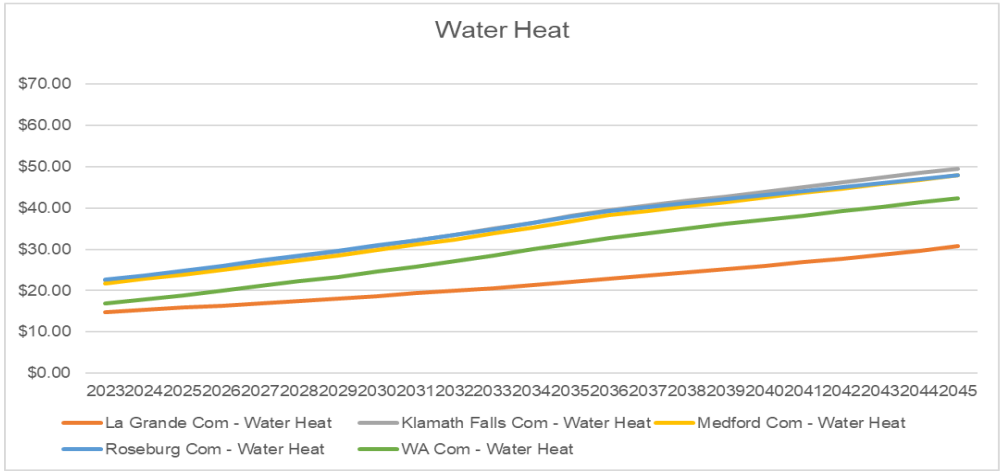


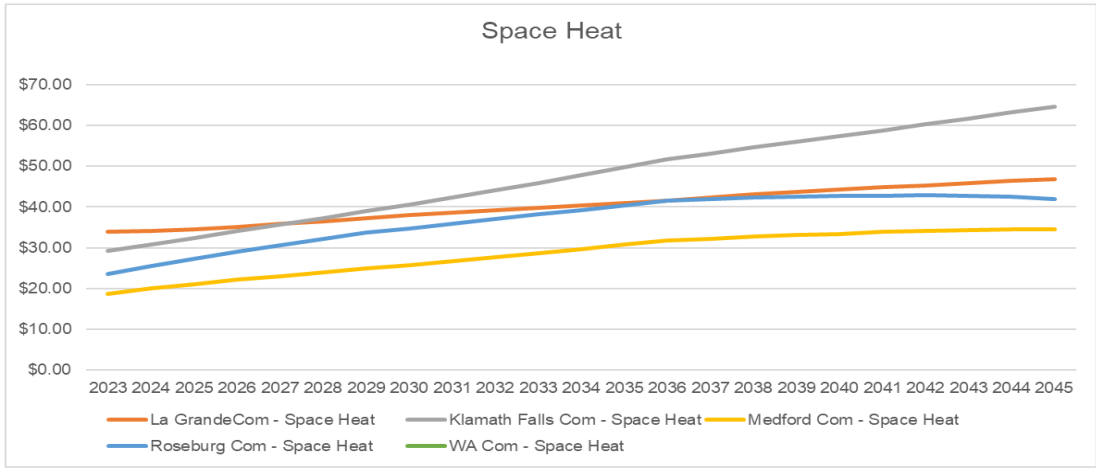


Electrification – No Capital Costs

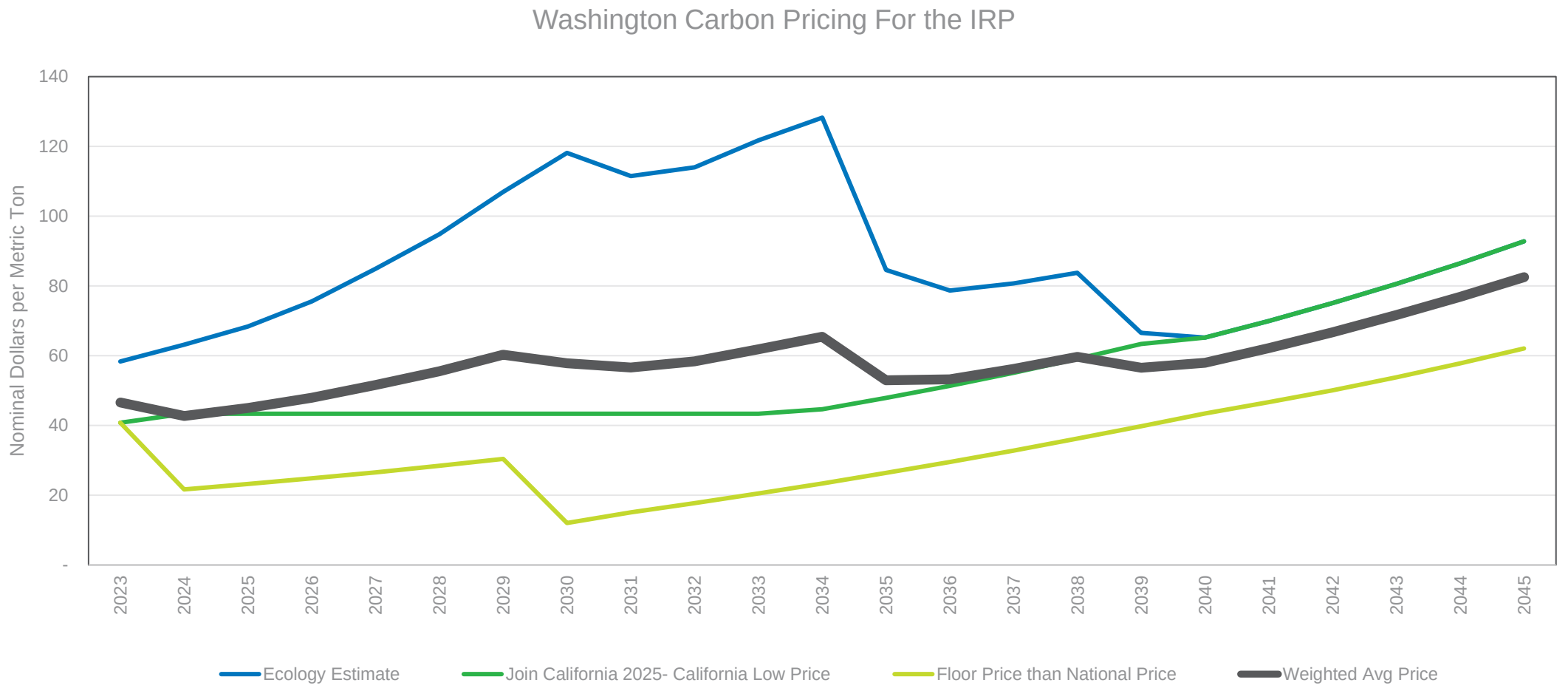




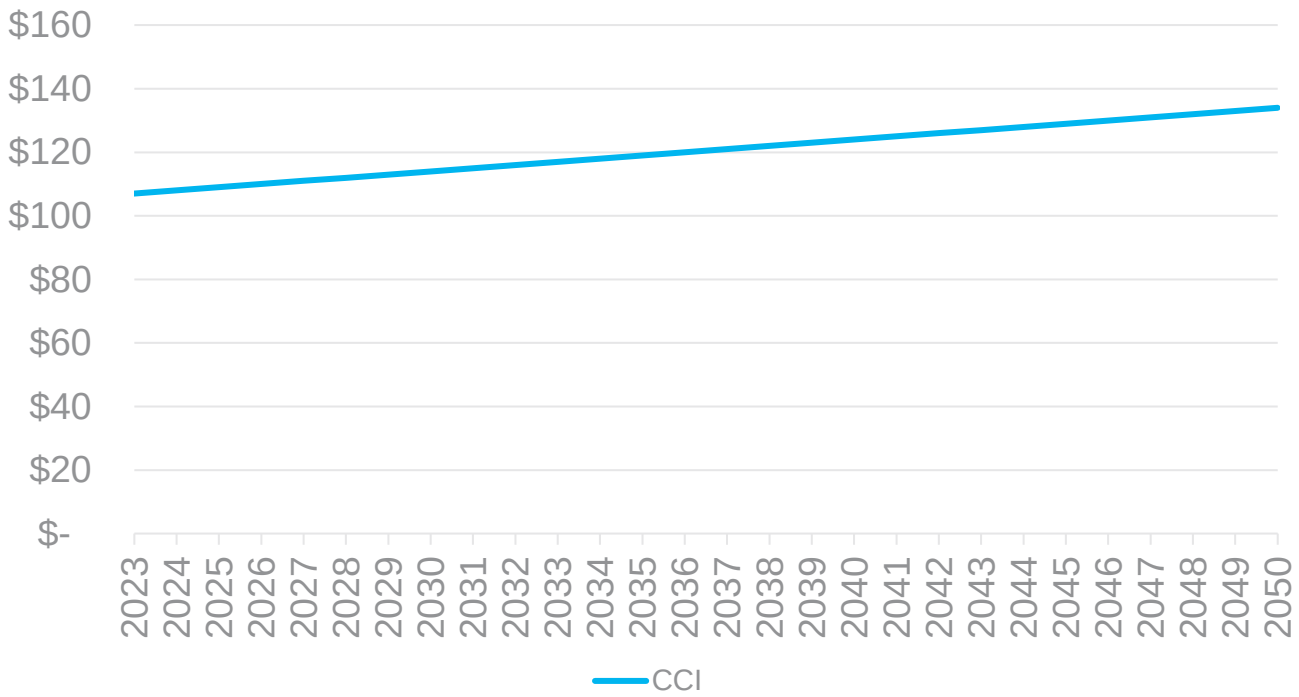




Allowance Price



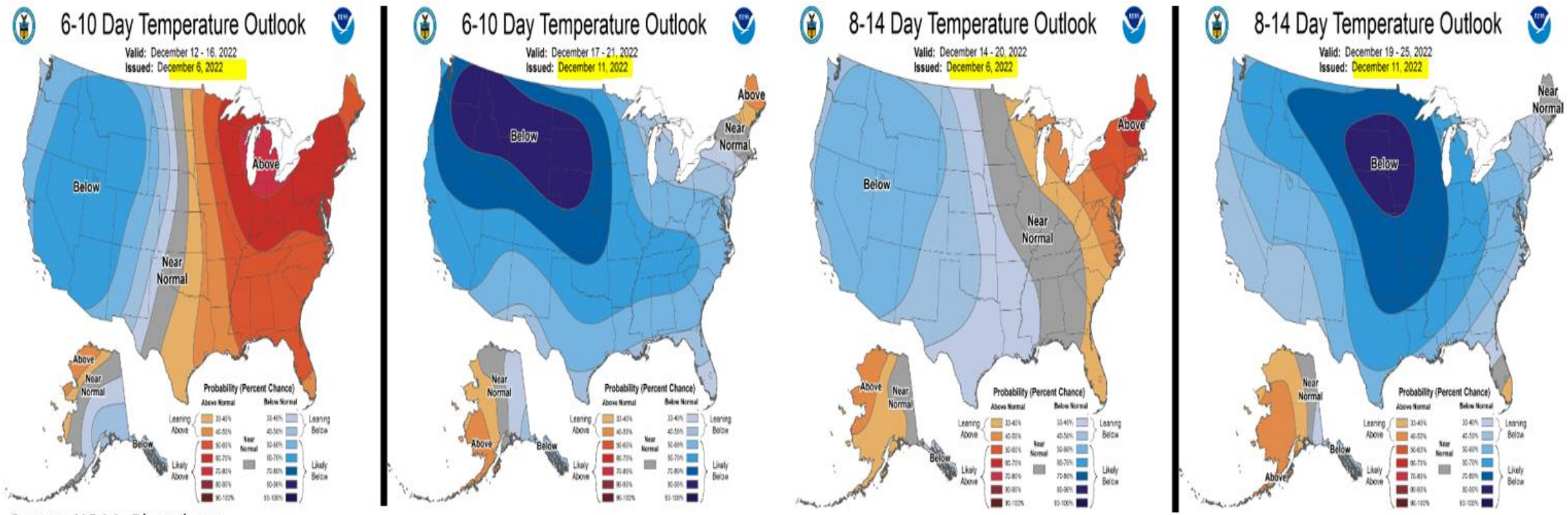
CCI Costs



OAR 340-271-9000
Table 7
CCI credit contribution amount

Effective date	CCI credit contribution amount in 2021 dollars, to be adjusted according to OAR 340-271-0820(3)
March 1, 2023	$107
March 1, 2024	$108
March 1, 2025	$109
March 1, 2026	$110
March 1, 2027	$111
March 1, 2028	$112
March 1, 2029	$113
March 1, 2030	$114
March 1, 2031	$115
March 1, 2032	$116
March 1, 2033	$117
March 1, 2034	$118
March 1, 2035	$119
March 1, 2036	$120
March 1, 2037	$121
March 1, 2038	$122
March 1, 2039	$123
March 1, 2040	$124
March 1, 2041	$125
March 1, 2042	$126
March 1, 2043	$127
March 1, 2044	$128
March 1, 2045	$129
March 1, 2046	$130
March 1, 2047	$131
March 1, 2048	$132
March 1, 2049	$133
March 1, 2050	$134

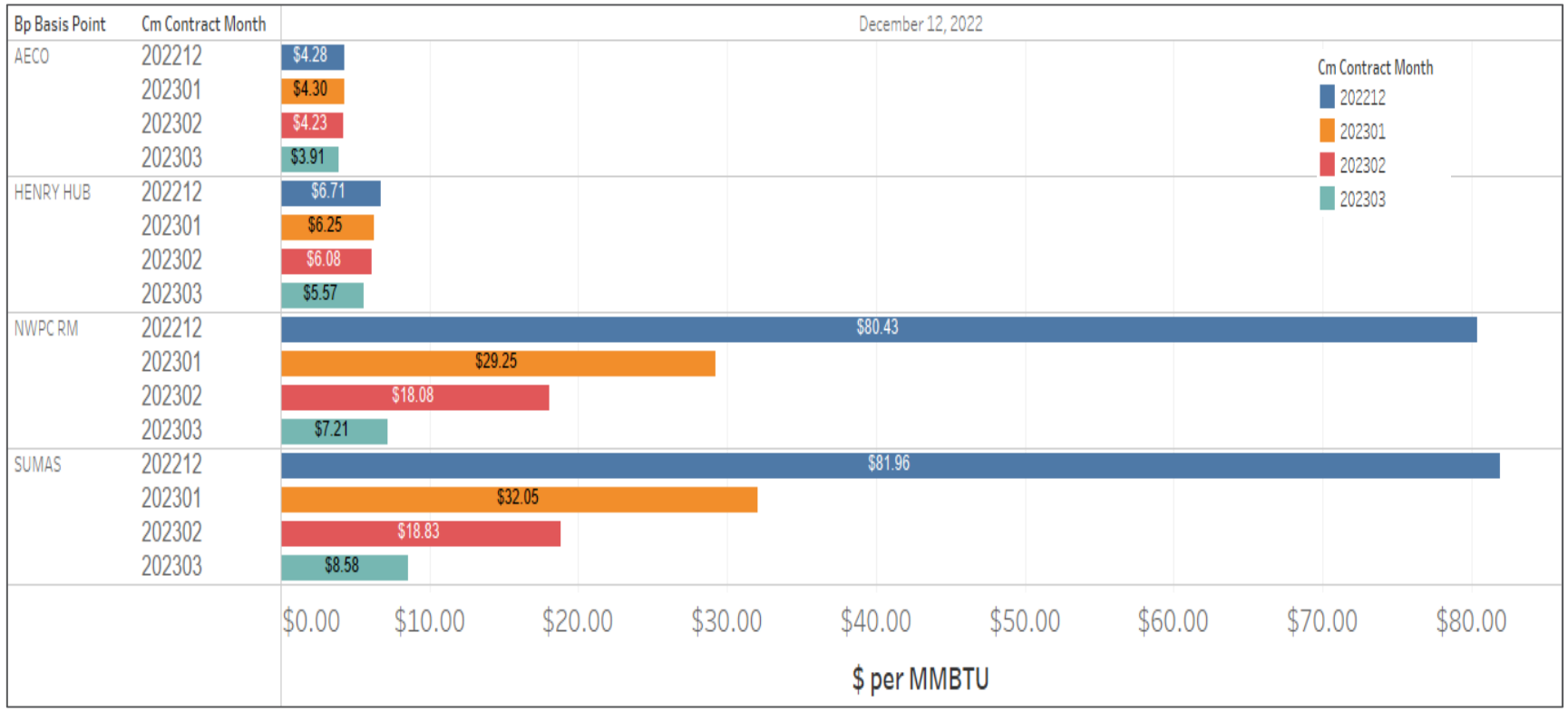
Quick Market Update



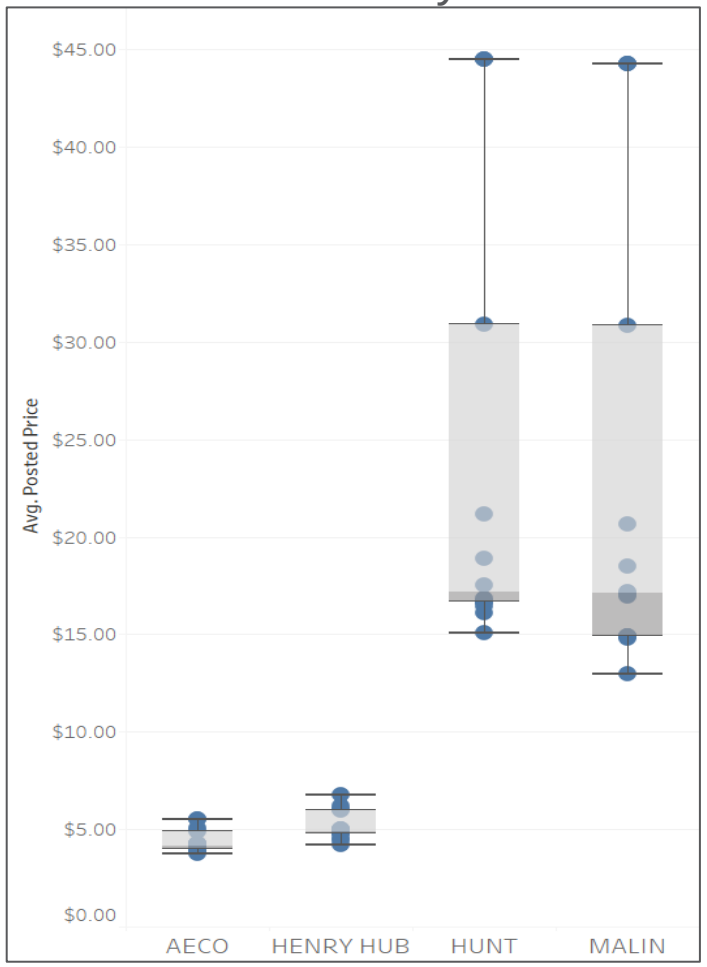
Source: NOAA, Bloomberg

Natural Gas Prices

Forwards



Daily



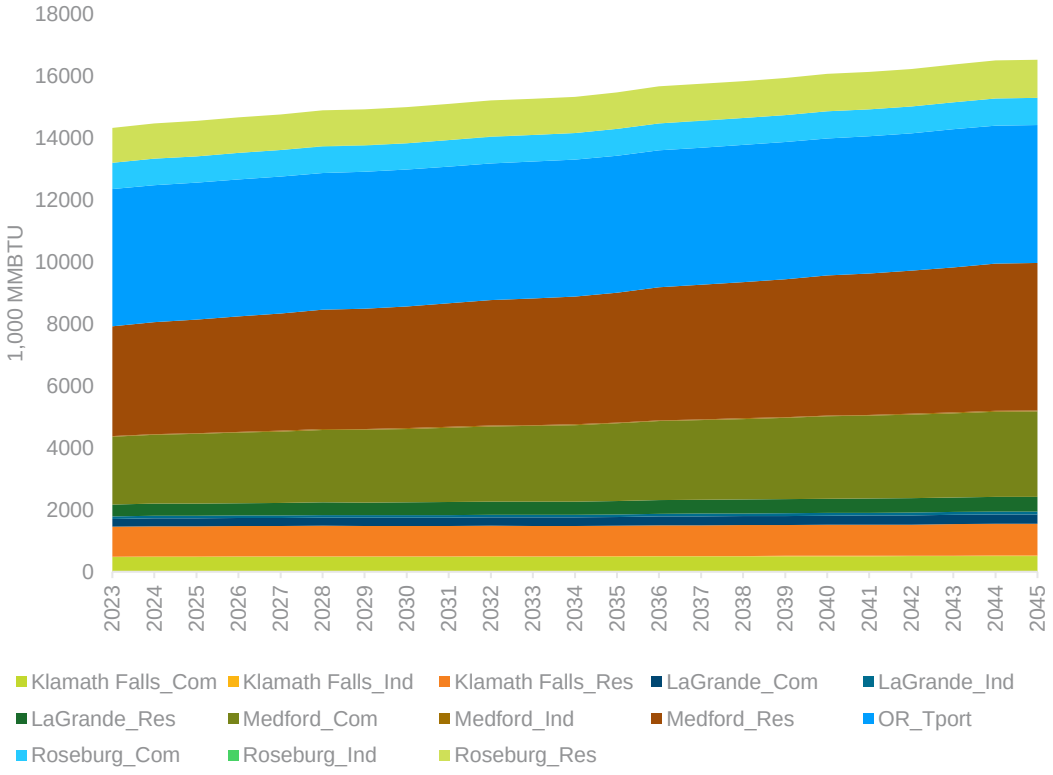
*prior two weeks of daily prices

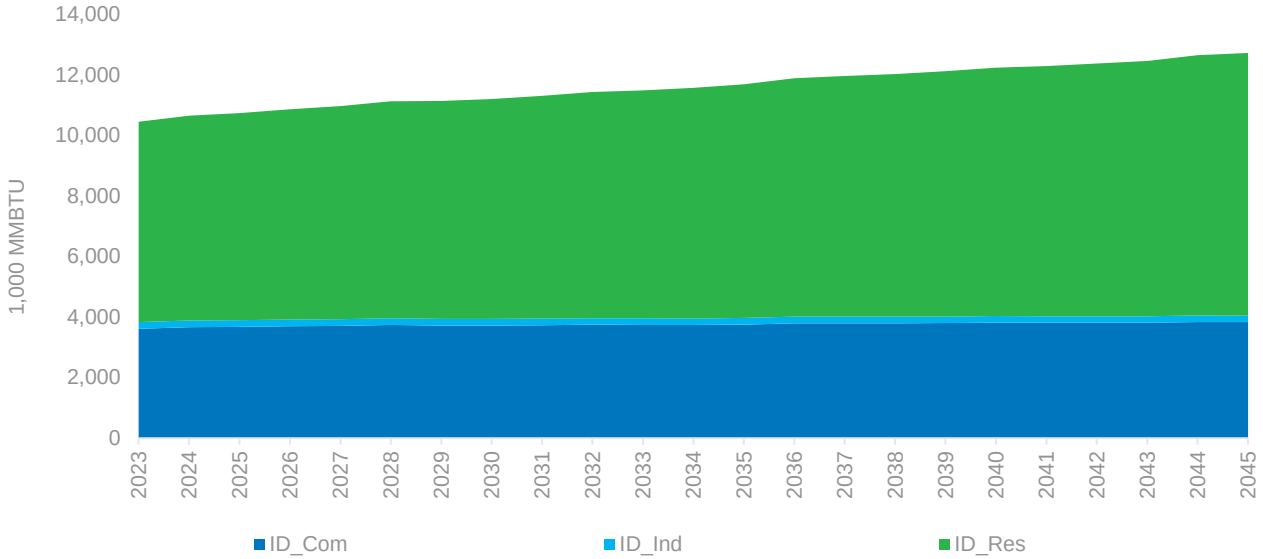
Preferred Resource Strategy (PRS)

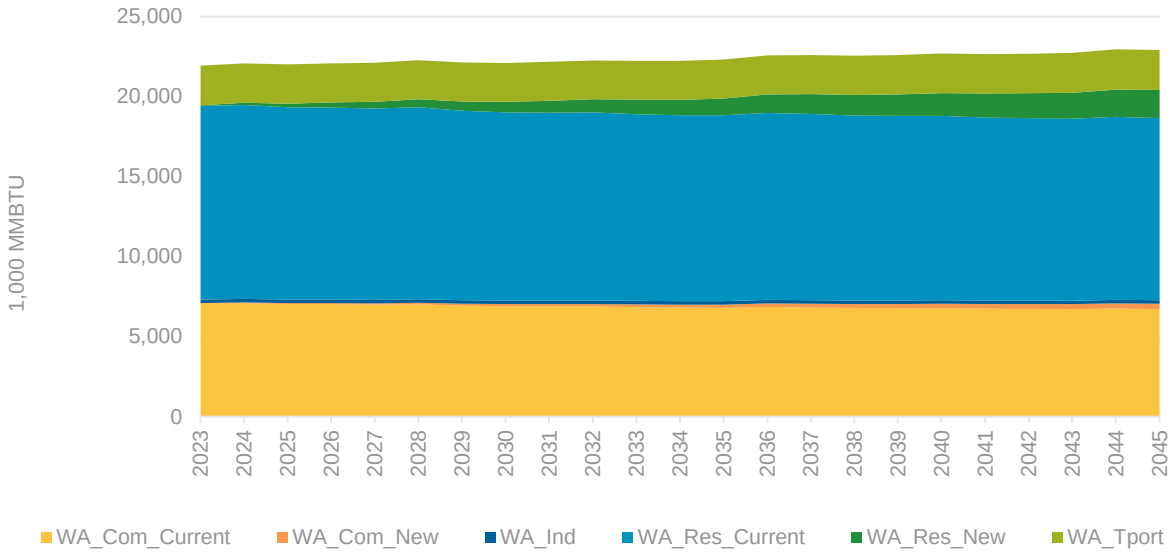
Simulation Analysis

- Simulation analysis is performed using stochastic simulation paired with Monte Carlo simulation to understand risk
- Stochastic simulation provides a single solution based on the number of simulations performed
  - 5 future simulations
- Monte Carlo simulation is used to provide risk analysis around the resources selected stochastically
  - 500 MC simulations

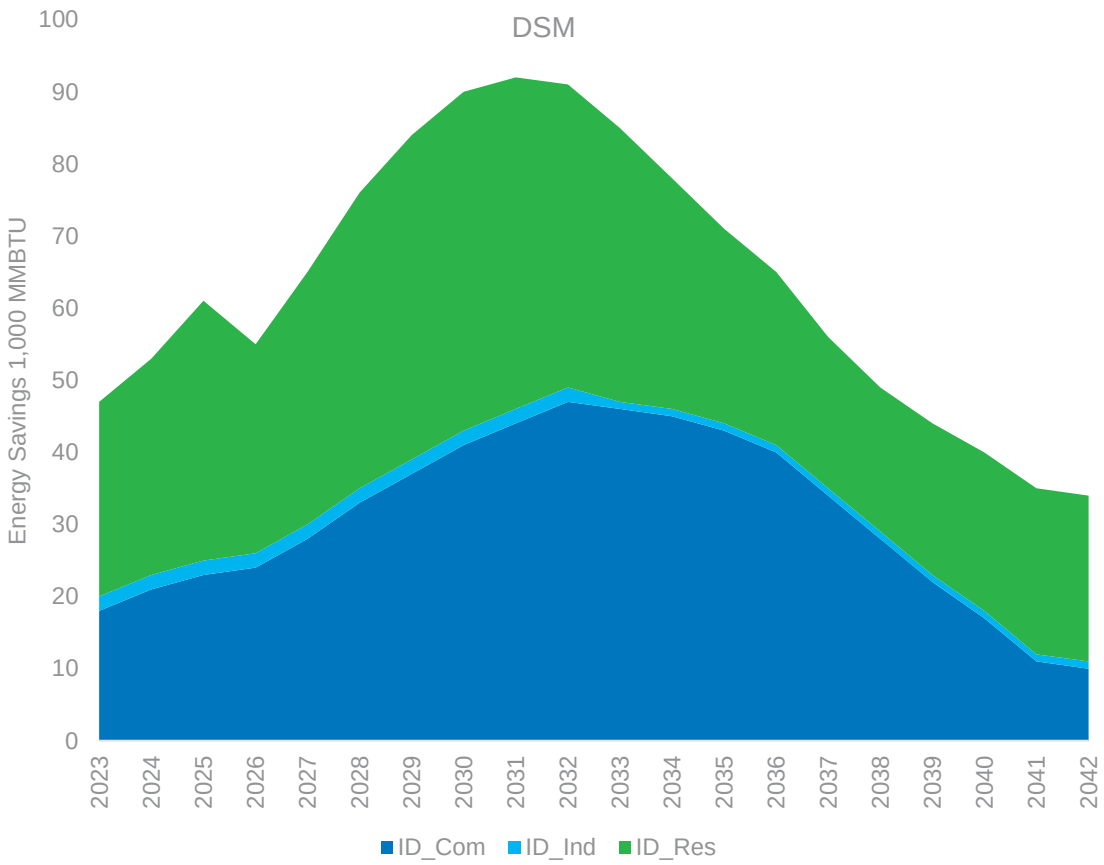
Demand by State







Idaho


DSM
Energy Savings 1,000 MMBTU
100
90
80
70
60
50
40
30
20
10
0
2023
2024
2025
2026
2027
2028
2029
2030
2031
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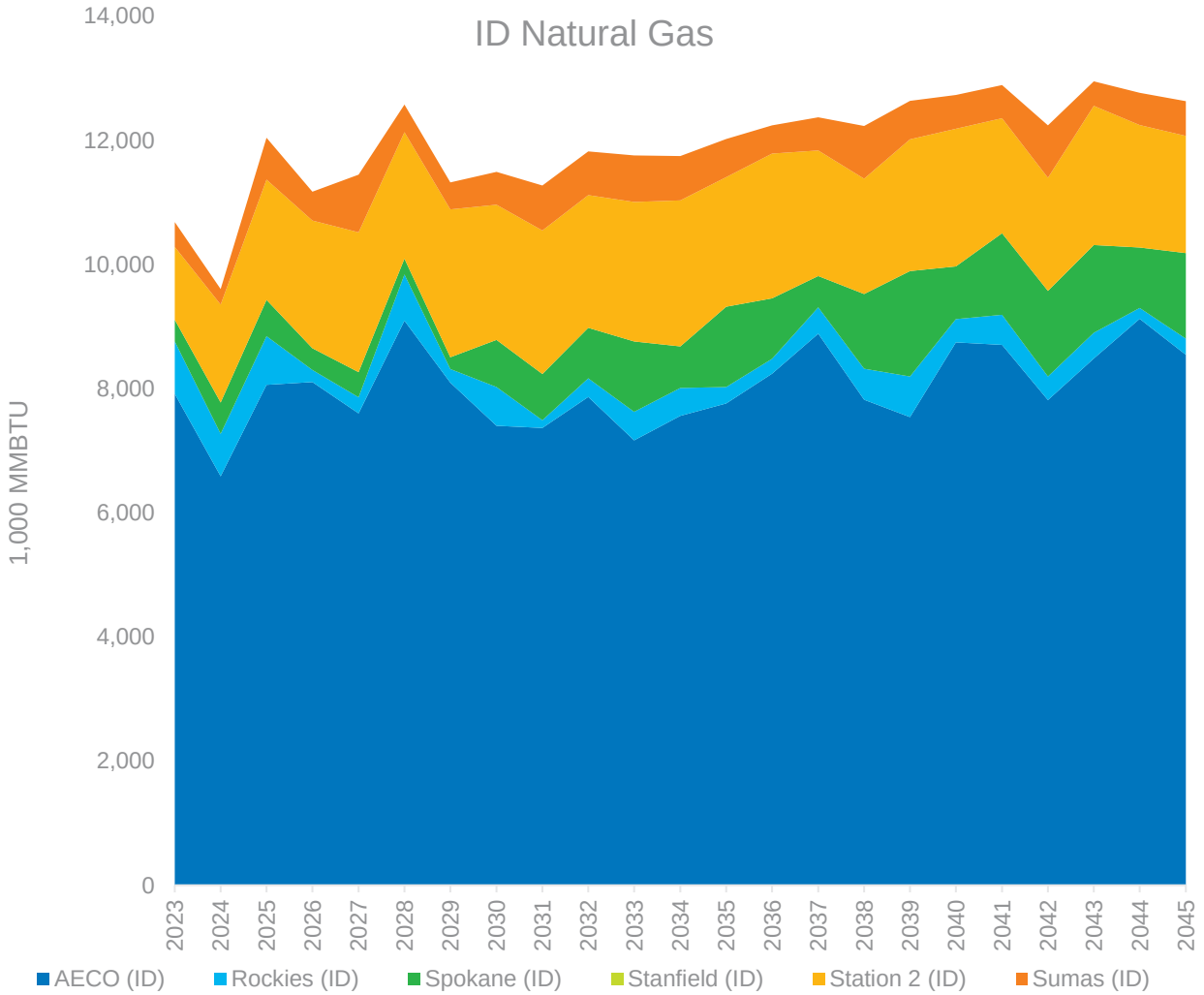
2039
2040
2041
2042
ID_Com
ID_Ind
ID_Res


ID Natural Gas
1,000 MMBTU
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
2023
2024
2025
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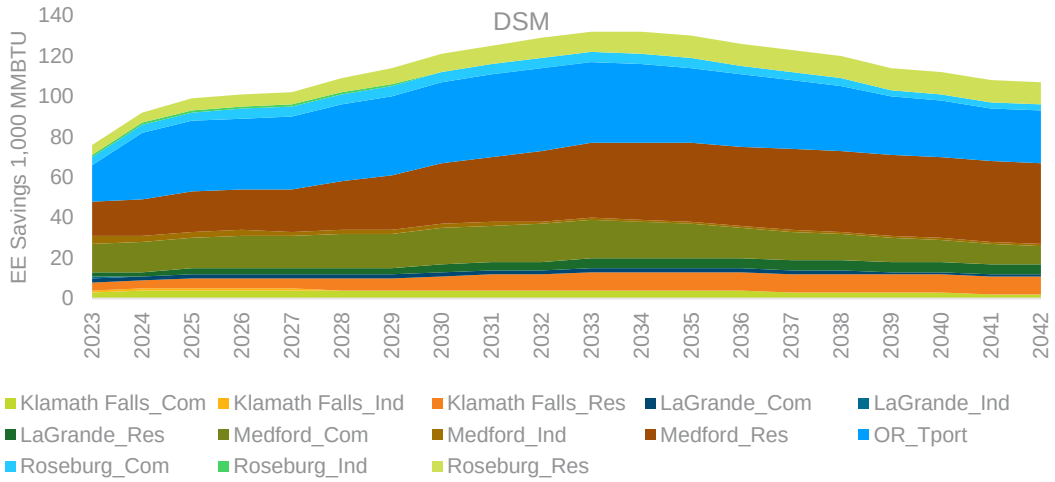
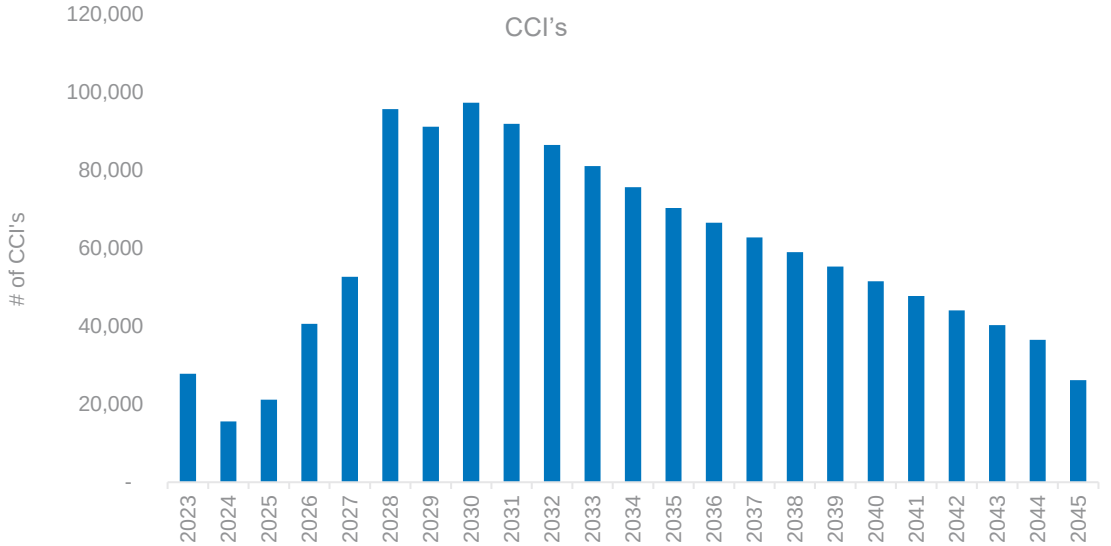
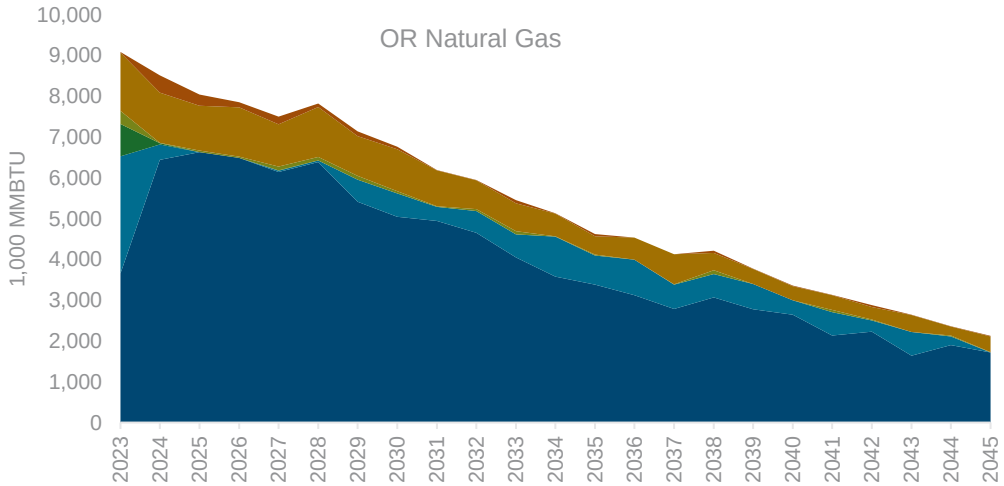
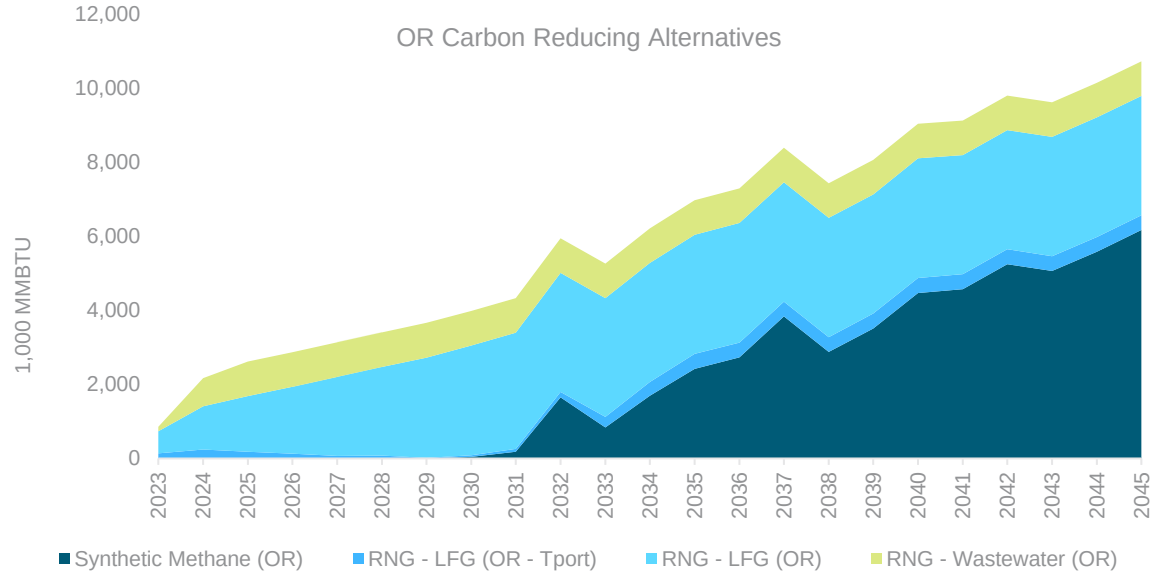
2043
2044
2045
AECO (ID)
Rockies (ID)
Spokane (ID)
Stanfield (ID)
Station 2 (ID)
Sumas (ID)

Oregon


DSM
EE Savings 1,000 MMBTU
140
120
100
80
60
40
20
0
2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042
Klamath Falls_Com
Klamath Falls_Ind
Klamath Falls_Res
LaGrande_Com
LaGrande_Ind
LaGrande_Res
Medford_Com
Medford_Ind
Medford_Res
OR_Tport
Roseburg_Com
Roseburg_Ind
Roseburg_Res


CCI's
# of CCI's
120,000
100,000
80,000
60,000
40,000
20,000
-
2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045


OR Natural Gas
1,000 MMBTU
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045
AECO (OR)
Malin (OR)
Rockies (OR)
Stanfield (OR)
Station 2 (OR)
Sumas (OR)


OR Carbon Reducing Alternatives
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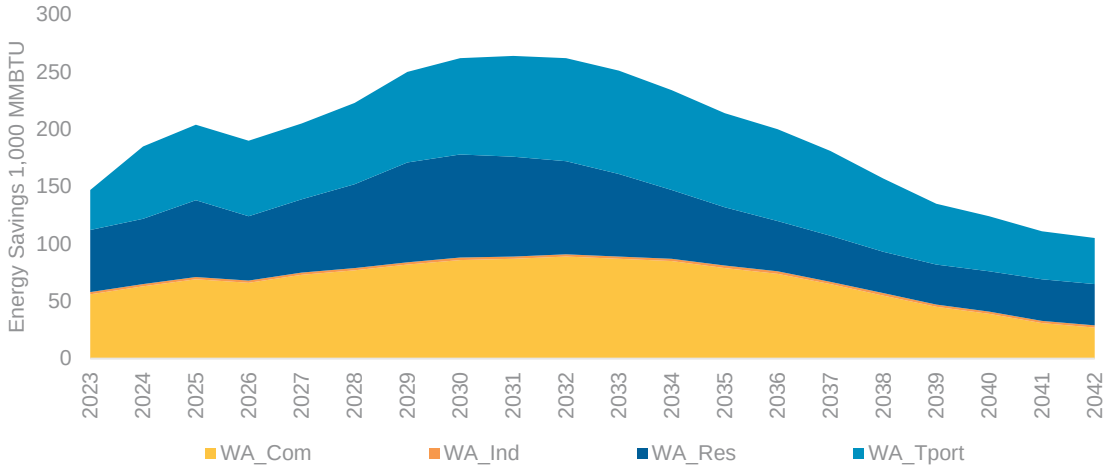
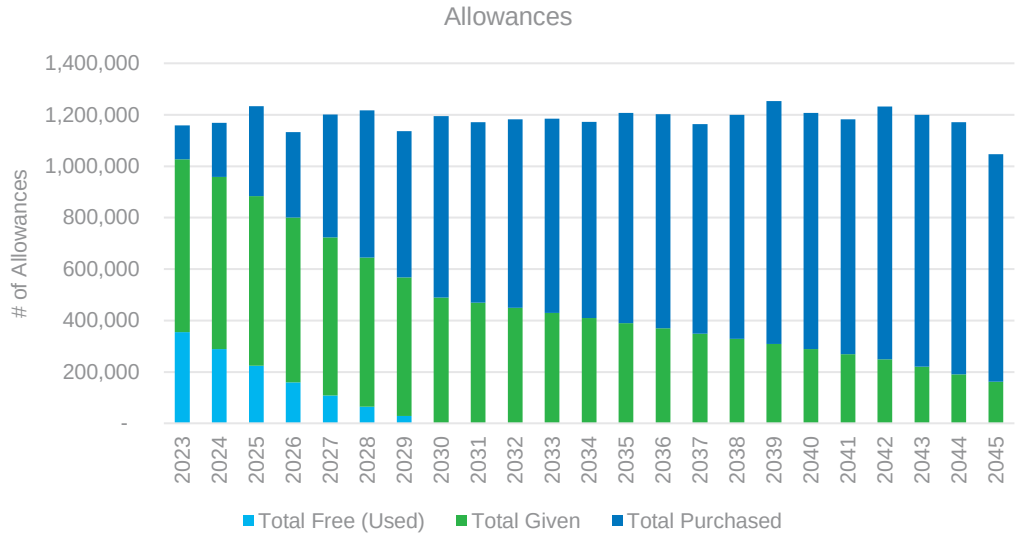
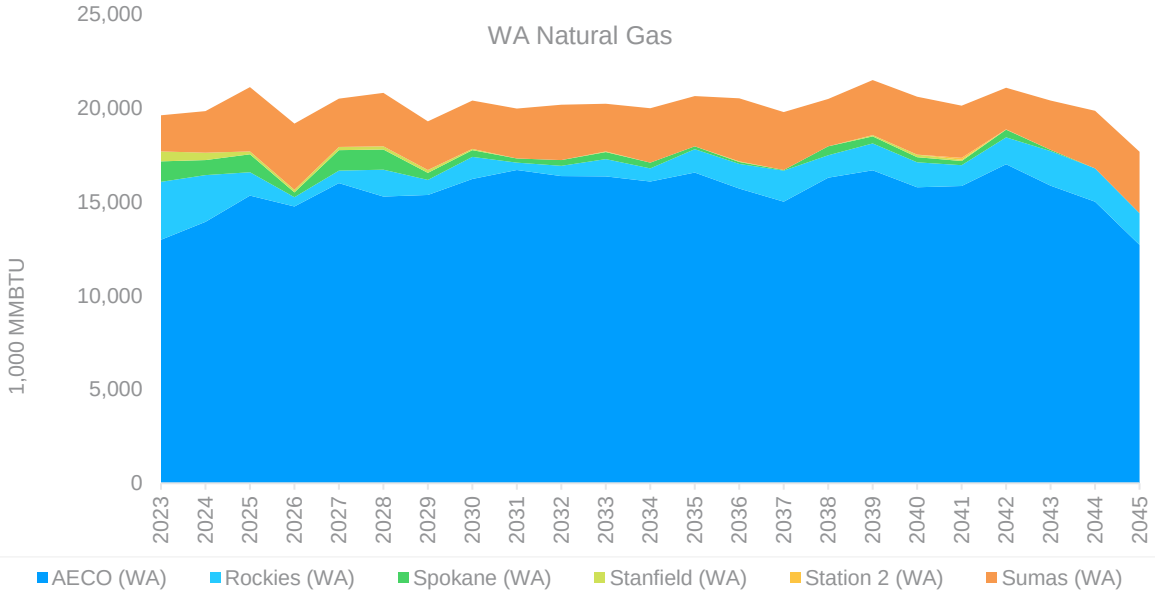
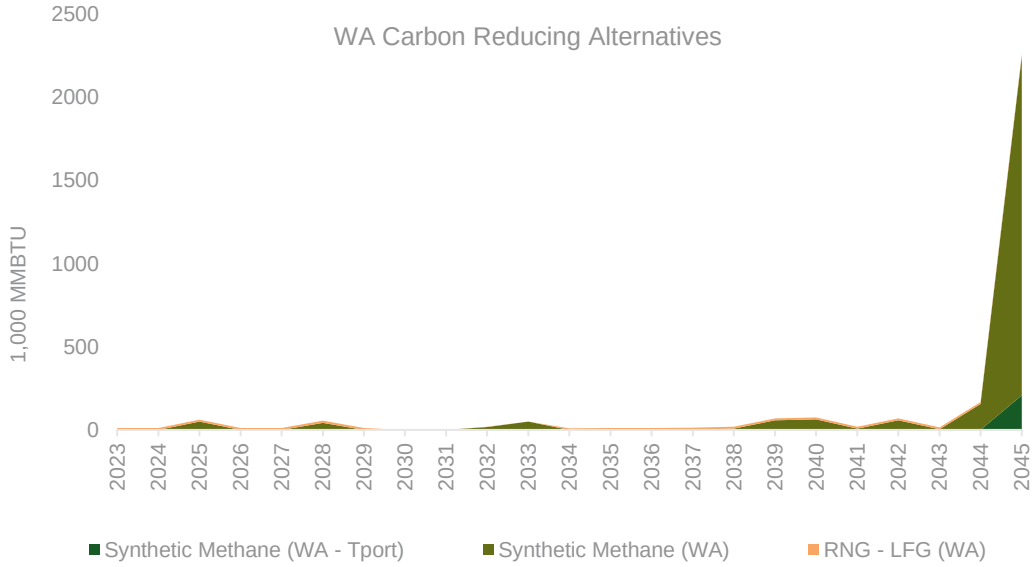
12,000
10,000
8,000
6,000
4,000
2,000
0
2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045
Synthetic Methane (OR)
RNG - LFG (OR - Tport)
RNG - LFG (OR)
RNG - Wastewater (OR)

Washington

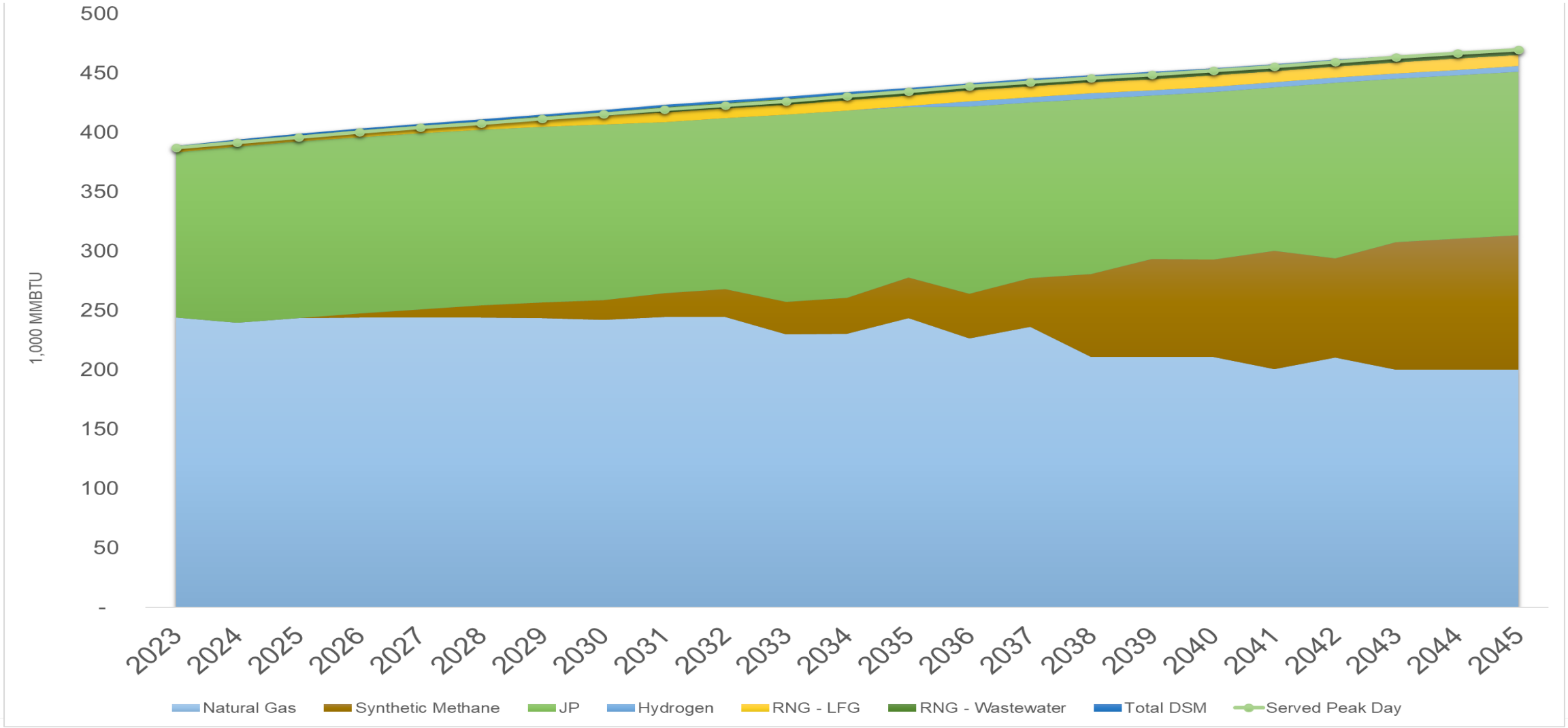

Energy Savings 1,000 MMBTU
300
250
200
150
100
50
0
2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042
WA_Com
WA_Ind
WA_Res
WA_Tport


Allowances
# of Allowances
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
-
2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045
Total Free (Used)
Total Given
Total Purchased


WA Natural Gas
1,000 MMBTU
25,000
20,000
15,000
10,000
5,000
0
2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045
AECO (WA)
Rockies (WA)
Spokane (WA)
Stanfield (WA)
Station 2 (WA)
Sumas (WA)

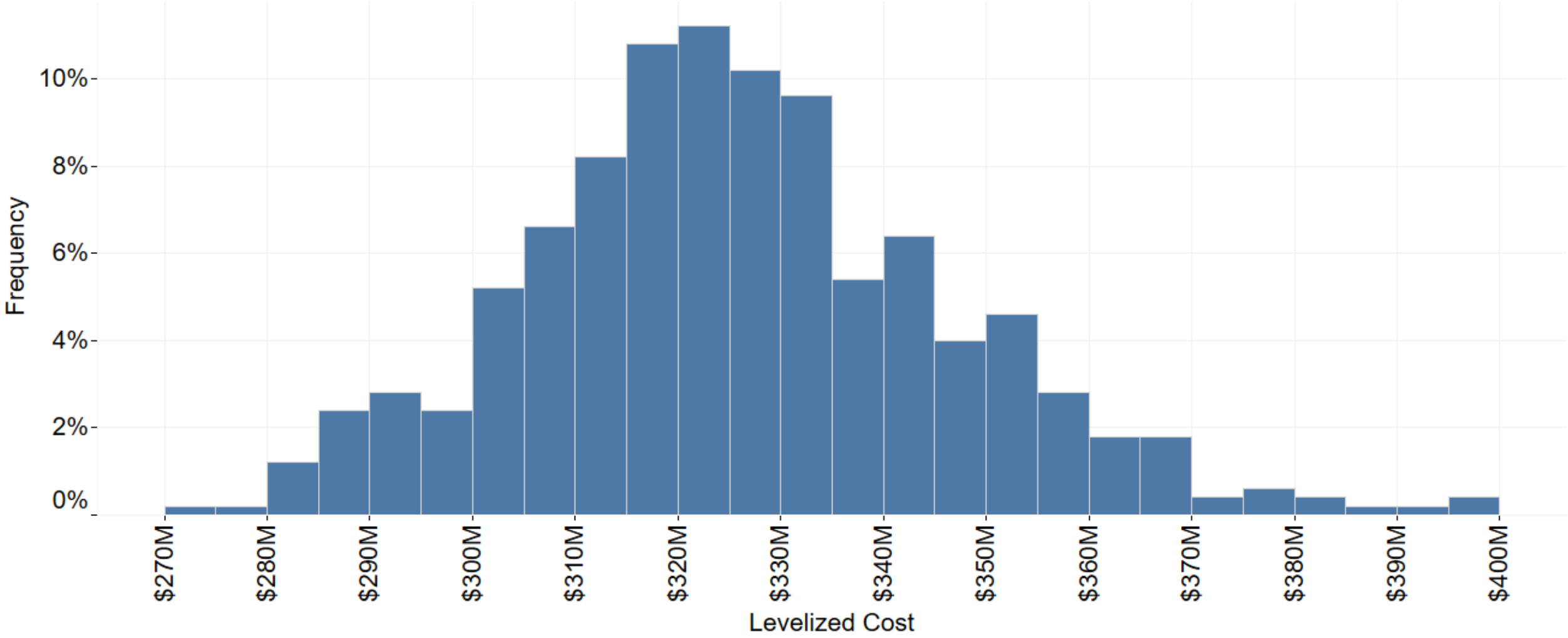

WA Carbon Reducing Alternatives
1,000 MMBTU
2500
2000
1500
1000
500
0
2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045
Synthetic Methane (WA - Tport)
Synthetic Methane (WA)
RNG - LFG (WA)

PRS - System Peak Day

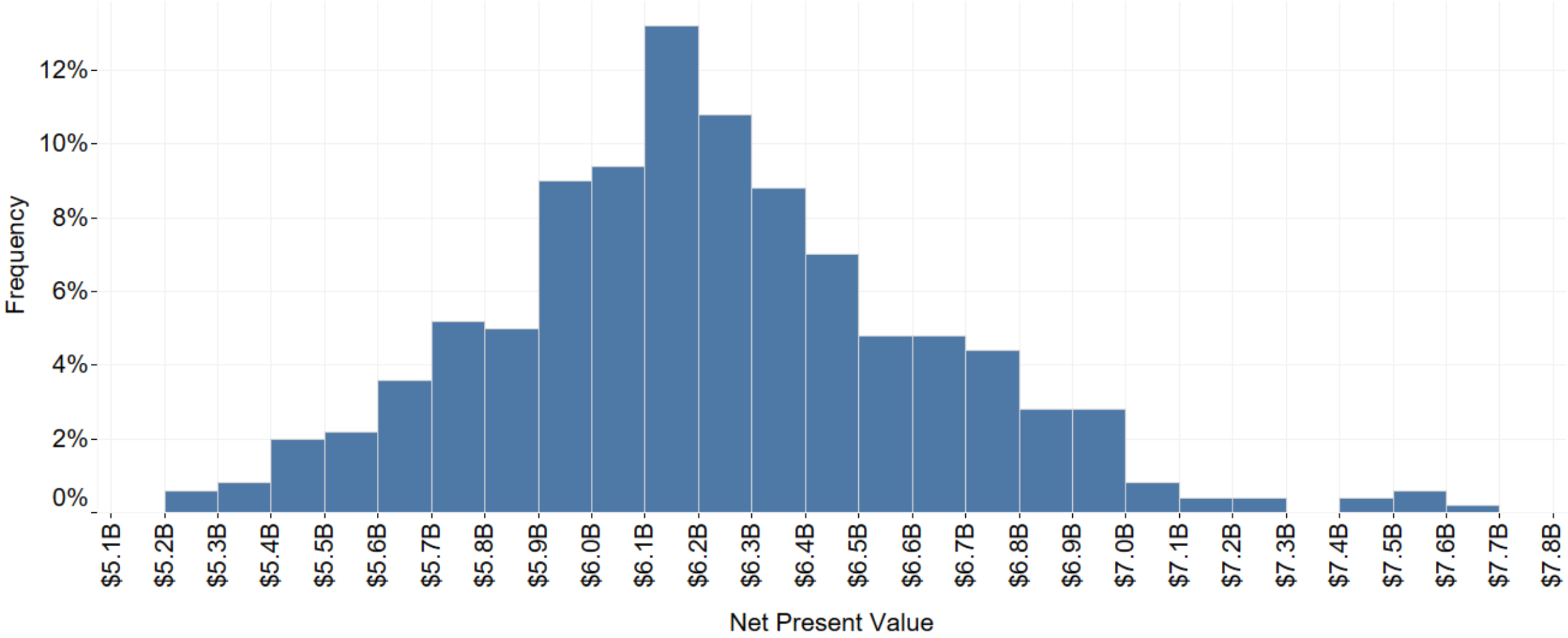


Residential PGA Impact

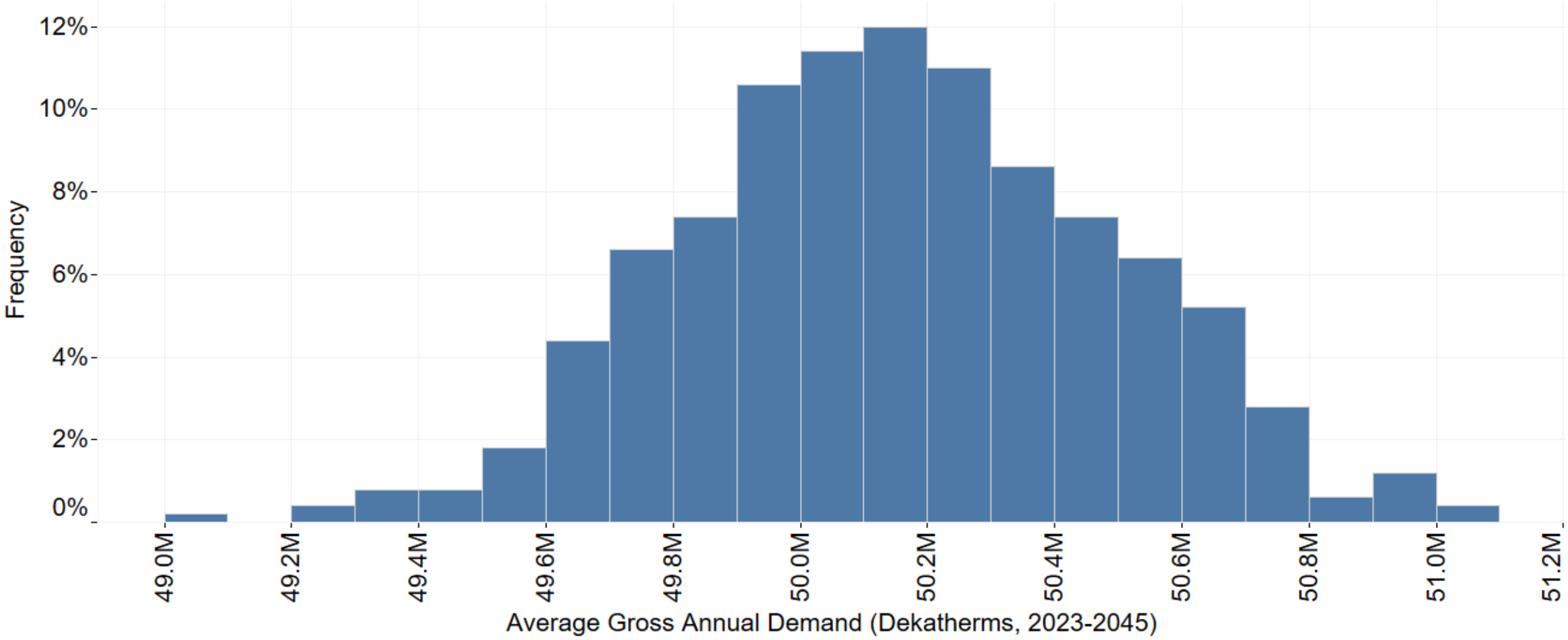
Monte Carlo – Levelized System Cost (500 Draws)



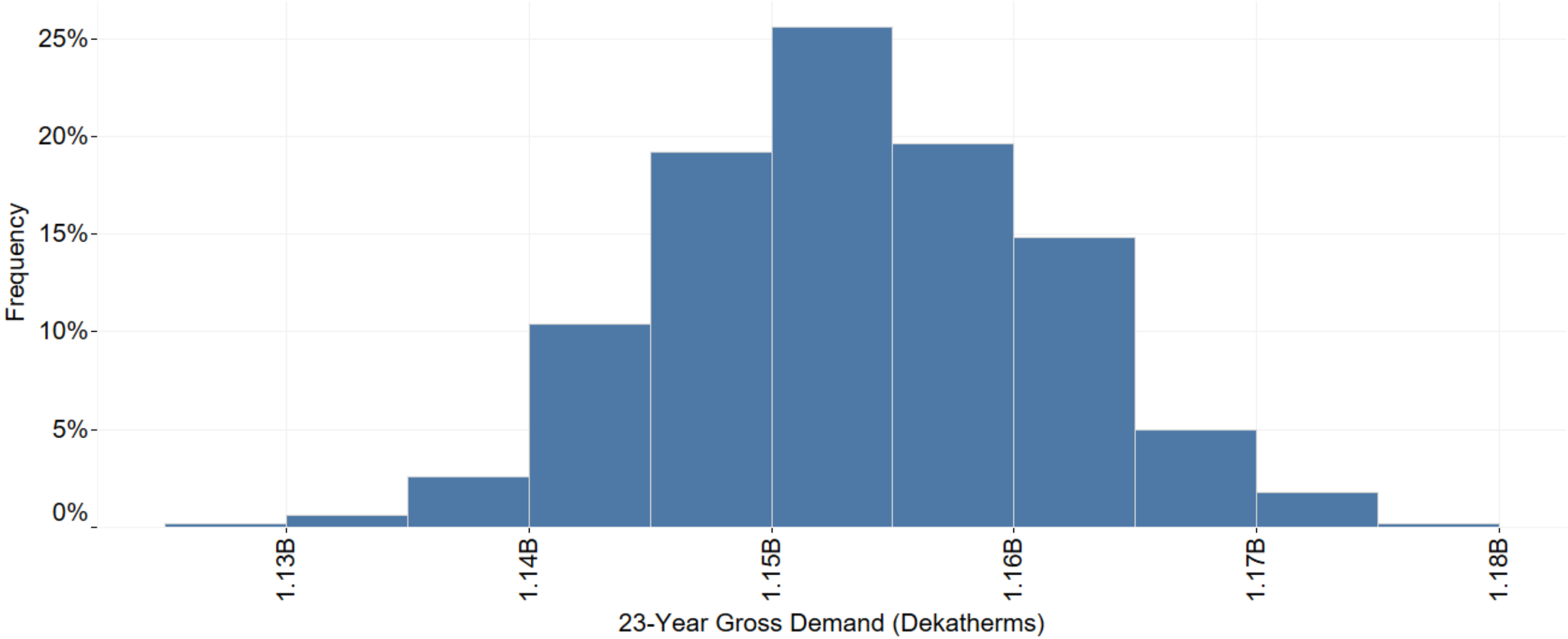
Monte Carlo – System Cost Net Present Value (500 Draws)



Monte Carlo – Average Annual Gross System Demand (500 Draws)



Monte Carlo – Gross System Demand 2023-2045 (500 Draws)



Scenario Results

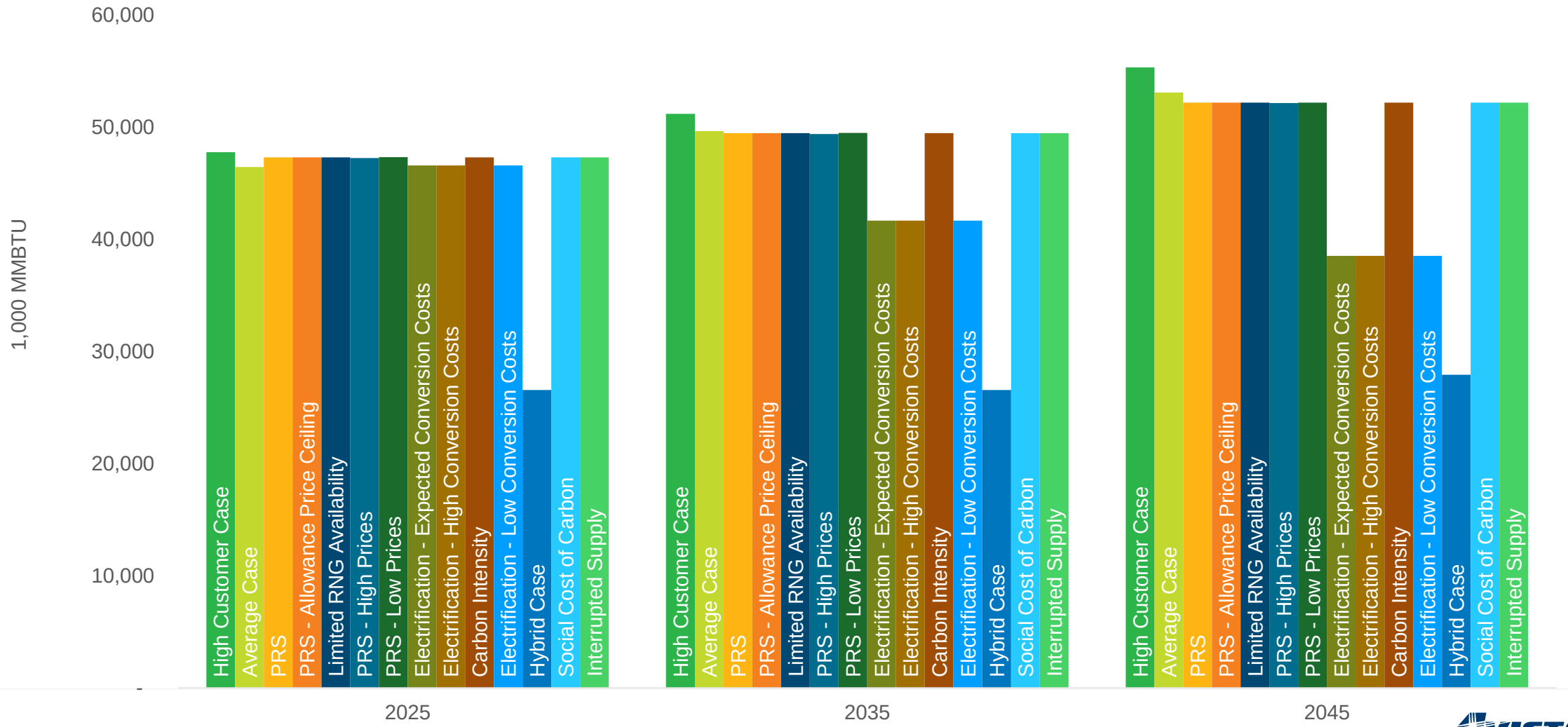
Scenarios

- **Preferred Resource Case** – Our expected case based on assumptions and costs with a least risk and least cost resource selection
- **Preferred Resource Case Low Prices** – Same as PRS, but includes low price curve for natural gas
- **Preferred Resource Case High Prices** - Same as PRS, but includes high price curve for natural gas
- **Preferred Resource Case CCA Ceiling Prices** – Same as PRS, but our expected case based on assumptions with a yearly ceiling price for allowances in the CCA program
- **Electrification Expected Conversion Costs –** Expected conversion costs case to show the risk involved with energy delivered through the natural gas infrastructure moving to the electric system
- **Electrification Low Conversion Costs –** A low conversion cost case to show the risk involved with energy delivered through the natural gas infrastructure moving to the electric system
- **Electrification High Conversion Costs** - A high conversion cost case to show the risk involved with energy delivered through the natural gas infrastructure moving to the electric system
- **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
- **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
- **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
- **Hybrid Case** – Natural Gas used for space heat below 40º F while transferring all other usage to electricity.

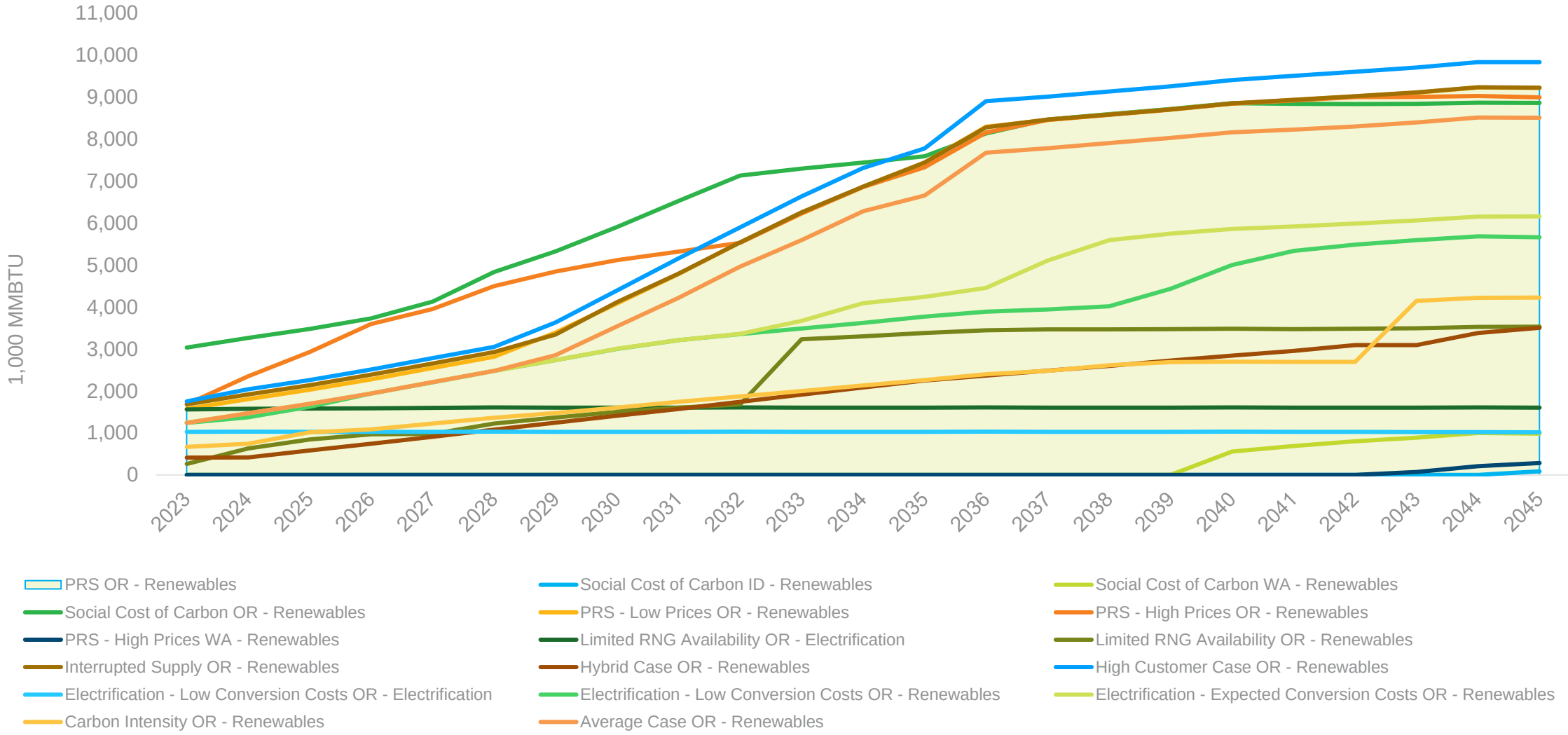
Scenario Analysis

- Uncertainty in future outcomes
- Understanding potential future outcomes through varying scenarios can help determine risk levels

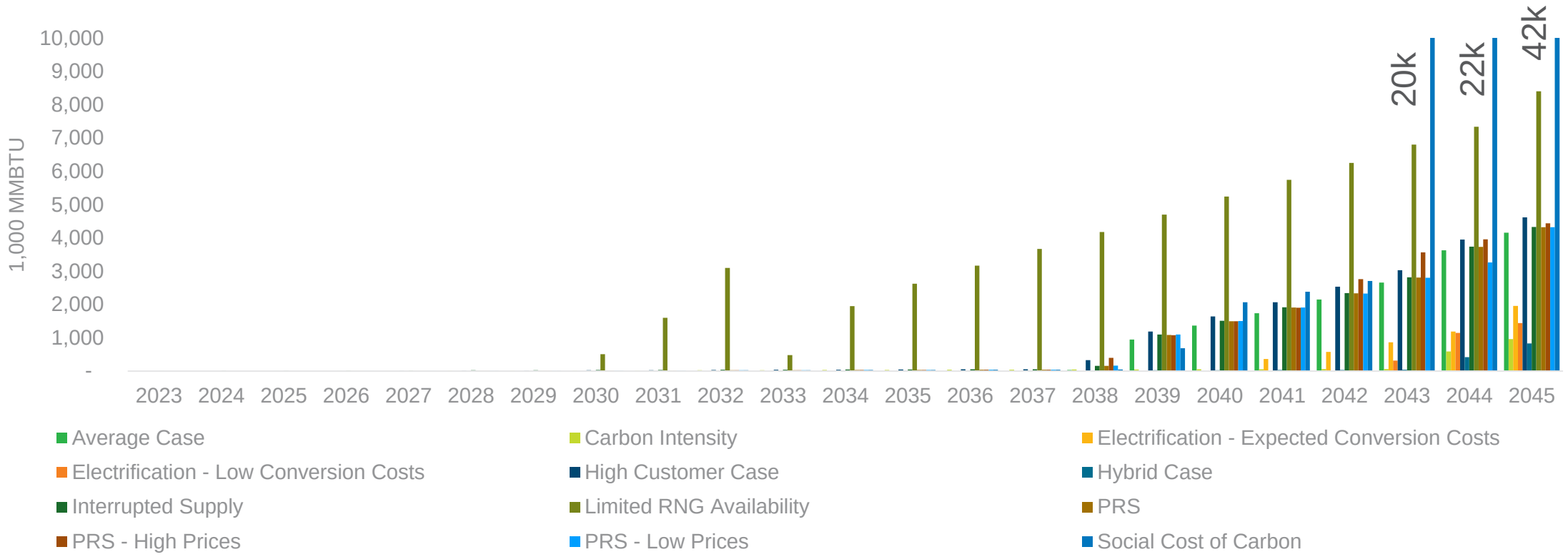
System Demand by Scenario



RNG Supply

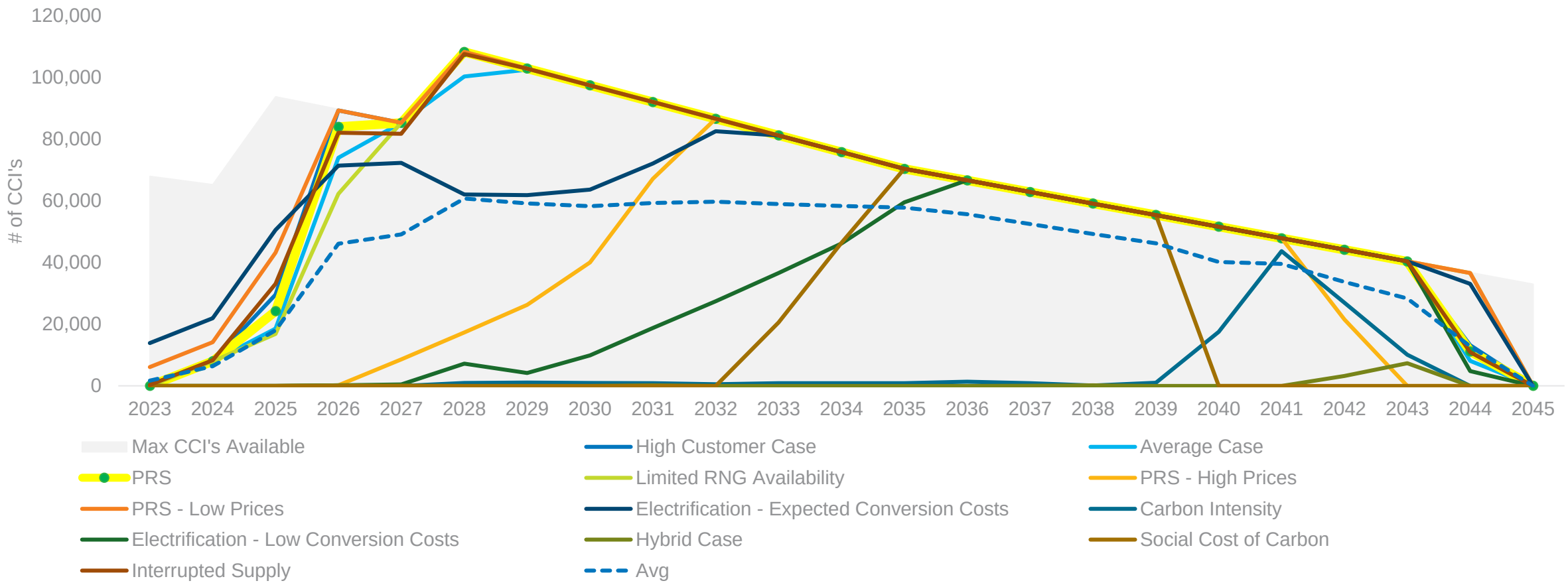

11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000 MMBTU
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
2044
2045
PRS OR - Renewables
Social Cost of Carbon ID - Renewables
Social Cost of Carbon WA - Renewables
Social Cost of Carbon OR - Renewables
PRS - Low Prices OR - Renewables
PRS - High Prices OR - Renewables
PRS - High Prices WA - Renewables
Limited RNG Availability OR - Electrification
Limited RNG Availability OR - Renewables
Interrupted Supply OR - Renewables
Hybrid Case OR - Renewables
High Customer Case OR - Renewables
Electrification - Low Conversion Costs OR - Electrification
Electrification - Low Conversion Costs OR - Renewables
Electrification - Expected Conversion Costs OR - Renewables
Carbon Intensity OR - Renewables
Average Case OR - Renewables

Synthetic Methane

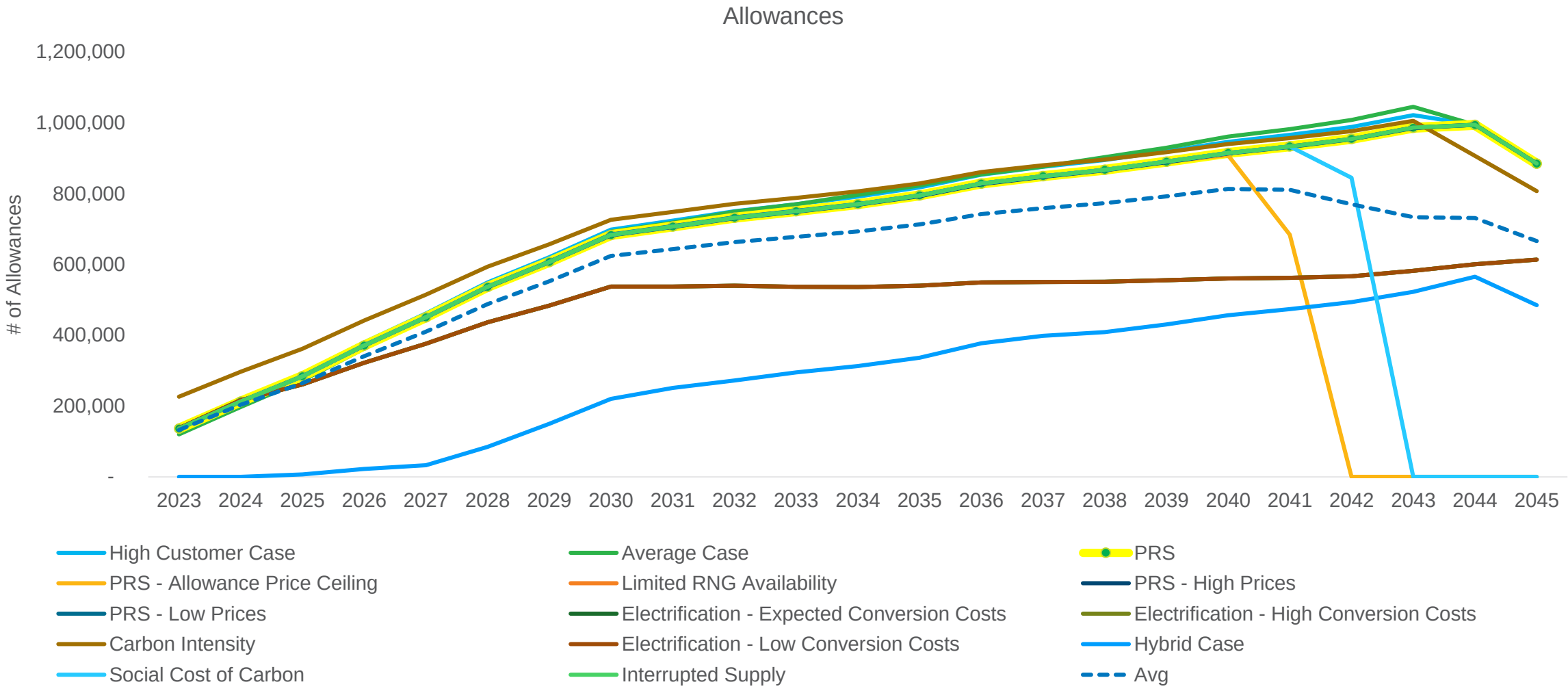


Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Average Case	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	948	1,364	1,735	2,148	2,657	3,627	4,152
Carbon Intensity	-	-	0	4	7	10	13	17	20	24	27	31	34	38	41	44	48	51	55	58	61	589	960
Electrification - Expected Conversion Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	362	575	865	1,187	1,953
Electrification - Low Conversion Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	316	1,148	1,438
High Customer Case	-	-	3	7	11	15	20	24	28	32	37	41	45	50	54	329	1,187	1,642	2,069	2,532	3,026	3,947	4,615
Hybrid Case	-	-	-	-	-	-	-	-	-	1	4	8	11	15	18	21	25	28	31	34	38	413	827
Interrupted Supply	5	9	13	17	20	24	27	30	34	37	41	44	48	51	55	155	1,095	1,506	1,914	2,341	2,817	3,737	4,325
Limited RNG Availability	-	-	-	4	7	10	13	506	1,597	3,097	477	1,946	2,624	3,168	3,669	4,174	4,699	5,243	5,743	6,251	6,804	7,338	8,401
PRS	-	-	-	3	7	10	13	17	20	24	27	31	34	38	41	154	1,081	1,497	1,905	2,332	2,810	3,726	4,318
PRS - High Prices	-	-	-	3	6	10	13	16	20	23	27	30	34	37	41	399	1,076	1,493	1,902	2,761	3,567	3,953	4,437
PRS - Low Prices	-	-	-	3	7	10	14	17	20	24	27	31	34	38	41	162	1,094	1,504	1,907	2,329	2,804	3,261	4,318
Social Cost of Carbon	-	-	-	3	7	10	13	17	20	24	27	31	34	38	41	44	687	2,068	2,380	2,703	20,729	22,664	42,385

Oregon
Community Climate Investments



Washington
Allowances and/or Offsets



If offset projects are cheaper than allowance price, an offset will be purchased

Levelized Cost 2023 – 2042

*Natural gas system cost only

WA GRC Commitments Applicable to Natural Gas IRP

December 15, 2022

Shawn Bonfield, Sr. Manager of Regulatory Policy & Strategy

WA General Rate Case Natural Gas Transition Issues

Avista agrees to include in its 2023 Natural Gas IRP, a natural gas system decarbonization plan for complying with the Climate Commitment Act.

i. The Natural Gas IRP's decarbonization plan shall include a supply curve of decarbonization resources by price and availability, e.g. energy efficiency bundle 1 costs X$/ton of carbon dioxide equivalent (CO2e) reduction and can reduce Y tons of CO2e, dairy RNG costs A$/ton and can reduce B tons of CO2e.

ii. The decarbonization plan shall consider a comprehensive set of strategies, programs, incentives and other measures to encourage new and existing customers to adopt fully energy efficient appliances and equipment or other decarbonization measures, which could include electrification.

iii. The decarbonization plan shall include targets for the ratio of new gas customers added relative to new electric customers added in future years.

WA General Rate Case CCA Commitments

Within 60 days of the adoption of the final Department of Ecology rules), Avista will begin consulting with its applicable advisory groups concerning its plans for complying with the CCA for electric and gas service, and the terms of any future tariff filing, including the following:

i. Reporting requirements for the consignment of no-cost allowances for the benefit of ratepayers,

ii. The accounting treatment of any proceeds from the consignment of allowances, and

iii. The investment of any proceeds from the sale of allowances during the rate plan including investments in projects that provide benefits to ratepayers including, but not limited to, weatherization, decarbonization, conservation and efficiency services, and bill assistance. (RCW 70A.65.130)

Note: Department of Ecology final rules adopted on September 29th and go into effect on October 30th with program beginning on January 1st. Avista provided initial CCA Overview provided at September 29th TAC Meeting.

CCA Deferred Accounting Petition

- Filed CCA deferred accounting petition on November 1st for natural gas costs and revenues related to compliance with the CCA
- Expect to begin incurring compliance costs in Q1 2023.
- Expect to receive revenues from consigned allowances in Q3 2023.
- Proposed to file annual tariff revisions to recover deferred costs. Current thinking is to begin recovery on November 1, 2023.
- Did not include proposal for what to do with revenues as more conversation is needed with WUTC.

Regulatory Next Steps for CCA Compliance

- Expect deferred accounting petition to be processed by WUTC in January 2023.
- WUTC initiating CCA compliance discussions in Q1 2023
- Thinking through needed rate schedule changes for allocating costs and revenues attributed to CCA.
  - Continuation of low-income bill discount tariff.
  - Transport customers – separating those above and below 25,000 MTC02e.
  - General Service – separating those on the system before and after July 25, 2021.
  - Special Contracts - separating those above and below 25,000 MTC02e.
  - Tariff riders for CCA costs and benefits and which rate schedules tariff riders are applicable to.

Key Regulatory CCA Questions

- How are low-income customers determined?
- Can low-income customers not be charged CCA compliance costs to avoid complexity of providing them bill credits to offset costs?
- What is “reasonable distance” when considering RNG resources? (Note: Ecology expected to release guidance on RNG reporting soon.)
- What falls into the category of “decarbonization” that revenues from no-cost allowances can be used for?

Action Items

2025 Natural Gas IRP

Oregon Action Items

- Purchase Community Climate Investments for compliance to the Climate Protection Plan for years 2022, 2023 and 2024 to comply with emissions levels
- ETO identified 2023 gross savings of 546 thousand therms in the IRP verses 427 thousand therms of planned savings in the 2023 ETO Budget and Action Plan. Work with ETO to meet IRP gross savings target of 568 thousand therms in 2024
- New program offered by ETO for interruptible customers in 2023 to save 15 thousand therms.
- Engage stakeholders to explore additional new offerings for interruptible, transport and low-income customers to work towards identified savings of 375 thousand therms in 2024
- Acquire 8.64 million therms of RNG in 2023 and 21.80 million therms of RNG in 2024

Washington Action Items

- Purchase Allowances or offsets for compliance to the Climate Commitment Act for years 2023 and 2024 to comply with emissions levels
- Begin to offer a transport customer EE program by 2024 with the goal of saving 35 thousand therms
- Explore methods for using Non Energy Indicators (NEI) in future IRP analysis

Other Action Items

- Explore modeling alternatives like end use model to compliment time series

Next Steps

Next Steps

- Include Monte Carlo risk analysis and send out prior to IRP draft
- Determine electricity costs for Hybrid scenario
- Review RPF and incorporate selection in IRP
- Draft IRP January 25, 2023
- Virtual Public meeting March 8, 2023
- File final IRP March 31, 2023

2023 – Avista Natural Gas IRP