Energy Efficiency Avoided Costs UM 1893

November 4, 2021

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Oregon Public Utility Commission

Agenda

10:30	Schedule and 2022 topics
10:40	First look: Electric
11:20	First look: Gas
12:00	Adjourn

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Process Timelines

	2021				2022				2023	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Budget			Budget planning	Approve 2021 budget	New budget process		Budget planning	Approve 2022 budget		
	2021 budget in effect				2022 budget in effect				2023 budget in effect	
Metrics					2023 Environmental Justic metrics development ->					
	Approved 2021 metrics				Approve 2022 metrics				Approve 2023 metrics	
	2021 metrics in effect				2022 metrics in effect				2023 metrics in effect	
Avoided cost				Approve **2023** AC	GHG compliance cost updates			Approve 2024 AC	2023 AC in effect	

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UM 1893 Schedule

11/4/21	First look at numbers
11/31/21	Commission Public Meeting with final recommendations
Q1 2022	Meet to discuss social cost of carbon implementation and other topics of interest
8/16/2022	Any changes to data collection forms finalized
10/17/2022	Submissions due
12/2022	Commission Public Meeting with final recommendations

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Comment Request

Staff requested comments on implementing carbon compliance values.

Staff welcomes immediate suggestions on:

a) Elements to explore in the forthcoming discussion
b) Actions utilities could more immediately take to align energy efficiency investments to meet sector clean energy goals

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Possible Topics for 2022

In addition to greenhouse gas (GHH) compliance cost (EO 20-04):

- Capacity (UM 2011) <- Special Public Meeting Nov. 4
- Improved peak modeling
- Budget tie-ins?

Staff is open to other suggestions!

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Today's Review

Energy Trust will present a preliminary look at submitted numbers.

As Energy Trust goes through these numbers, we ask:

- Are any inconsistent with what you submitted?
- Does anything stand out for Staff to investigate?
- Alternate numbers that Staff should focus on?

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On to our review…

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Overview of 2023 Draft Avoided Costs for Oregon

UM 1893 Workshop Presentation

November 4th, 2021

Energy Trust of Oregon

Avoided Cost Background

Avoided Costs Definition

- The costs a utility would have otherwise had to pay to provide energy through utility supply side resources and delivery infrastructure if demand side energy resources, such as energy efficiency, had not been brought into implementation.

What Are Avoided Costs?

- Stream of forecasted values over the next 20 years extended to cover the measure lives of the most long lived measures
- Different end uses have different values based on whether they save during utility peak periods
- They are the primary component of value in the numerator of the Benefit/Cost ratio we use to screen measures and programs for cost-effectiveness
- Energy Trust calculates blended avoided costs for gas and for electric to apply for cost-effectiveness screening throughout our territory

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Avoided Costs Updates

- Energy Trust routinely updates avoided costs to reflect the current value of electric and gas energy efficiency
- We are in process of updating avoided costs for 2023 planning and reporting
- The last time we updated avoided costs for OR was at the end of 2020 for 2022 planning
- We will update avoided costs again in Fall/Winter 2022/2023 for 2024 planning

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Draft Electric Avoided Cost Updates

Key Components of Electric Avoided Costs

1. Energy Price Forecasts
   - includes embedded carbon value
2. Avoided Transmission & Distribution (T&D) capacity deferral value
3. Avoided generation capacity deferral value
4. Regional 10% conservation credit
5. Utility risk reduction value

Comparison of Electric Avoided Cost Inputs

Avoided Cost Element		Pacific Power				Portland General Electric			
		PAC Current (2022 AC)	PAC 2019 IRP Submission	PAC Alternative Submission	Final Inputs for 2023 Avoided Cost	PGE Current (2022 AC)	PGE 2019 IRP Submission	PGE Alternative Submission	Final Inputs for 2023 Avoided Cost
Global Assumptions	Inflation Rate	2.28%	2.28%	2.16%	IRP	2.05%	2.05%	N/A	IRP
	Real Discount Rate	4.54%	4.54%	4.63%	IRP	4.41%	4.41%	N/A	IRP
	Regional Act Credit	10.00%	10.00%	10.00%	IRP	10.00%	10.00%	N/A	IRP
T&D Line Losses	Transmission Loss Factor	3.50%	3.50%	3.50%	IRP	1.90%	1.90%	N/A	IRP
	Distribution Loss Factor, Commercial	3.69%	3.69%	3.69%	IRP	4.15%	4.15%	N/A	IRP
	Distribution Loss Factor, Industrial	3.20%	3.20%	3.20%	IRP	1.45%	1.45%	N/A	IRP
	Distribution Loss Factor, Residential	4.46%	4.46%	4.46%	IRP	4.74%	4.74%	N/A	IRP
Transmission Capacity Value	Transmission Deferral Credit	$4.16	$4.16	$ 6.34	IRP	$9.38	$9.38	N/A	IRP
	Seasonal Capacity Split - Summer	50%	48%	39%	Current	50%	50%	N/A	IRP
	Seasonal Capacity Split - Winter	50%	52%	61%	Current	50%	50%	N/A	IRP
	Deficiency start year	2022	2018	2021	IRP	2022	2022	N/A	IRP
Distribution Capacity Value	Distribution Deferral Credit	$9.20	$9.20	$ 13.38	IRP	$24.39	$24.39	N/A	IRP
	Seasonal Capacity Split - Summer	50%	57%	90%	Current	50%	50%	N/A	IRP
	Seasonal Capacity Split - Winter	50%	43%	10%	Current	50%	50%	N/A	IRP
	Deficiency start year	2022	2018	2021	IRP	2022	2022	N/A	IRP
Generation Capacity Value	Generation Capacity Credit	$83.76	$83.76	$ 83.76	IRP	$103.33	$103.33	N/A	IRP
	Seasonal Capacity Split - Summer	100.0%	92%	83%	Current	50.0%	50%	N/A	IRP
	Seasonal Capacity Split - Winter	0.0%	8%	17%	Current	50.0%	50%	N/A	IRP
	Deficiency start year	2022	2026	2026	Current	2022	2022	N/A	IRP
Other Values	Risk Reduction Value	$4.02	$3.88	$3.05	IRP	$3.00	$3.00	N/A	IRP
	Forward Market Prices	See Graph for Comparison			IRP	See Graph for Comparison			IRP

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Comparison of Electric Component Values from 2022 Avoided Costs and 2023 Draft Avoided Costs

Avoided Cost Component	2023 AC (Updated) Blended Value	2022 Blended Value	Percent Change
Inflation Rate	2.14%	2.14%	0.0%
Real Discount Rate	4.50%	4.50%	0.0%
Northwest Power Act 10% Credit	10.00%	10.00%	0.0%
Risk Reduction Value ($/MWh) ($ 2023)	$3.65	$3.71	-1.6%
Transmission Loss Factor	2.54%	2.54%	0.0%
Transmission Loss Credit ($/kW-yr.) ($ 2023)	$7.97	$7.97	0.0%
Distribution Loss Factor, Commercial	3.96%	3.96%	0.0%
Distribution Loss Factor, Industrial	2.15%	2.15%	0.0%
Distribution Loss Factor, Residential	4.63%	4.63%	0.0%
Distribution Credit ($/kW-yr.) ($ 2023)	$20.00	$20.00	0.0%
Generation Deferral Credit ($/kW-yr.) ($ 2023)	$103.39	$103.40	0.0%
Forward Market Prices	Varies	Varies	NA

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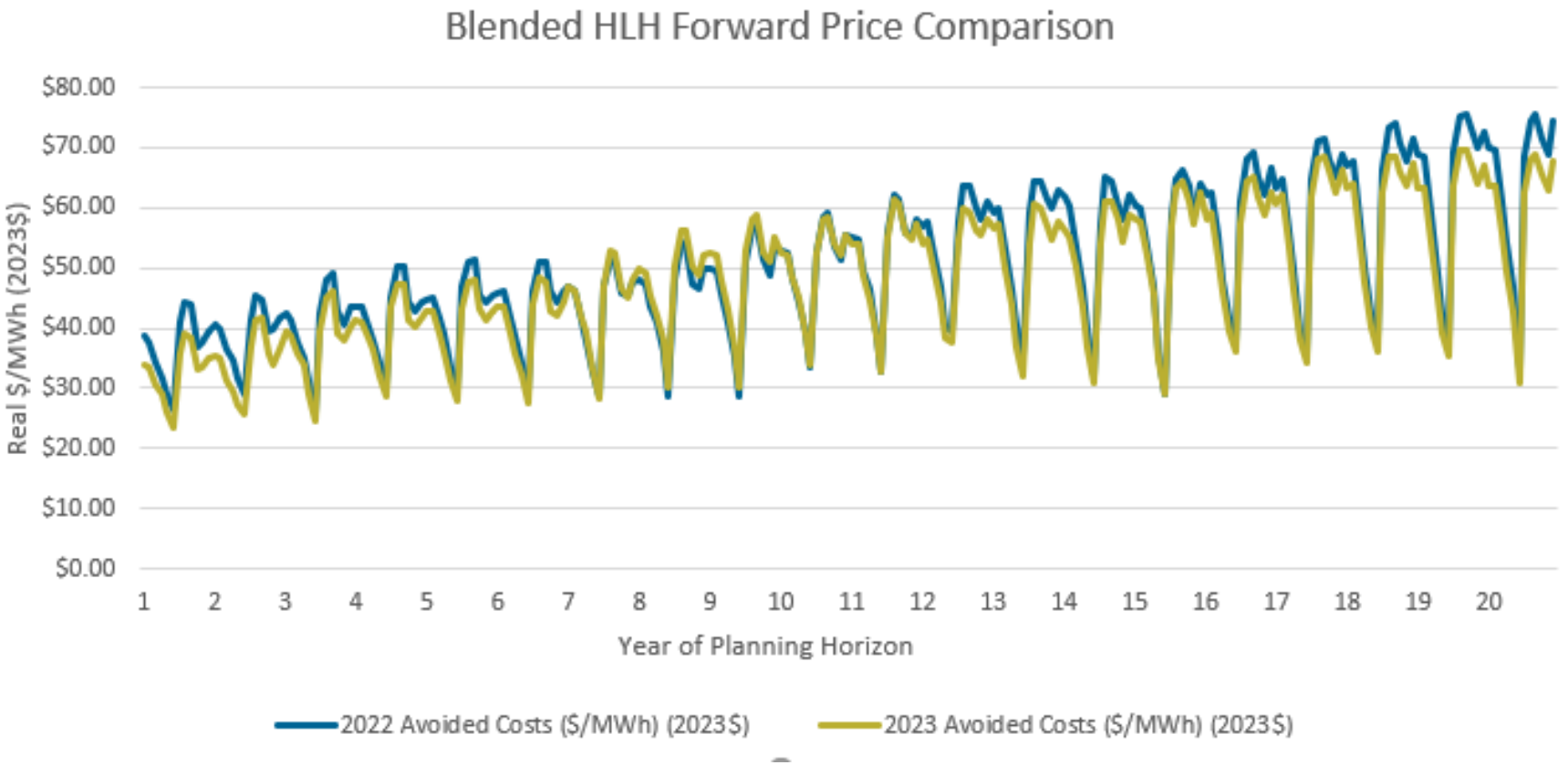
Blended High Load Hours Forward Price Comparison



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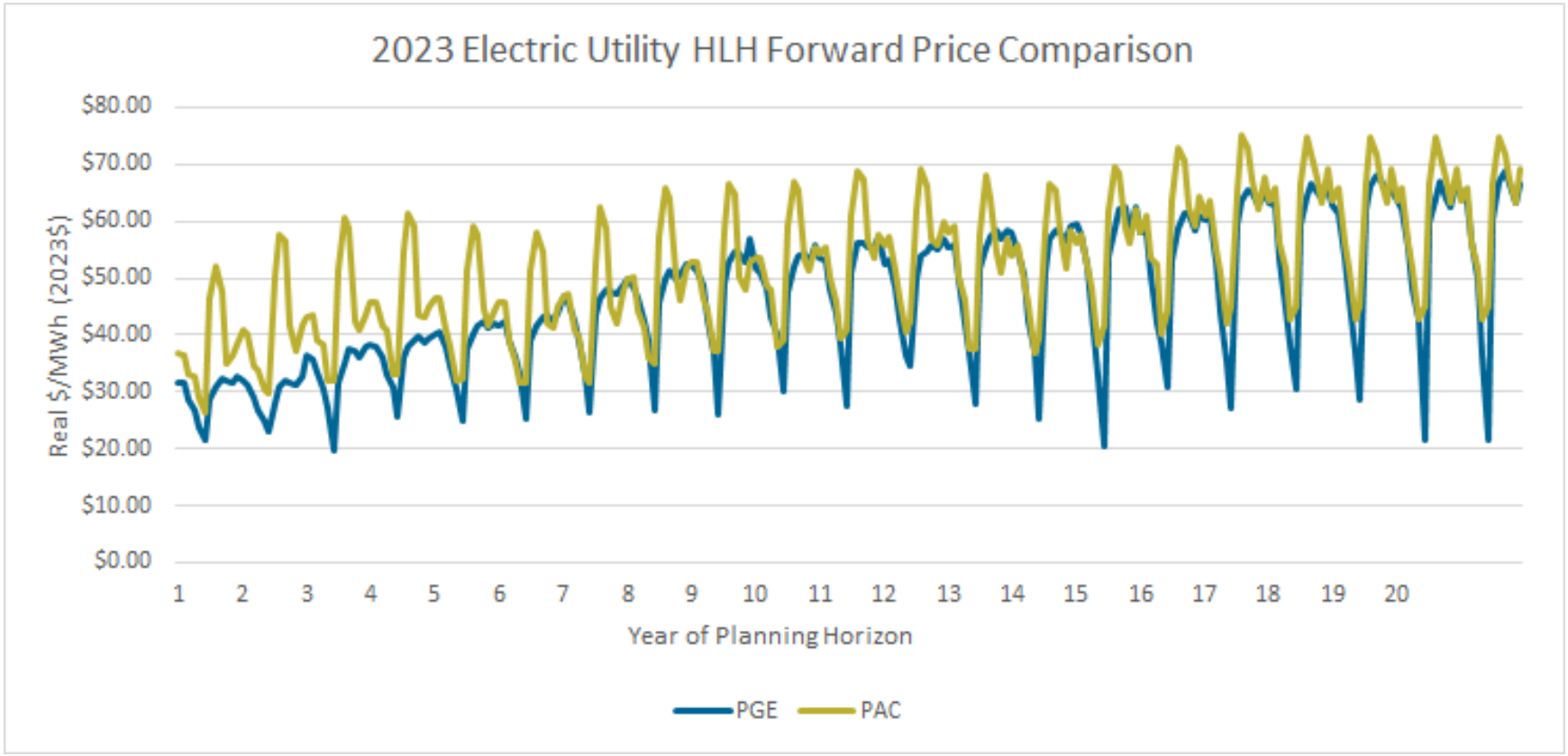
Electric Utility HLH Forward Price Comparison for 2023 Avoided Costs



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Electric Generation Capacity Deferral Value

- Values selected for draft calculations
  - Did not change for PGE or PacifiCorp
- Assumed
  - PGE system represents a 50% summer/50% winter split
  - PacifiCorp system represents 100% summer/0% winter split

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Electric Transmission and Distribution Capacity Deferral Value

- Values selected for draft calculations
  - Did not change for PGE or PacifiCorp

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Risk Reduction and NW Power Act Credit

- Blended risk reduction values went down by 1.6% compared to 2022 avoided costs
- NW Power Act Credit adds 10% to all values except for Risk Reduction Value

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Electric - Contribution of Each Component to Overall Weighted Average 2023 Avoided Cost Changes

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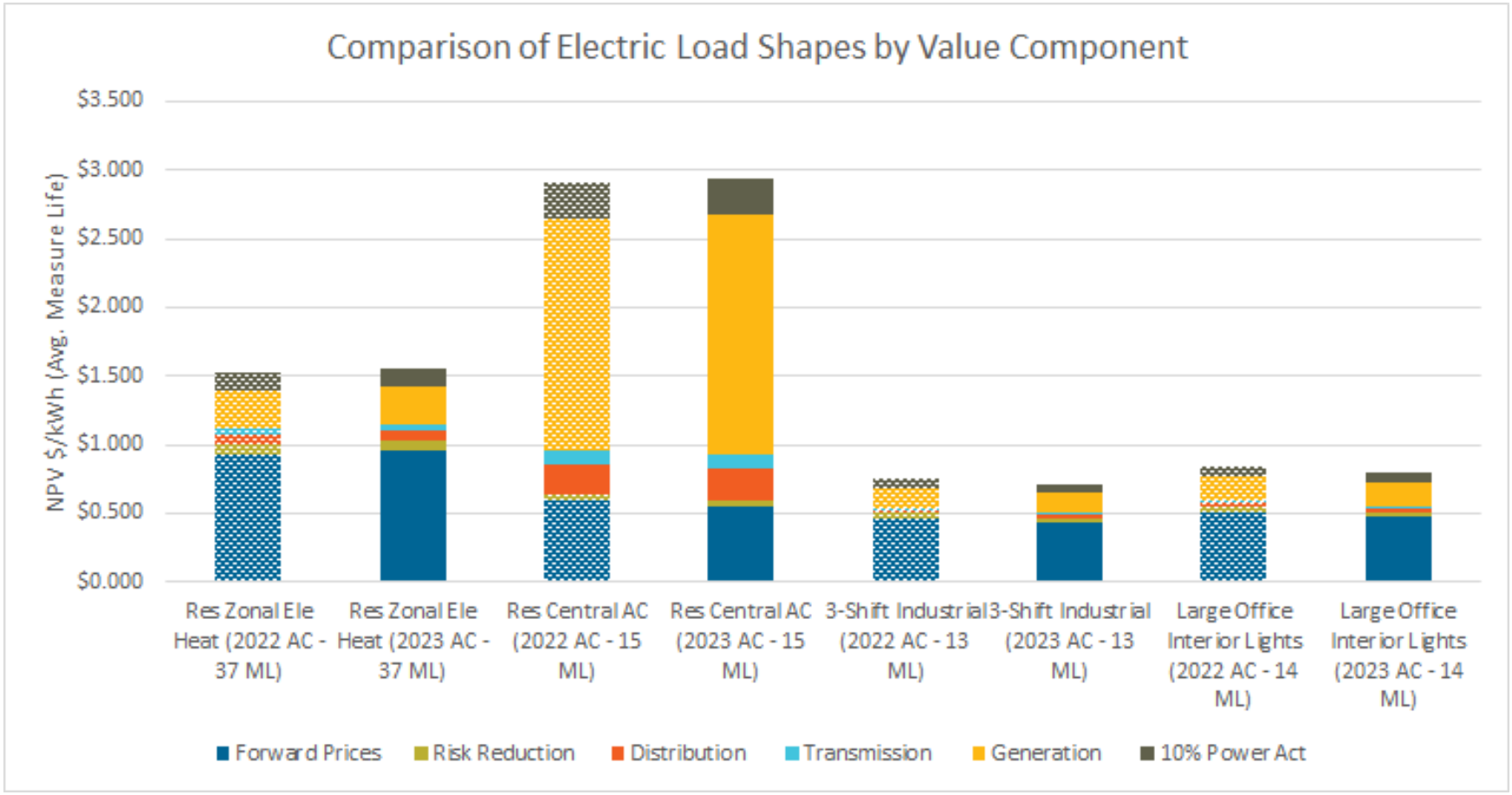
Comparison of Electric Load Shapes by Value Component



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Draft Gas Avoided Cost Updates

Key Components of Gas Avoided Costs

1. Gas Price Forecasts
2. Supply and Distribution Capacity Costs
3. Oregon State Carbon Policy Adder
4. Regional 10% conservation credit
5. Utility risk reduction value

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Comparison of Gas Avoided Cost Inputs

* Still under discussion

	Avoided Cost Element							
Input Vintage Description	Inflation Rate	Real Discount rate	Regional Act Credit	Commodity and Transport	Distribution Capacity - Hourly *	Supply Capacity	CO2 Compliance	Risk Reduction
	Percentage	Percentage	Percentage	$/Therm	$/Therm/Year	$/Therm/Year	$/Therm	$/Therm
Northwest Natural								
Selected Input for 2022 Avoided Cost (2022$)	1.96%	4.91%	10%		$240.88	$12.39	$0.16	$0.00
Current Submission - 2018 IRP Update (2023$)	2.25%	4.54%	10%	See Graph	$412.57	$13.29	$0.51	$0.06
Selected Input for 2023 Avoided Cost (2023$)	**2.25%**	**4.54%**	**10%**		**$412.57**	**$13.29**	**$0.51**	**$0.06**
2023 Avoided Cost Input Source	**Current IRP**	**Current IRP**	**Current IRP**	**Current IRP**	**Current IRP**	**Current IRP**	**Current IRP**	**Current IRP**
Cascade Natural Gas								
Selected Input for 2022 Avoided Cost (2022$)	3.68%	7.33%	10%		$1.27	$46.93	$0.15	$0.00
Current Submission - 2020 IRP (2023$)	3.72%	7.33%	10%	See Graph	$1.47	$4.01	$0.37	$0.00
Current Submission - ALT CO2 (2023$)	N/A	N/A	N/A	See Graph	N/A	N/A	$0.56	N/A
Selected Input for 2023 Avoided Cost (2023$)	**3.72%**	**7.33%**	**10%**		**$1.47**	**$4.01**	**$0.56**	**$0.00**
2023 Avoided Cost Input Source	**Current IRP**	**Current IRP**	**Current IRP**	**Current IRP**	**Current IRP**	**Current IRP**	**ALT CO2**	**Current IRP**
Avista								
Selected Input for 2022 Avoided Cost (2022$)	2.00%	4.36%	10%		$213.45	$0.07	$0.16	$0.00
Current Submission - 2021 IRP (2023$)	2.00%	4.36%	10%	See Graph	N/A	$0.06	$0.16	$0.00
Current Submission - ALT CO2 (2023$)	N/A	N/A	N/A	See Graph	N/A	N/A	$0.50	N/A
Selected Input for 2023 Avoided Cost (2023$)	**2.00%**	**4.36%**	**10.00%**		$358.49	**$0.06**	**$0.50**	**$0.00**
2023 Avoided Cost Input Source	**Current IRP**	**Current IRP**	**Current IRP**	**Current IRP**	**Blended NWN & CNG Value**	**Current IRP**	**ALT CO2**	**Current IRP**
Energy Trust								
Prior Blended Input for 2022 Avoided Cost (2022$)	**2.16%**	**4.50%**	**10%**	**See Graph**	**$211.42**	**$15.48**	**$0.17**	**$0.00**
Current Blended Input for 2023 Avoided Cost (2023$)	**2.17%**	**4.60%**	**10%**	**See Graph**	**$358.49**	**$2.32**	**$0.52**	**$0.05**
Percent Difference	**0.57%**	**2.22%**	**0.00%**		**69.56%**	**-85.05%**	**205.34%**	**Positive increase**

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Comparison of Gas Component Values from 2022 Avoided Costs and 2023 Draft Avoided Costs

Avoided Cost Component	2022 AC Blended Value	2023 AC (Updated) Blended Value	% Change
Inflation rate	**2.16%**	**2.17%**	**1%**
Real Discount rate	**4.50%**	**4.60%**	**2%**
Regional Act Credit	**10.00%**	**10.00%**	**0%**
Commodity and Transport Prices	**Varies**	**Varies**	**Varies**
Distribution Capacity - $/Therm/Year ($2022)	**$211.42**	**$358.49**	**70%**
Supply Capacity - $/Therm/Year ($2022)	**$15.48**	**$2.32**	**-85%**
CO2 Compliance - $/Therm ($2022)	**$0.17**	**$0.52**	**205%**
Risk Reduction	**$0.00**	**$0.04**	**0%**

Note: Risk reduction went up from zero, thus the percent difference is undefined

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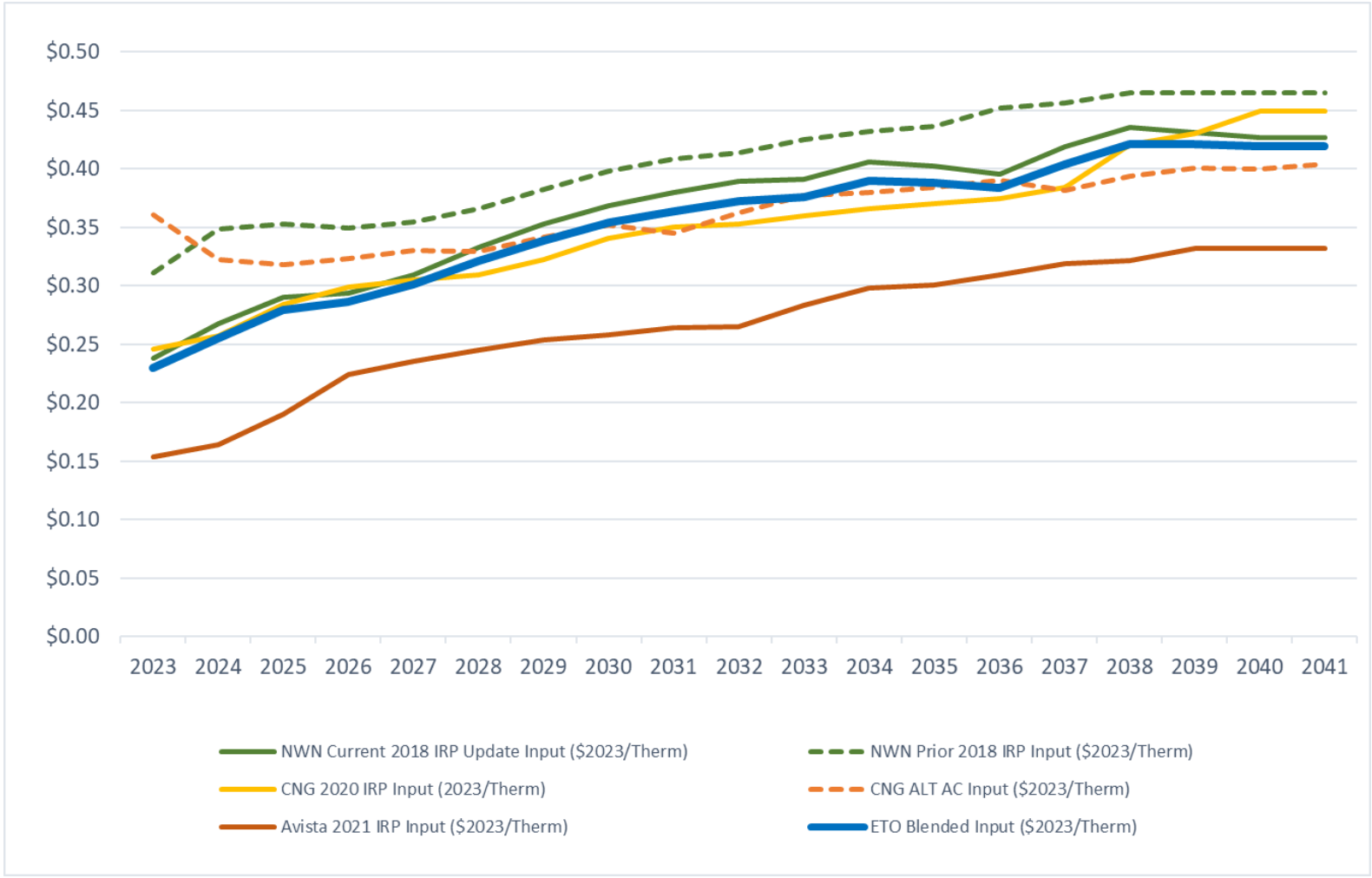
Gas Utility Commodity and Transport Price Comparison for 2023 Avoided Cost



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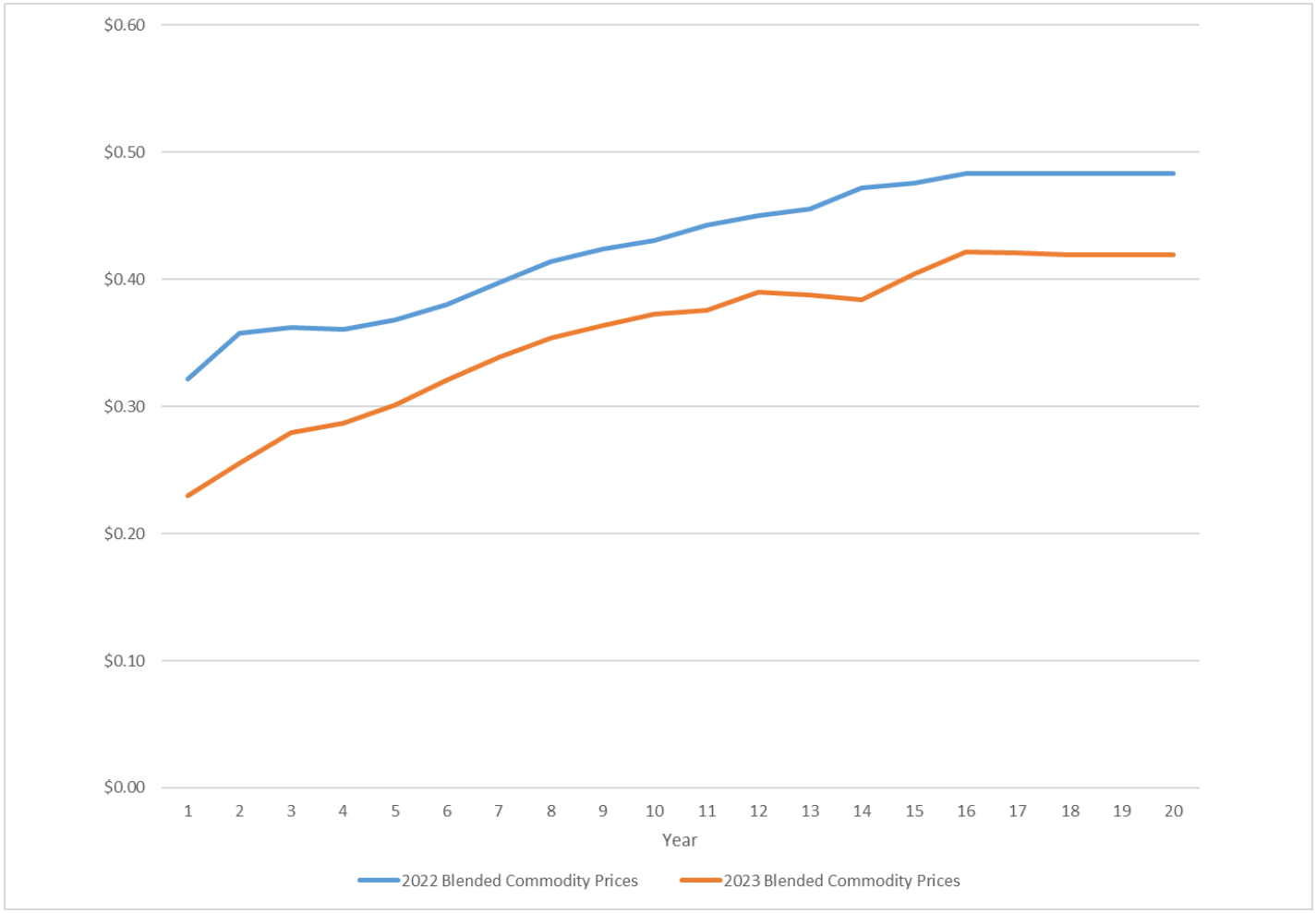
Gas Blended Commodity and Transport Price Comparison



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Peak Factors for 2023 Gas Avoided Costs

Daily Peak Factors for 2023 Avoided Costs

End-Use Load Shape	2023 Peak Day Factor	Source
Residential Space Heating	**1.8%**	Northwest Natural 2018 IRP
Commercial Space Heating	**1.6%**	Northwest Natural 2018 IRP
Domestic Hot Water	**0.4%**	NWPCC
Flat	**0.3%**	NWPCC
Clotheswasher	**0.2%**	NWPCC

Hourly Peak Factors for 2023 Avoided Costs

End-Use Load Shape	2023 Peak Hour Factor	Source	Analog Profile
Residential Space Heating	**0.13%**	NWPCC and Northwest Natural	R-All-HVAC-ER-All-All-E
Commercial Space Heating	**0.12%**	NWPCC and Northwest Natural	C-All-HVAC-ER-All-All-E
Domestic Hot Water	**0.03%**	NWPCC	R-All-WH-ERWH-All-All-R
Flat	**0.01%**	NWPCC	FLAT
Clotheswasher	**0.02%**	NWPCC	R-All-WH-Cwash-All-All-R

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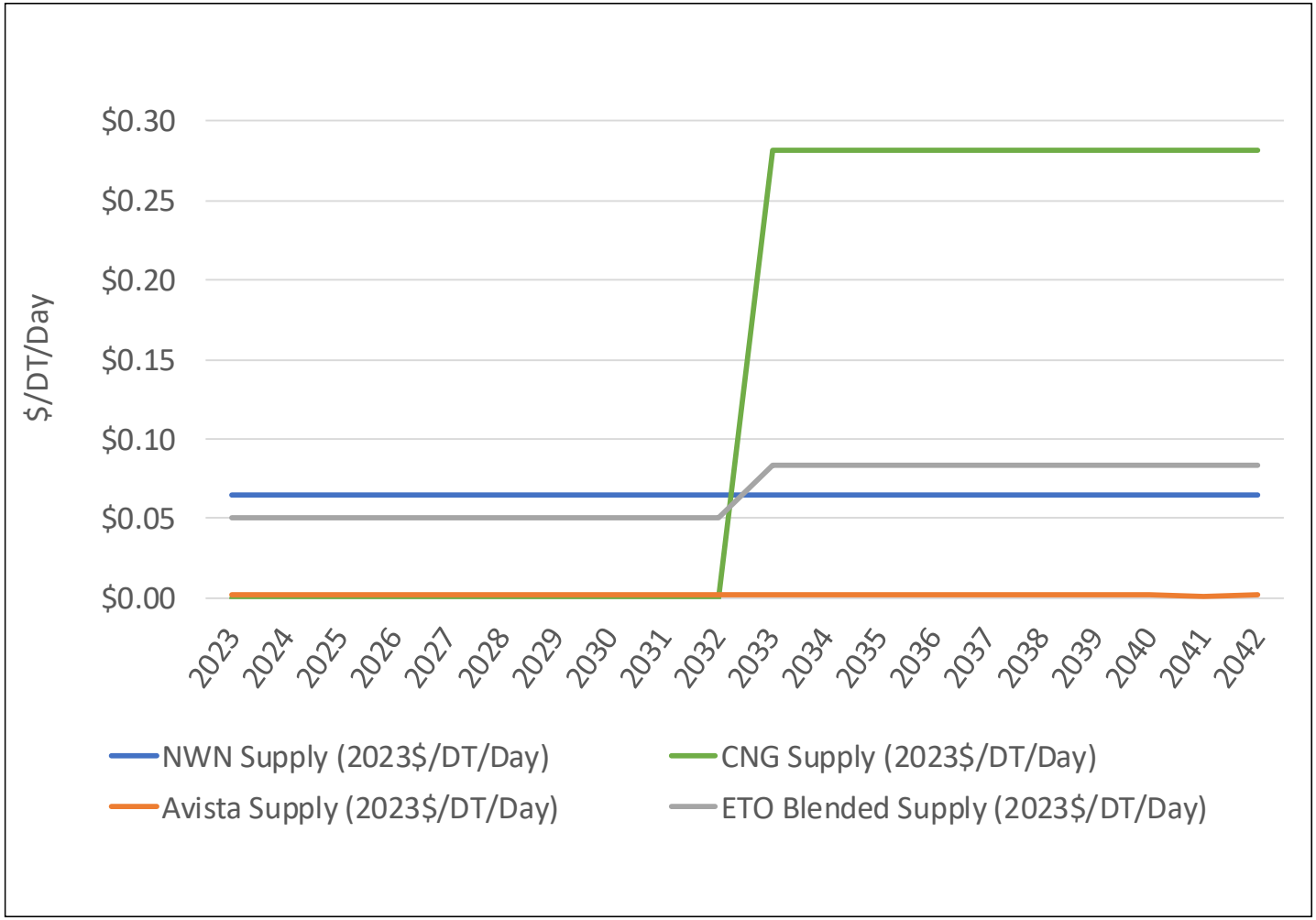
Gas Utility Supply Capacity Values for 2023 Avoided Costs



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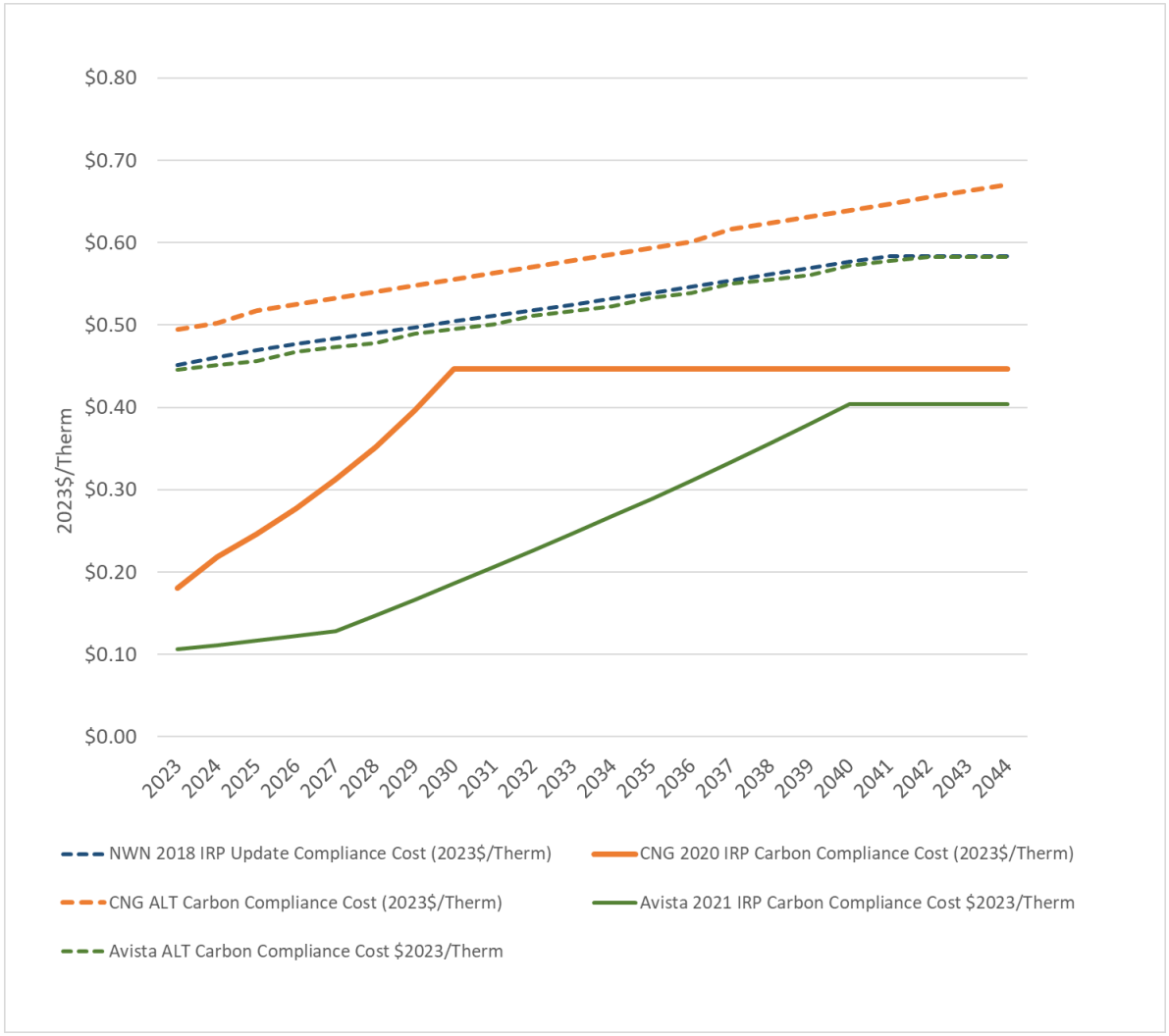
Gas Utility Carbon Compliance Values for 2023 Avoided Costs



NWN, CNG ALT and Avista ALT scenario are based on DEQ's Proposed Rulemaking pg 153-154

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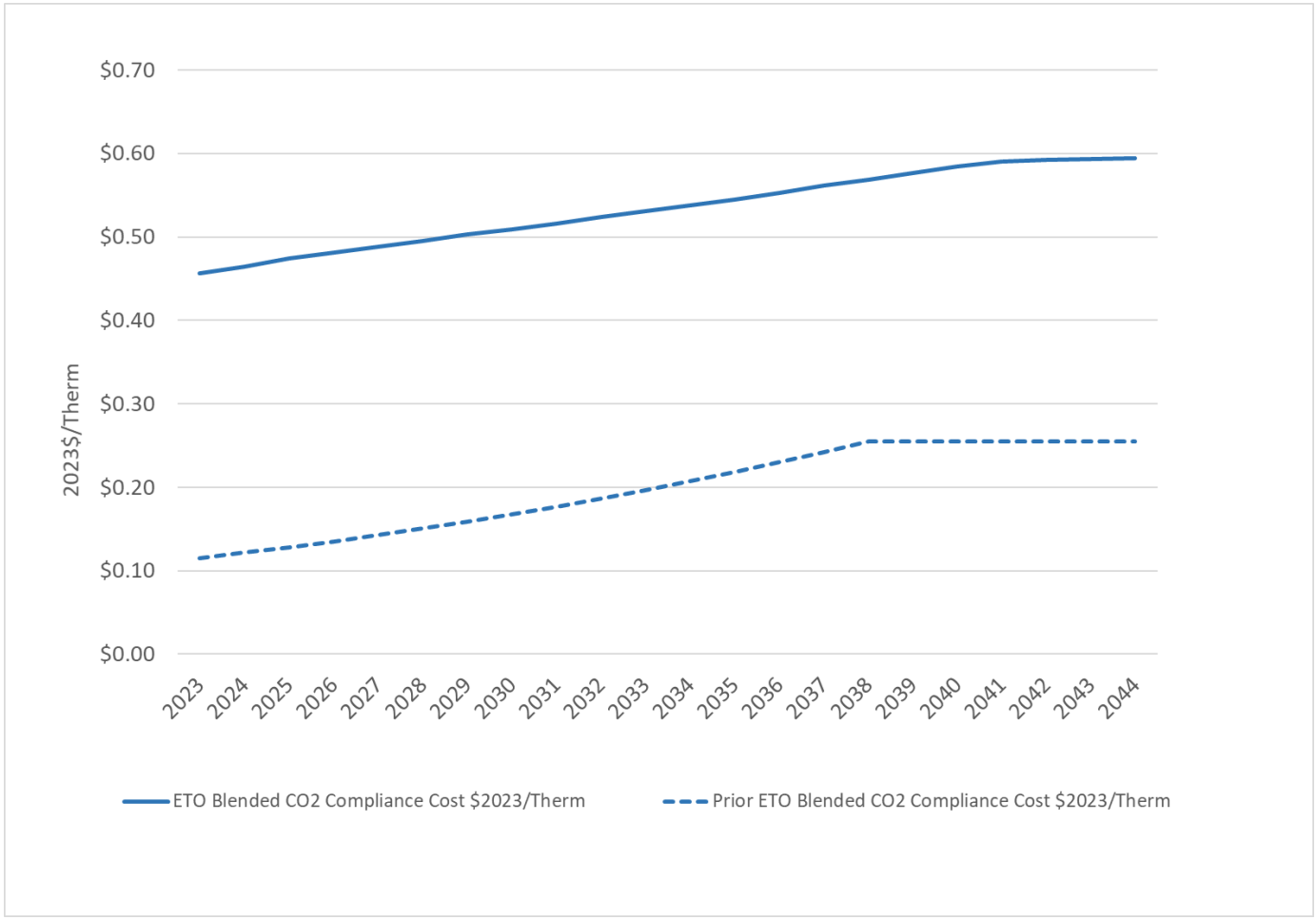
Gas Utility Carbon Compliance Values for 2023 Avoided Costs



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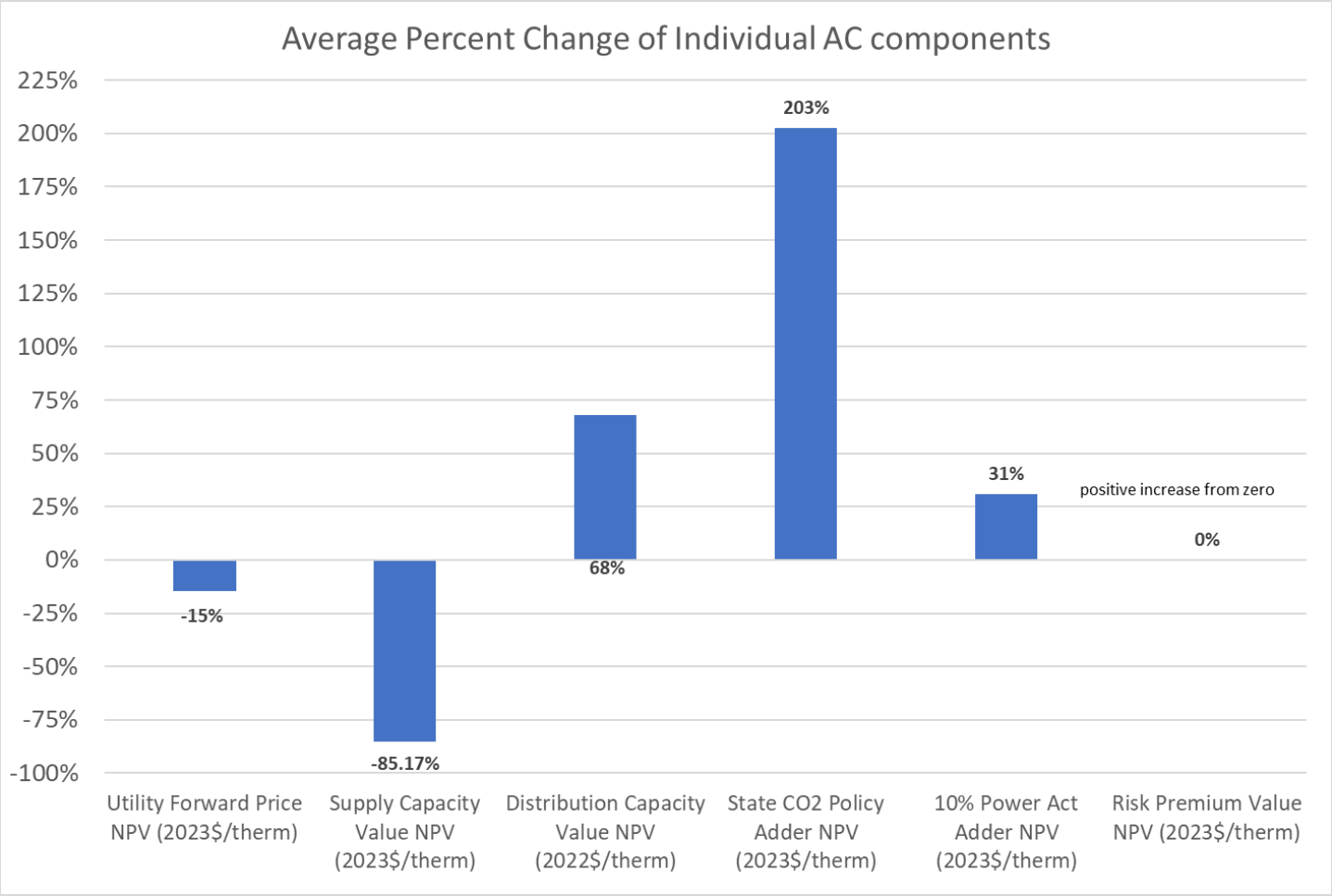
Gas – Average Percent Change of Each Avoided Cost Component



Note: Risk reduction went up from zero, thus, the percent difference is undefined

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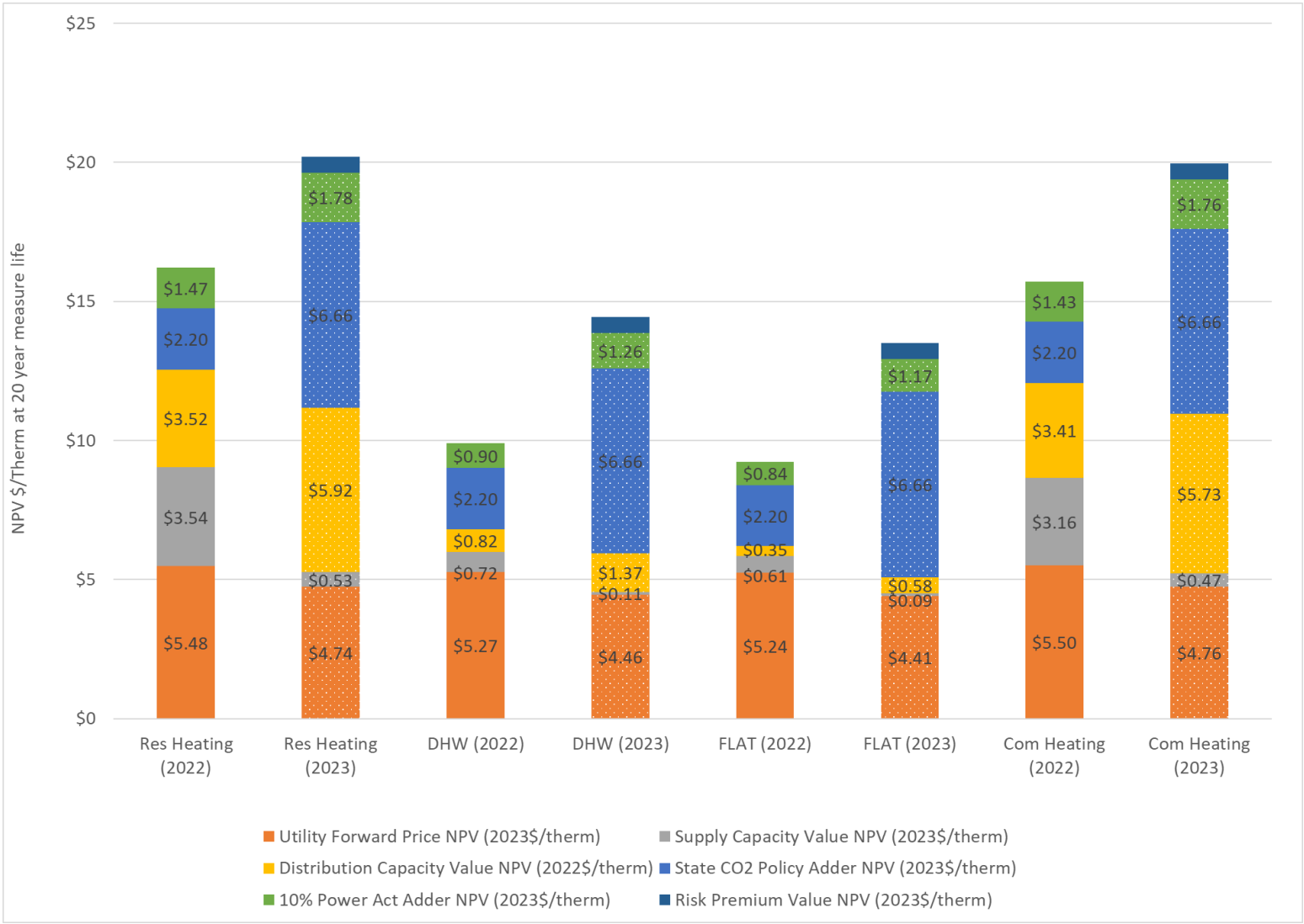
Comparison of Gas Load Shapes by Value Component



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Next Steps

Next Steps

- Stakeholders submit additional feedback
- Energy Trust receives direction from OPUC staff on which values to use in final 2023 avoided cost calculations for Oregon
- Energy Trust finalizes calculations

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Questions?

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