BPA Day-Ahead Markets Workshop



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Energy GPS
10/30/2026

Where Does the $100 Million Come From?

BPA WMEG Follow-up Analysis

Stakeholder Meeting

November 4, 2024

Energy+Environmental Economics

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BPA-Specific Results
WMEG Core Cases 2026

Cost/Benefit ($ millions)	Case: BAU (2026)	Case: EDAM Bookend (2026)	Case: Main Split (2026)
Load Cost	921.7	944.0	923.6
Generation Cost	131.3	131.3	131.3
Reserve Cost	0.0	0.0	0.2
Generation Revenue	-1343.1	-1489.6	-1370.3
Reserve Revenue	0.0	0.0	0.0
Wheeling Revenue	-251.4	-5.5	-31.8
Congestion Revenue	-49.9	-60.1	-52.7
GhG Revenue	0.0	-0.1	-0.8
Net Cost	**-591.3**	**-480.1**	**-400.5**
Net Cost vs. BAU		***111.2***	***190.8***
Net Cost excl. wheeling	**-339.9**	**-474.6**	**-368.7**
vs. BAU		***-134.7***	***-28.8***
Less: Gen Revenue for Slice	201.2	223.4	205.5
Adjusted Results			
Adjusted BPA Gen Revenue	-1140.1	-1226.2	-1164.8
Net Cost excl. wheeling	**-137.9**	**-251.2**	**-163.3**
vs. BAU		***-113.3***	***-25.4***

Where Does the $100 Million Come From?

CORE CASES for 2026

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Generation Revenue

EDAM Bookend Benefit vs BAU
Headline Number: $113 Million

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The Lede Is Buried in Plain Sight

ZERO Production Cost Savings

BPA-Specific Results
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All Other Values the Same

Surplus Sales
29 Million MWh

Annual Summary (MWh)	BAU (2026)	EDAM Bookend (2026)
Nuclear	9,999,824	9,999,824
Other	10,339	10,224
Coal	-	-
Hydro	62,898,766	62,897,853
Gas	-	-
Customer Solar	72,223	72,223
Solar	536	529
Wind	-	-
Battery Storage	415	422
Pumped Hydro	-	-
Purchases	169,278	327,500
Sales	29,512,742	29,669,947
Curtailment	173	296
Native Load	43,637,998	43,637,971
Load	43,638,638	43,638,628



No Production Cost Savings

+

All Generation and Load #s the Same

+

Very Small Volume of Purchases

+

29 Million MWh of Sales

=

Value of Sales Drives the Benefits

I Went And Looked at E3's Prices

BAU Vs EDAM Bookend

	2026	
	BAU	EDAM Bookend
AVA	$29.72	$31.16
PSEI	$31.86	$31.16
GCPD	$30.57	$31.16
CHPD	$30.57	$31.16
MID-C TZ	$30.57	$31.16
BPAT-WA Tx TZ	$29.88	$31.16
BPAT-WA	$19.54	$21.26
BPAT-Non-WA	$18.89	$19.52
BPAT-Non-WA Tx TZ	$20.80	$19.49
PGE	$23.05	$19.49
PACW	$20.39	$20.65
IPCO	$23.20	$20.71

WA Locations with Carbon

Modeled BPA Prices:
Used to value generation. Carbon Mishandled

Non-WA Locations without Carbon

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Questions on My Mind?

- 54% of real-world BPA sales at NW Market Hub (Mid-C Proxy), why doesn't BPA benefit from the higher WA prices?
- If BPA is receiving $20ish per MWh in its zone, why wouldn't the BPA traders sell the Mid-C for $30ish?

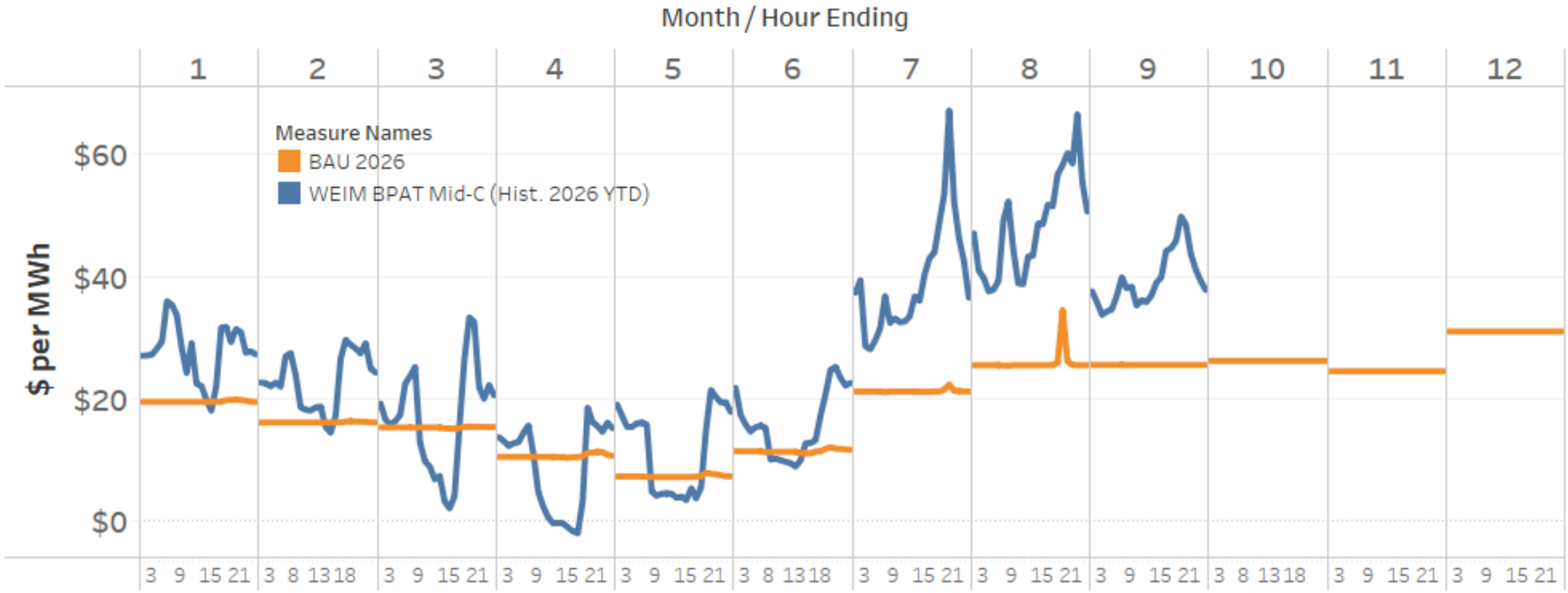
Vast majority of $100+ million of headline "Core Case" benefits stem from the BPAT-WA and BPAT-Non-WA price differences between BAU and EDAM Bookend

And I Looked at Their Hourly Prices



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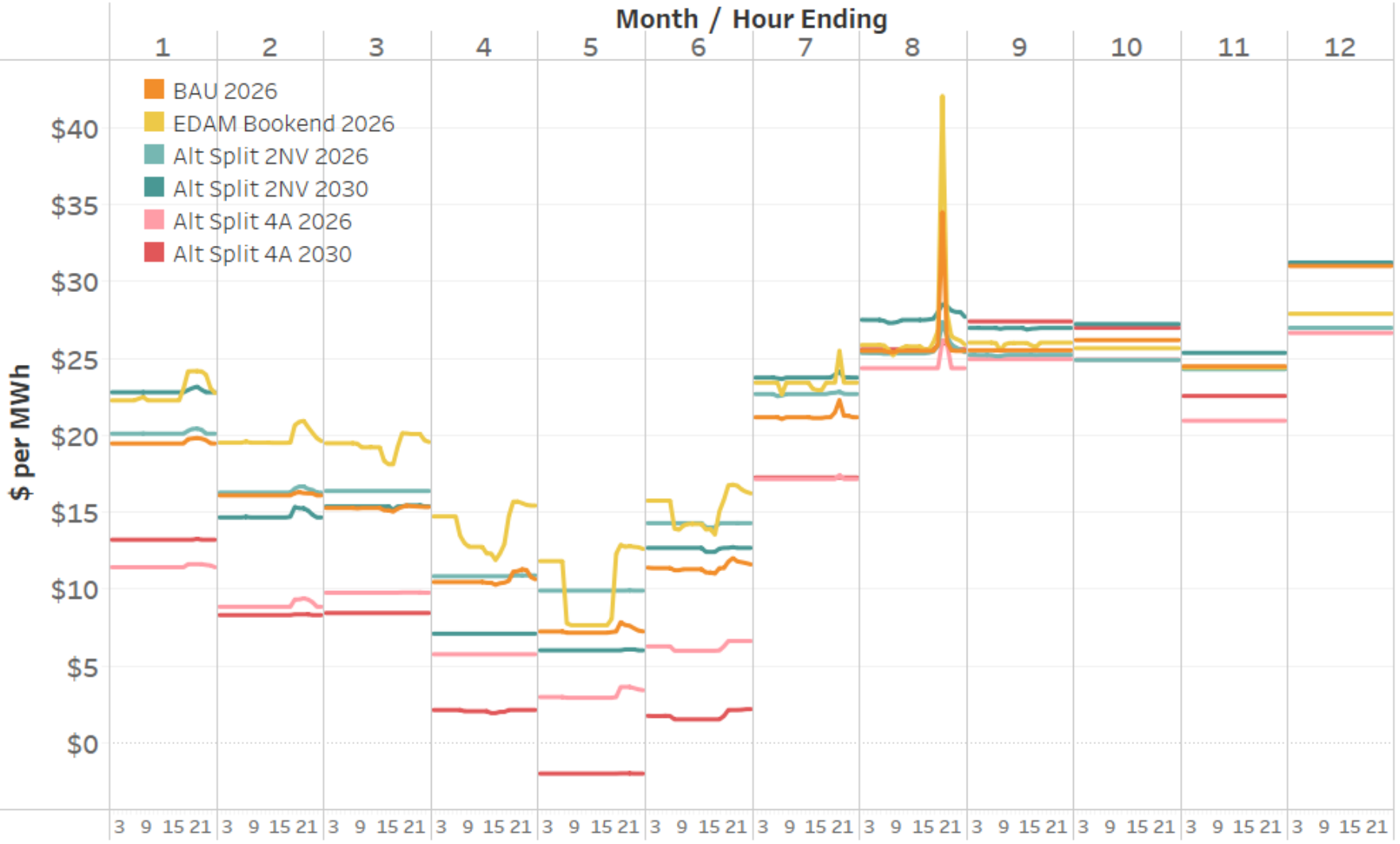
And I Compared to Actual 2026 Prices



Prices Depict Average Hourly Price for Each Month of the Year

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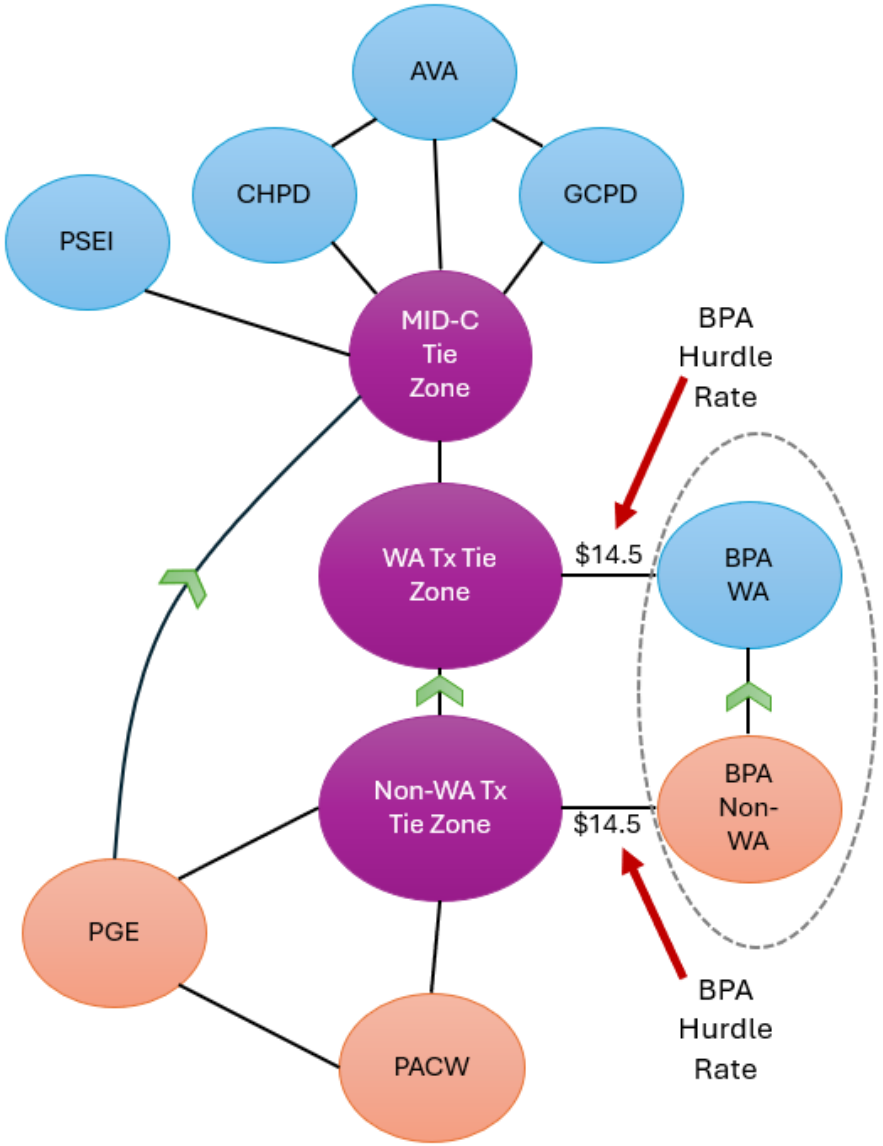
The Flawed Price Shape Appears in All Cases



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So Then I Looked Under the Hood

E3 Model View of World



BPA Pricing Zone

To leave bubble must pay hurdle rate

No direct access to NW Hub or Mid-C

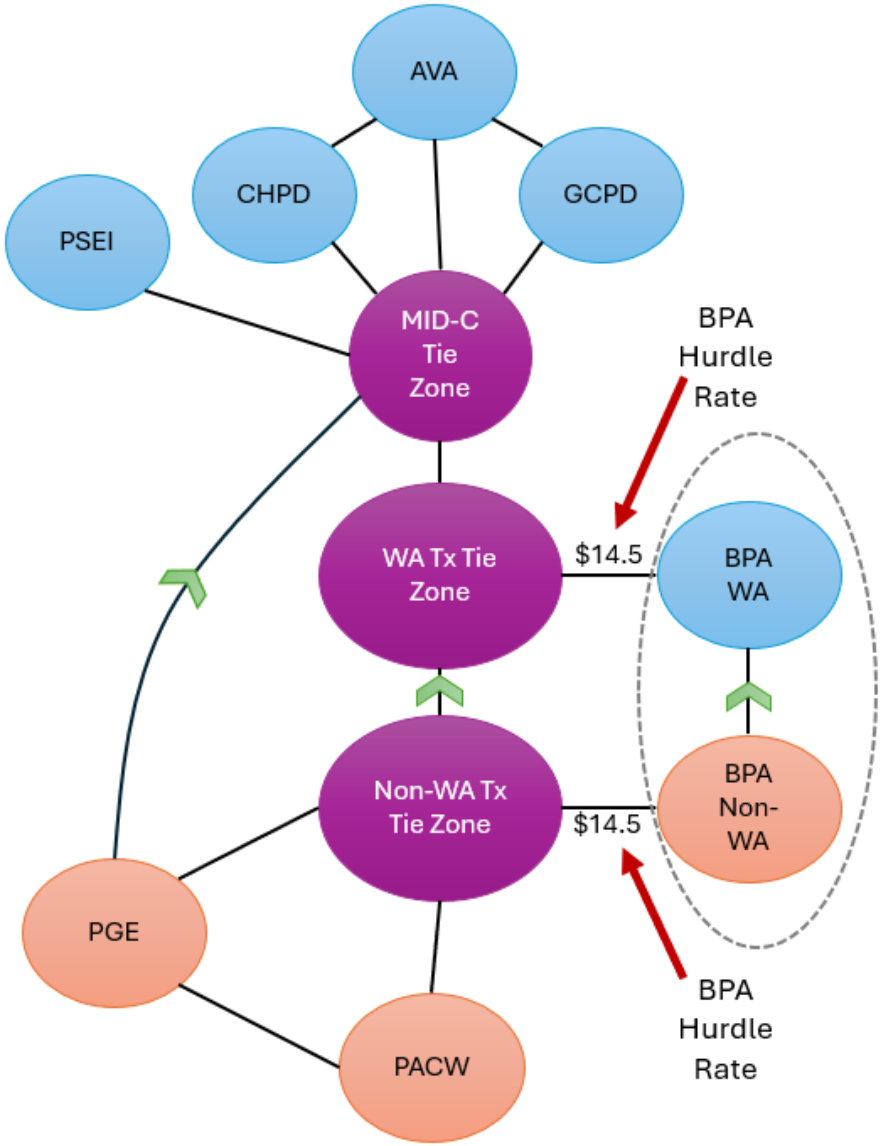
Who exactly is BPA selling to in its bubble?

Hurdle rate includes a "risk premium" of $10 per MWh. Risk premium doesn't make logical sense? What risk?

Carbon pricing works in tie zones but not the BPA WA bubble?

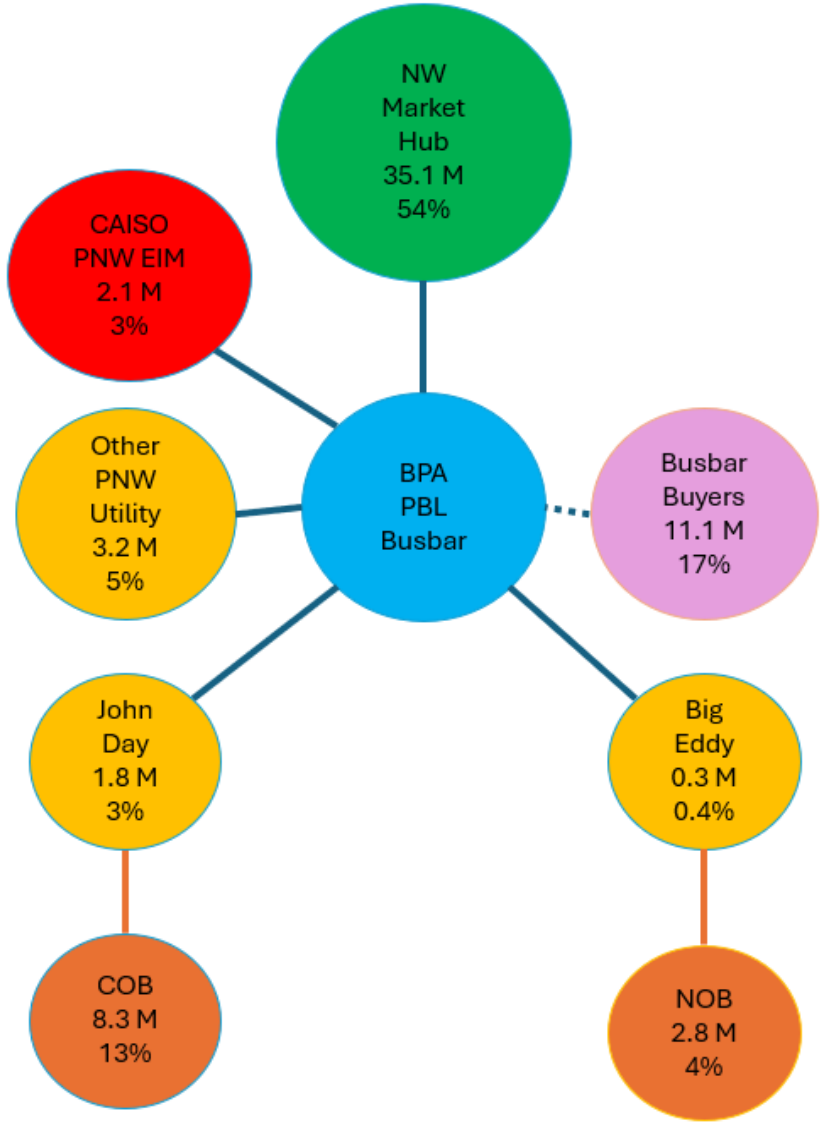
So Then I Looked Under the Hood

E3 Model View of World



BPA is hub of wheel. Not behind a fence.

2022-2025 Real World Sales



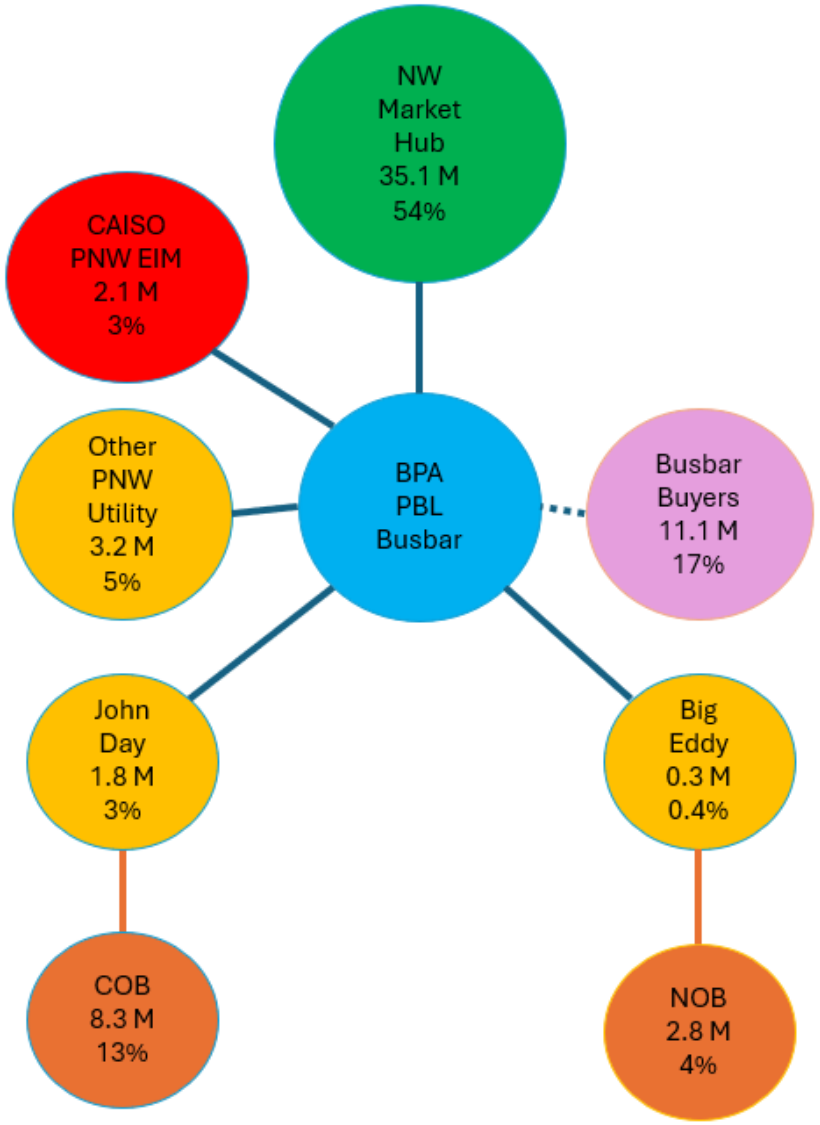
The Beat Goes On

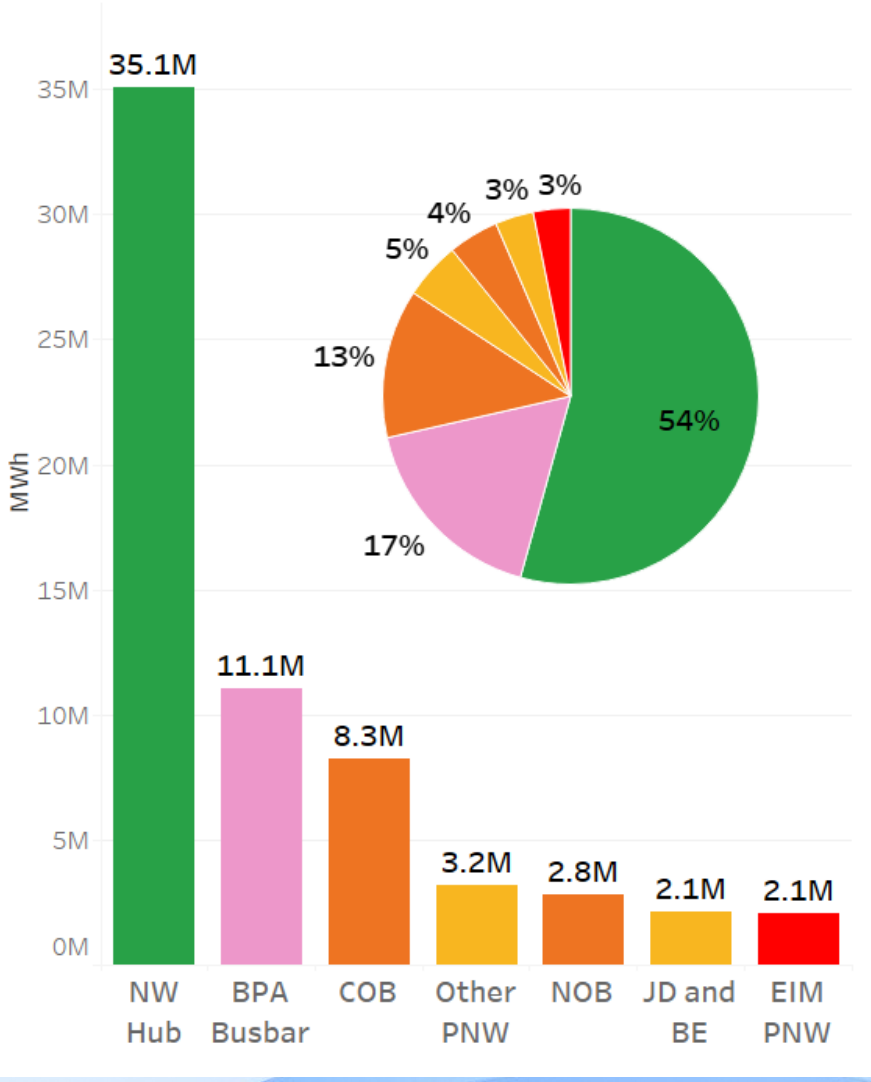
Alt 4A, Alt 2NV, EDAM Bookend, BAU

	Alt Split 4A	Alt Split 4A M2M	Alt Split 4A M2M2	2026 BAU	Alt Split 2NV	Alt Split 4A M2M3	EDAM Bookend
	$14.5	$10.0	$7.5	$14.5	$0.0	$4.5	$0.0
AVA	$24.15	$26.74	$28.67	$29.72	$23.88	$29.85	$31.16
PSEI	$24.15	$26.74	$28.67	$31.86	$23.88	$29.85	$31.16
GCPD	$24.15	$26.74	$28.67	$30.57	$23.88	$29.85	$31.16
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BPAT-WA Tx TZ	$24.15	$26.74	$28.67	$29.88	$23.88	$29.85	$31.16
BPAT-WA	$15.36	$17.54	$19.14	$19.54	$19.78	$20.10	$21.26
BPAT-Non-WA	$13.35	$15.64	$17.28	$18.89	$18.59	$18.41	$19.52
BPAT-Non-WA Tx TZ	$13.35	$15.64	$17.28	$20.80	$18.57	$18.40	$19.49
PGE	$26.10	$25.89	$24.69	$23.05	$18.57	$23.61	$19.49
PACW	$21.64	$21.36	$21.04	$20.39	$20.00	$20.88	$20.65
IPCO	$21.83	$21.53	$21.21	$23.20	$20.22	$21.03	$20.71

… So, Where *Does* BPA Sell Its Surplus?

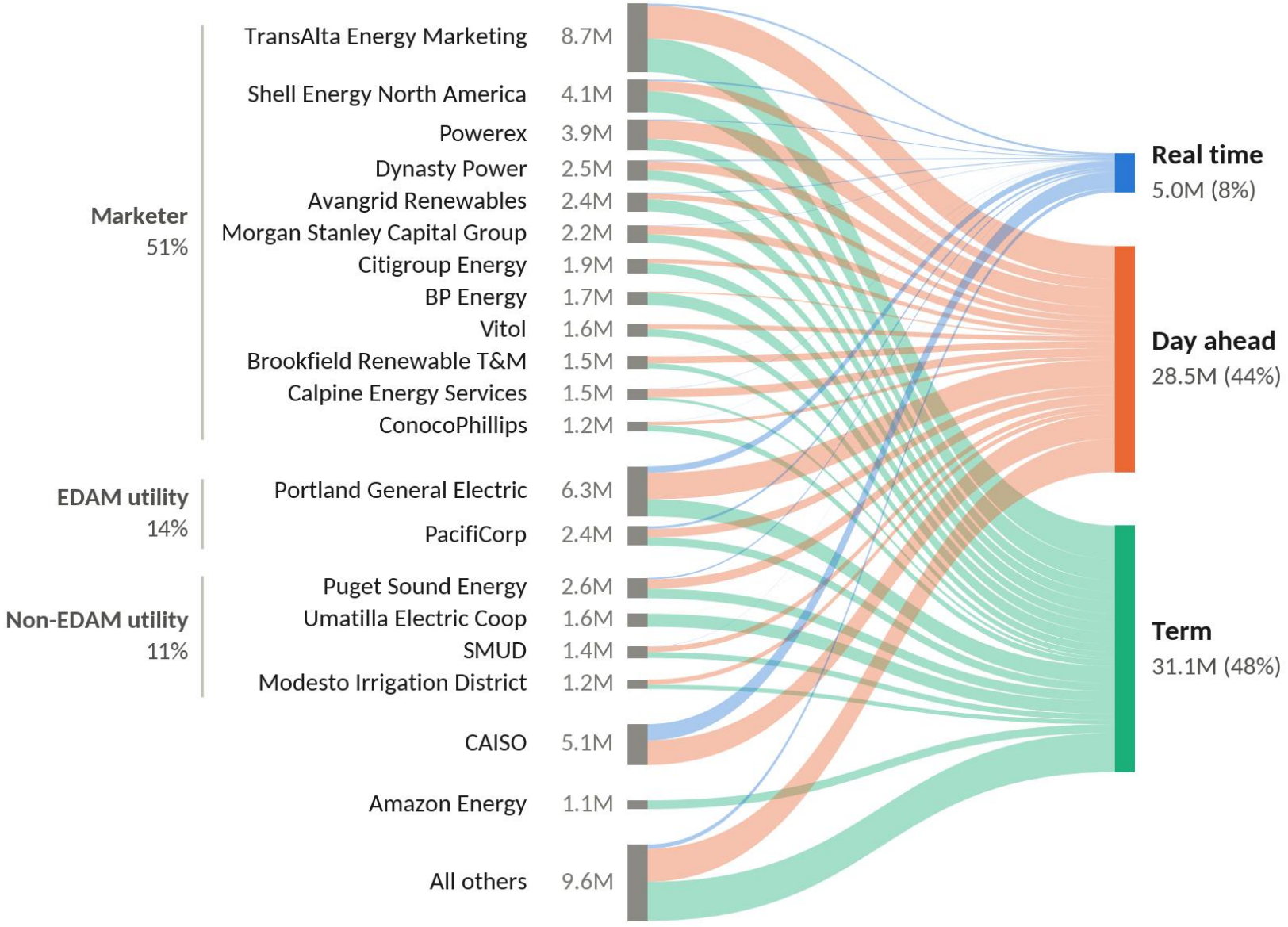
2022-2025 Sales
65 million MWh





Who Buys Over What Term?

2022-2025 Sales
65 million MWh



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Bilateral Trading Unlikely to Dry Up

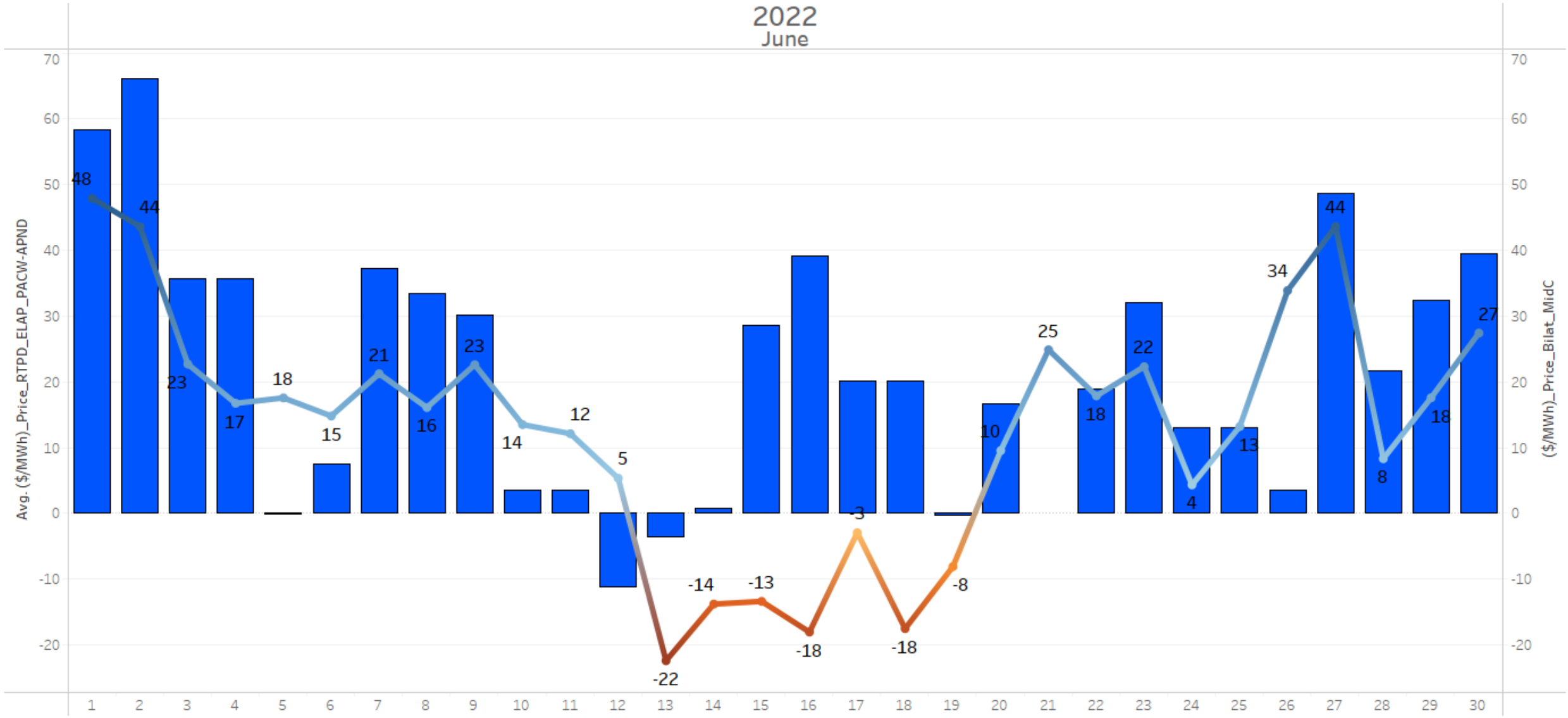


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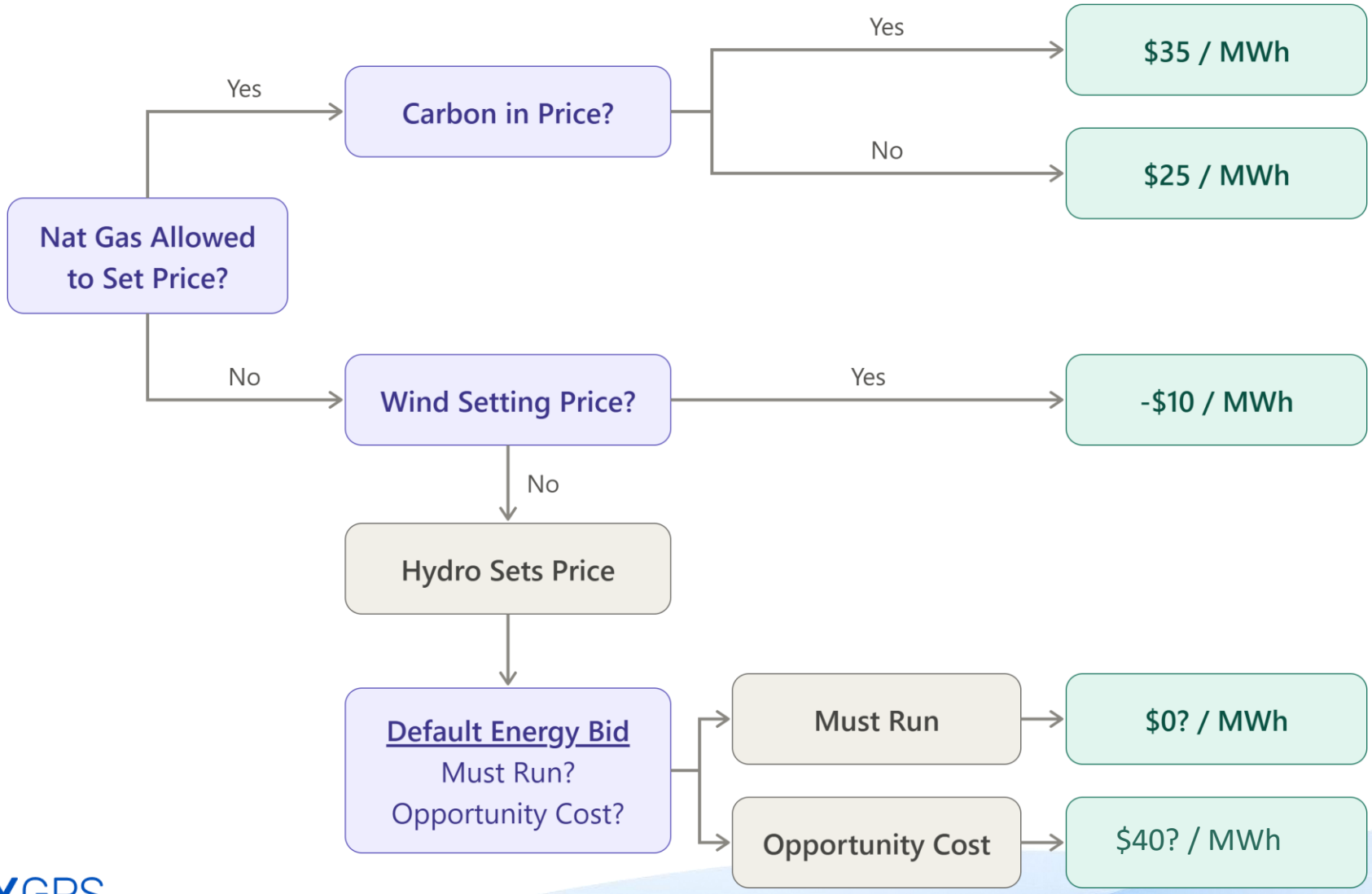
A Few Words on Price Formation

- Market Power Mitigation – Default Energy Bid
- Carbon Pricing
- Fast Start Pricing
- Scarcity Pricing
- Market Operator Bias

Comparison of ICE to PACW EIM

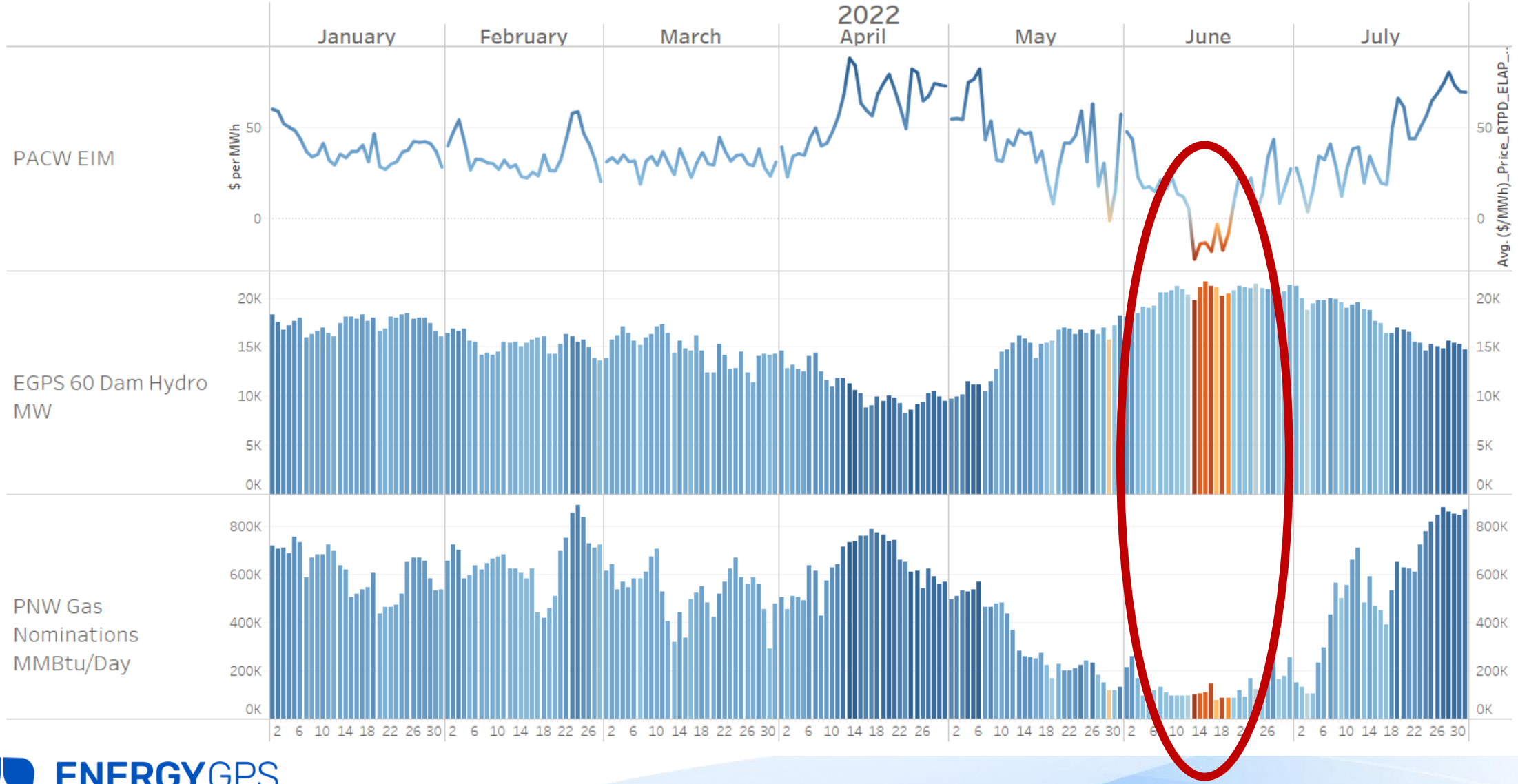


It's 10pm—Do You Know How Your Prices Are Formed?



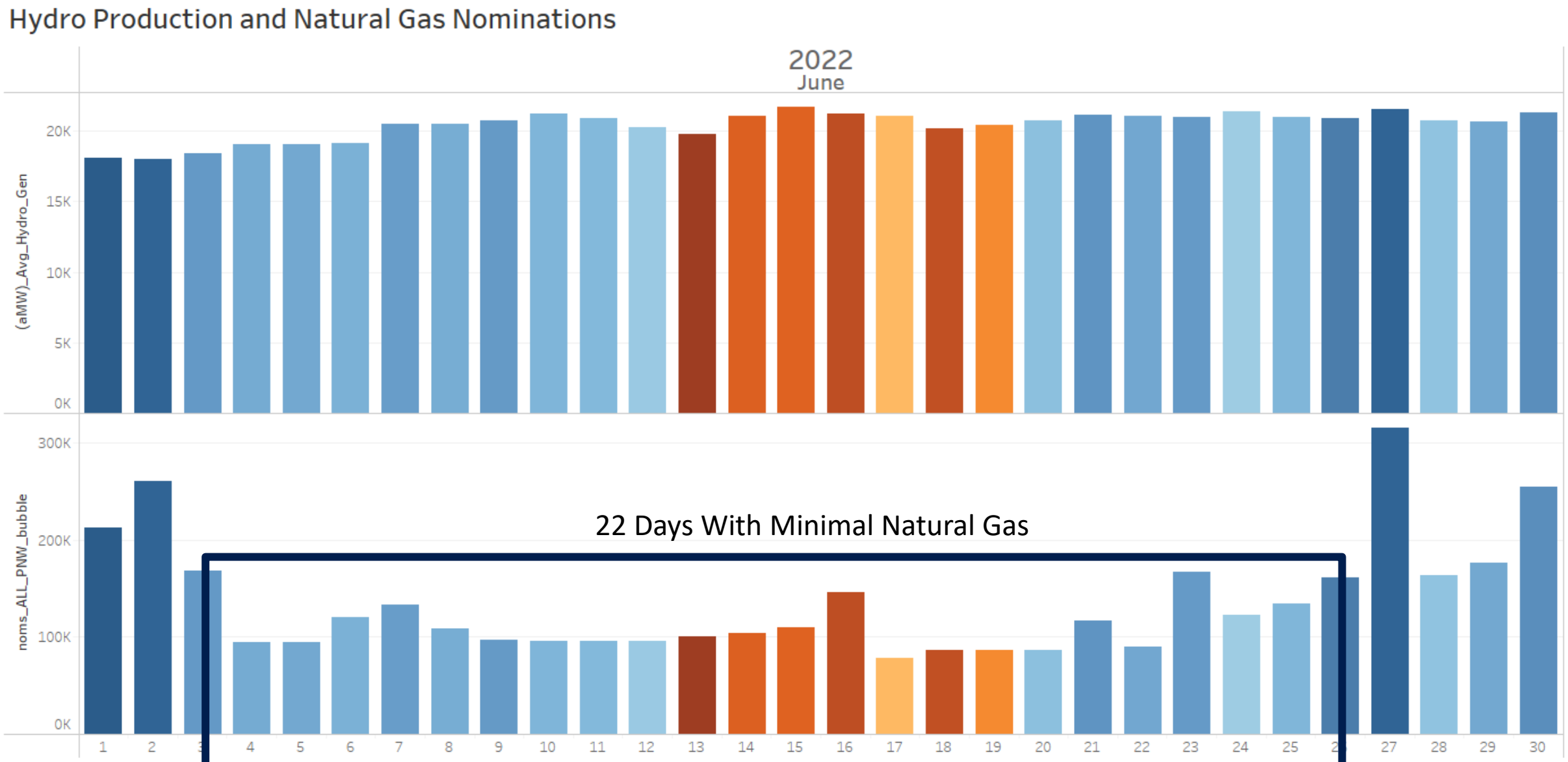
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Negative Prices: If Gas Isn't Setting Them, What Is?

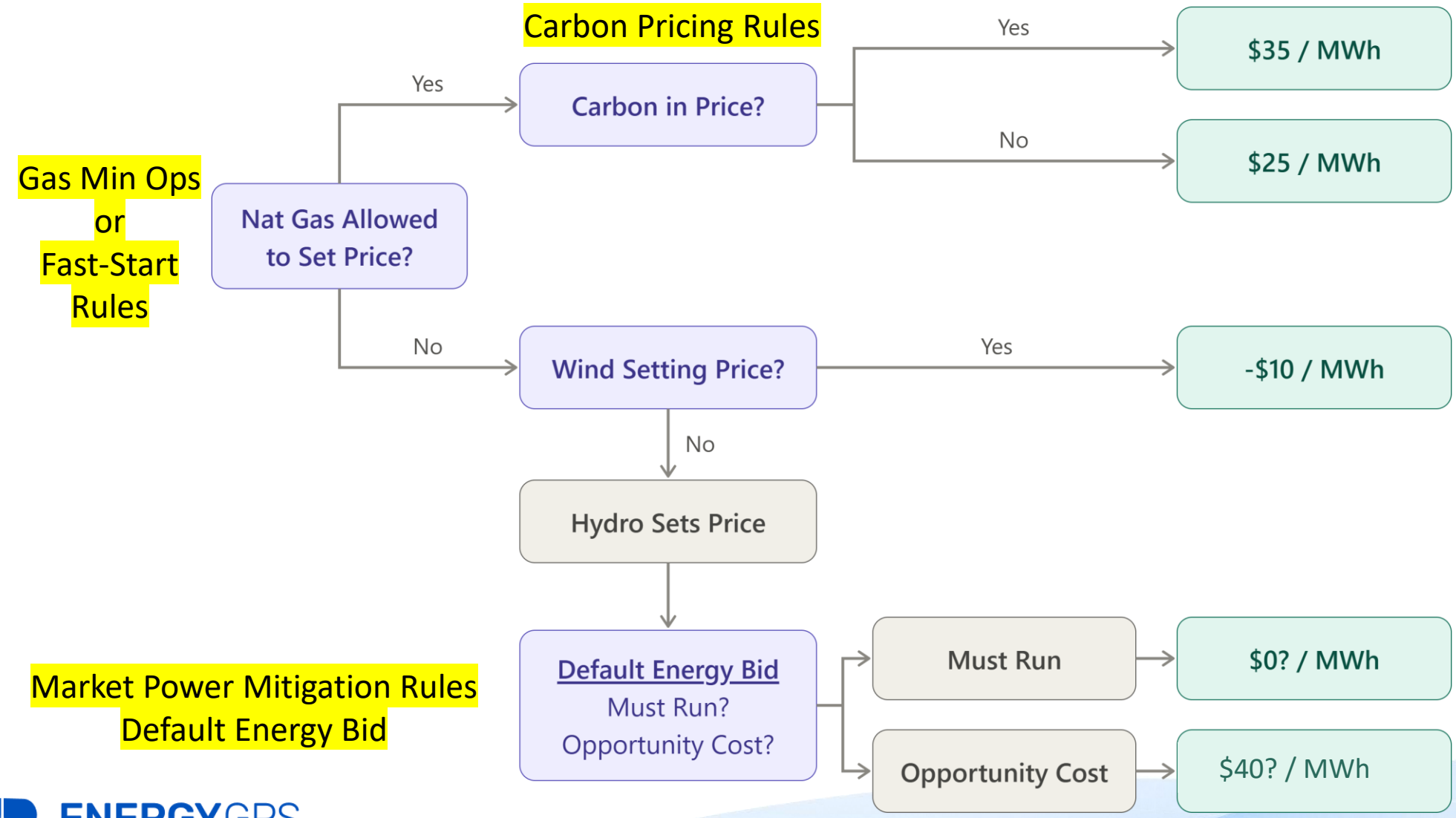


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June 2022 – PNW Hydro Versus Price

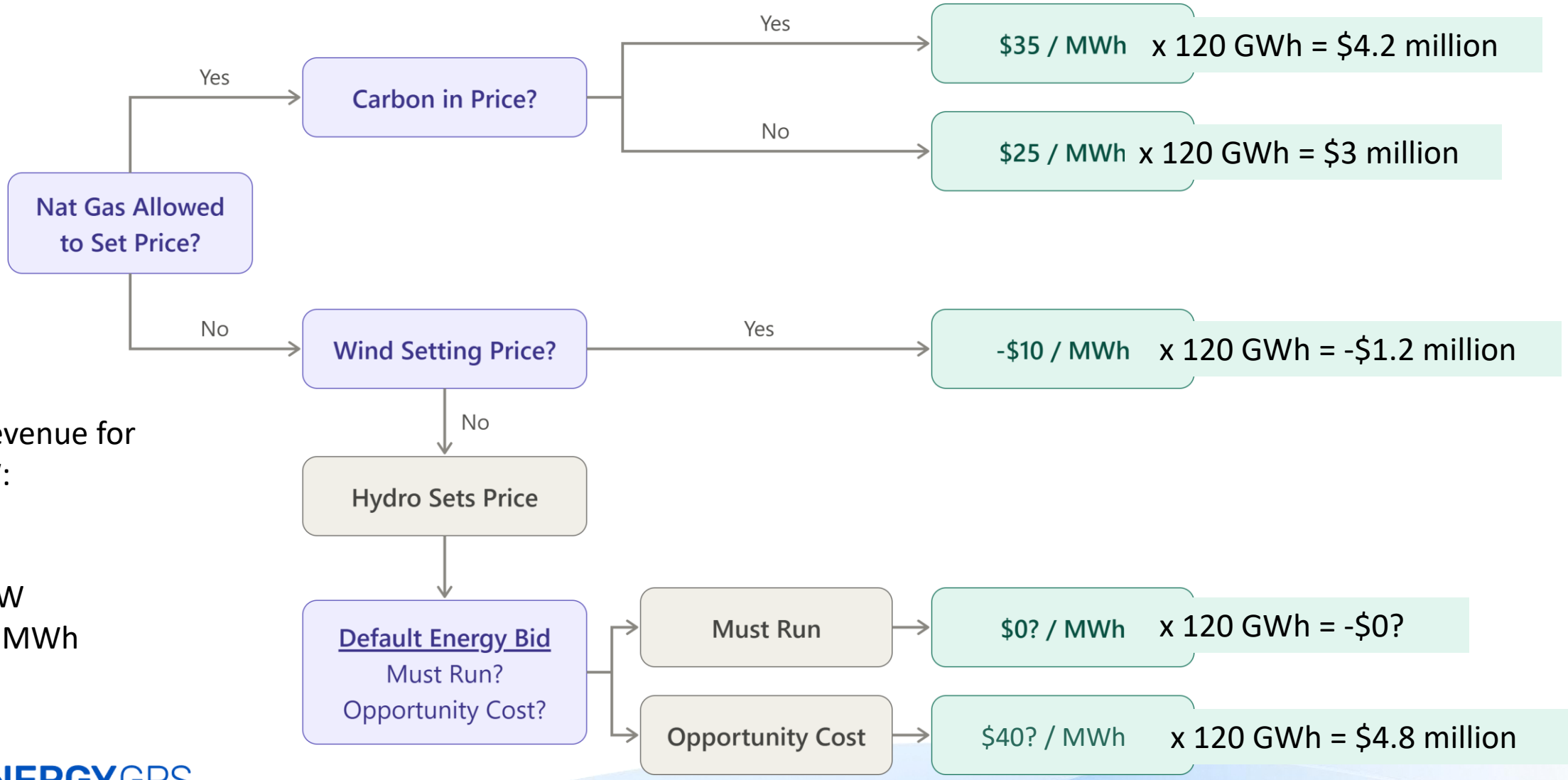


It's 10pm—Do You Know How Your Prices Are Formed?



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Rules Matter!



1 day of revenue for 5,000 MW:

24 hours
x 5,000 MW
= 120,000 MWh

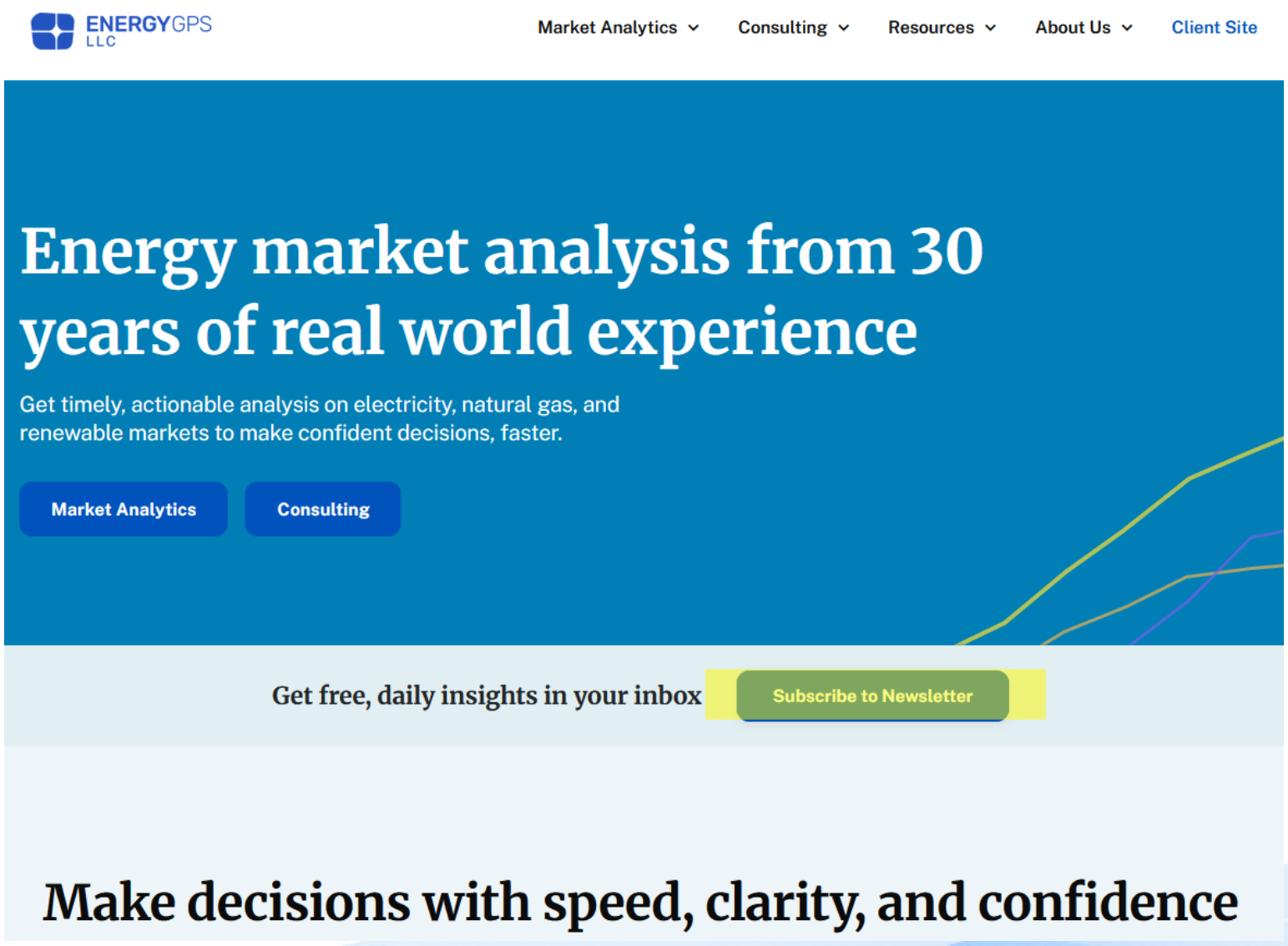
Conclusions

1. E3 study cannot be relied on to forecast benefits because the modeled prices, which are applied to the 29 million MWh of surplus sales, are riddled with flaws.

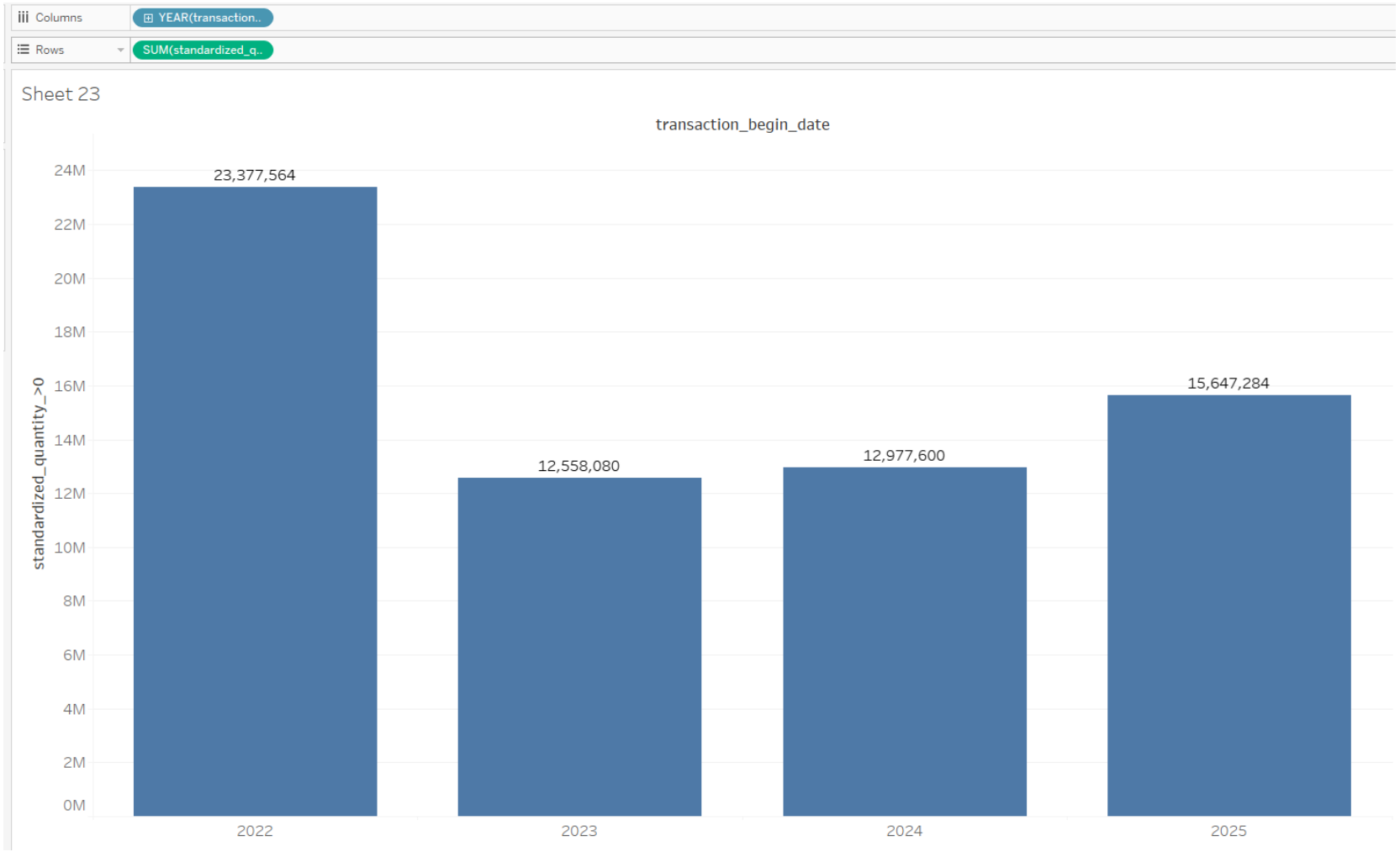
2. Price formation matters. It's not just about high prices during times of scarcity. BPA's largest sales volumes come in May and June when default energy bids and carbon pricing matter.

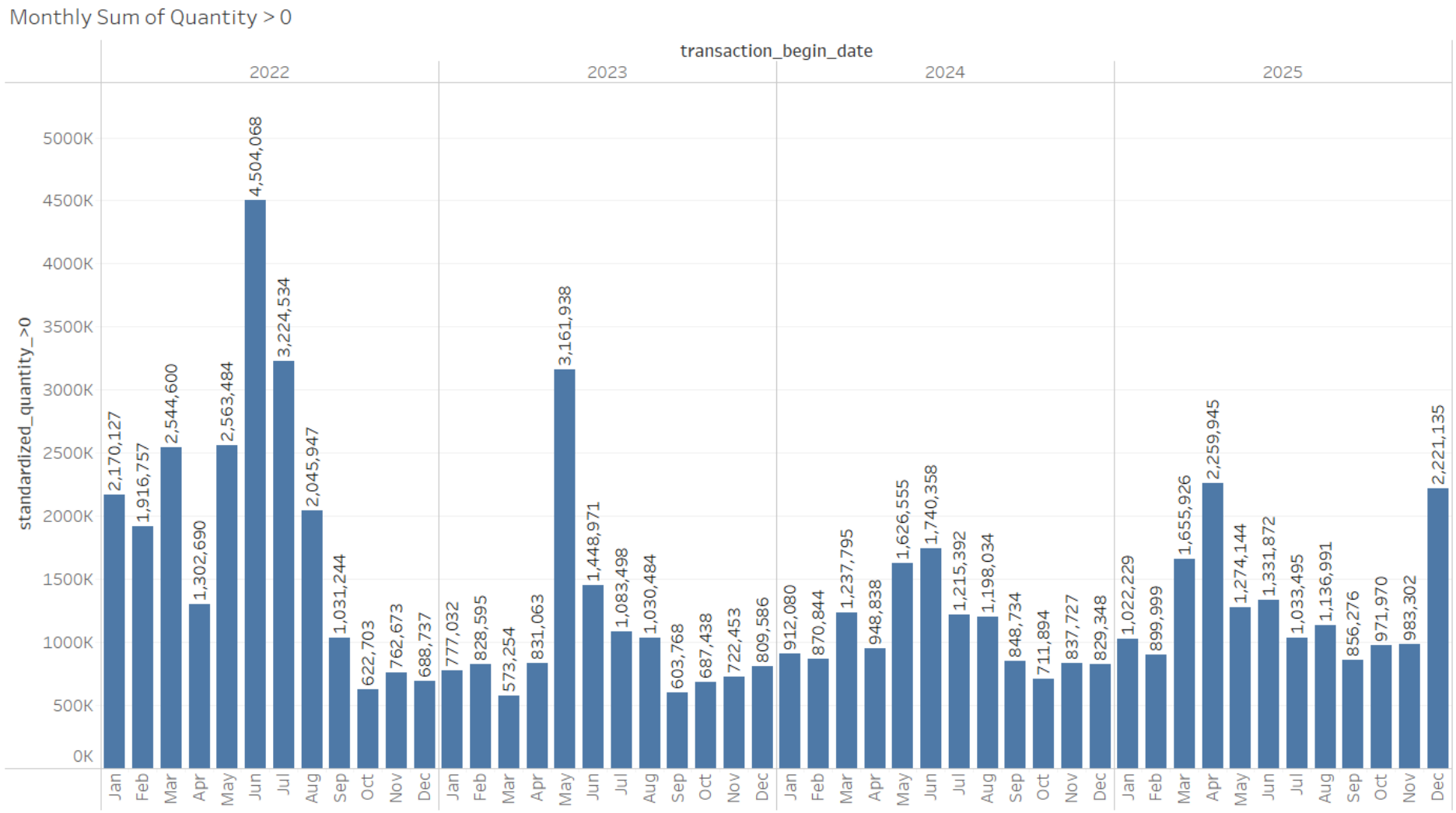
3. Don't conflate market footprint with liquidity. Bilateral cash markets operate alongside centralized markets throughout the United States. BPA sells half its output to power marketers. In a normal water year, BPA sells more than half its output in forward markets.

Thank You

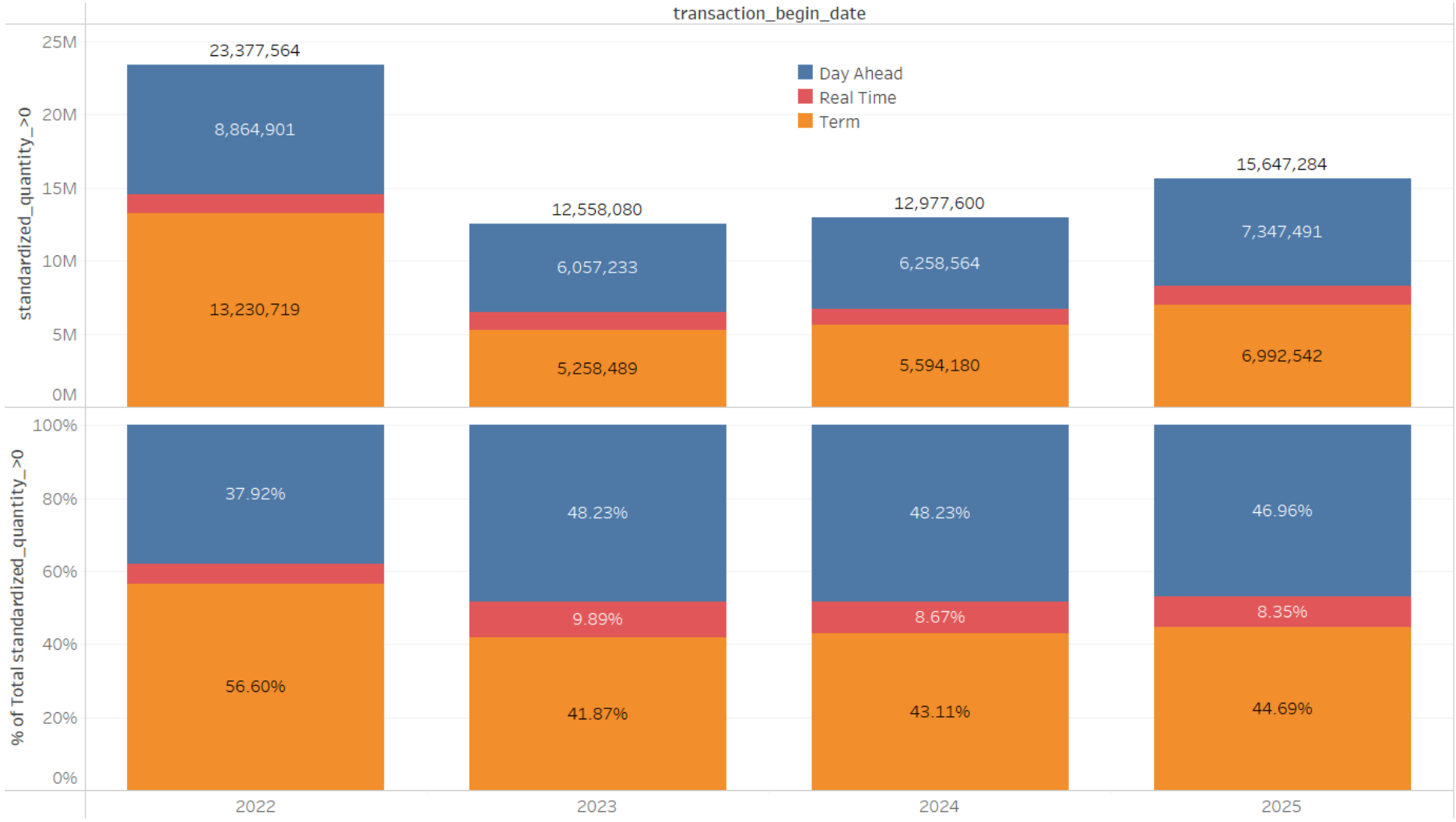


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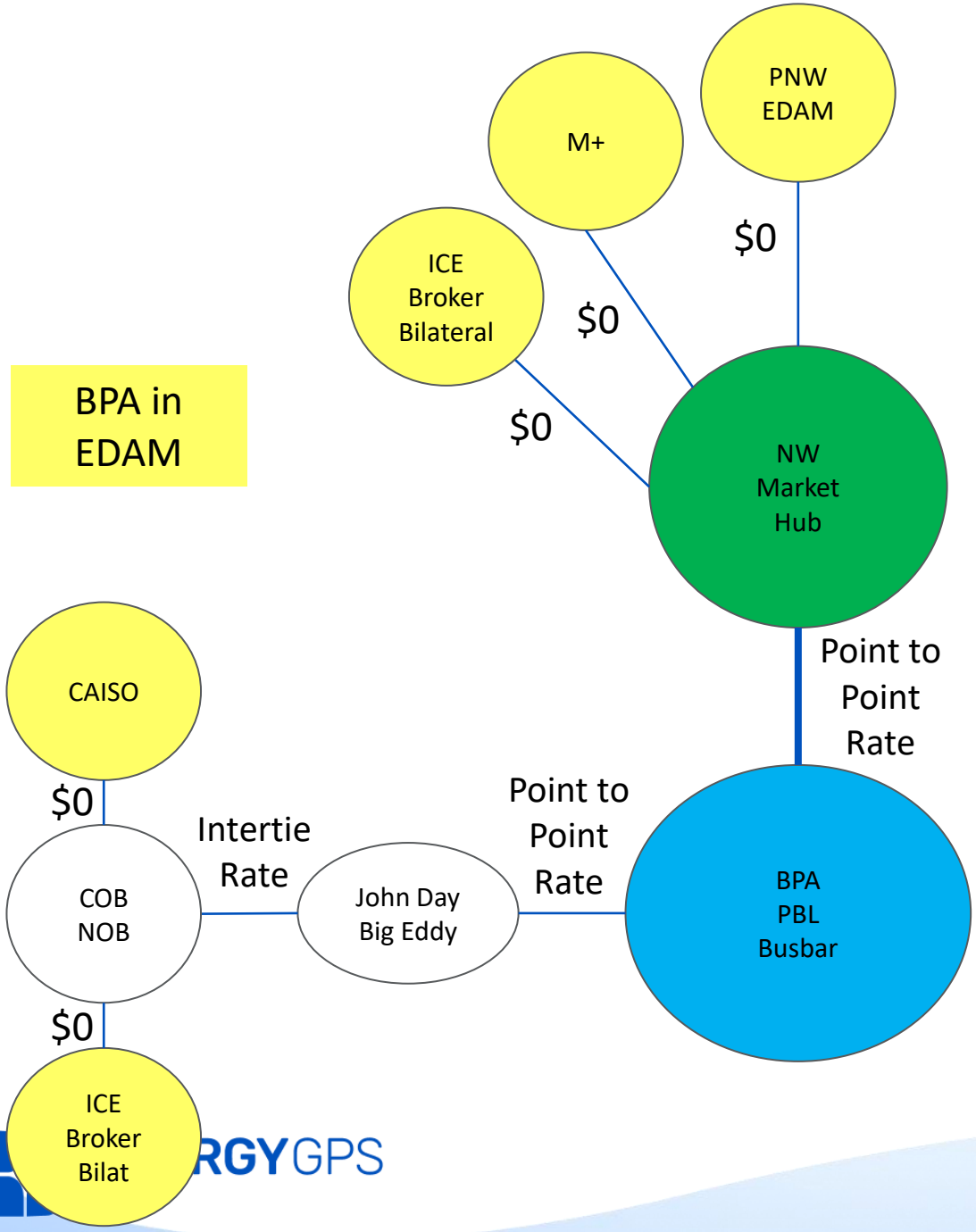

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Rows
SUM(standardized_q..
Sheet 23
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22M
20M
18M
16M
14M
12M
10M
8M
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2023
2024
2025

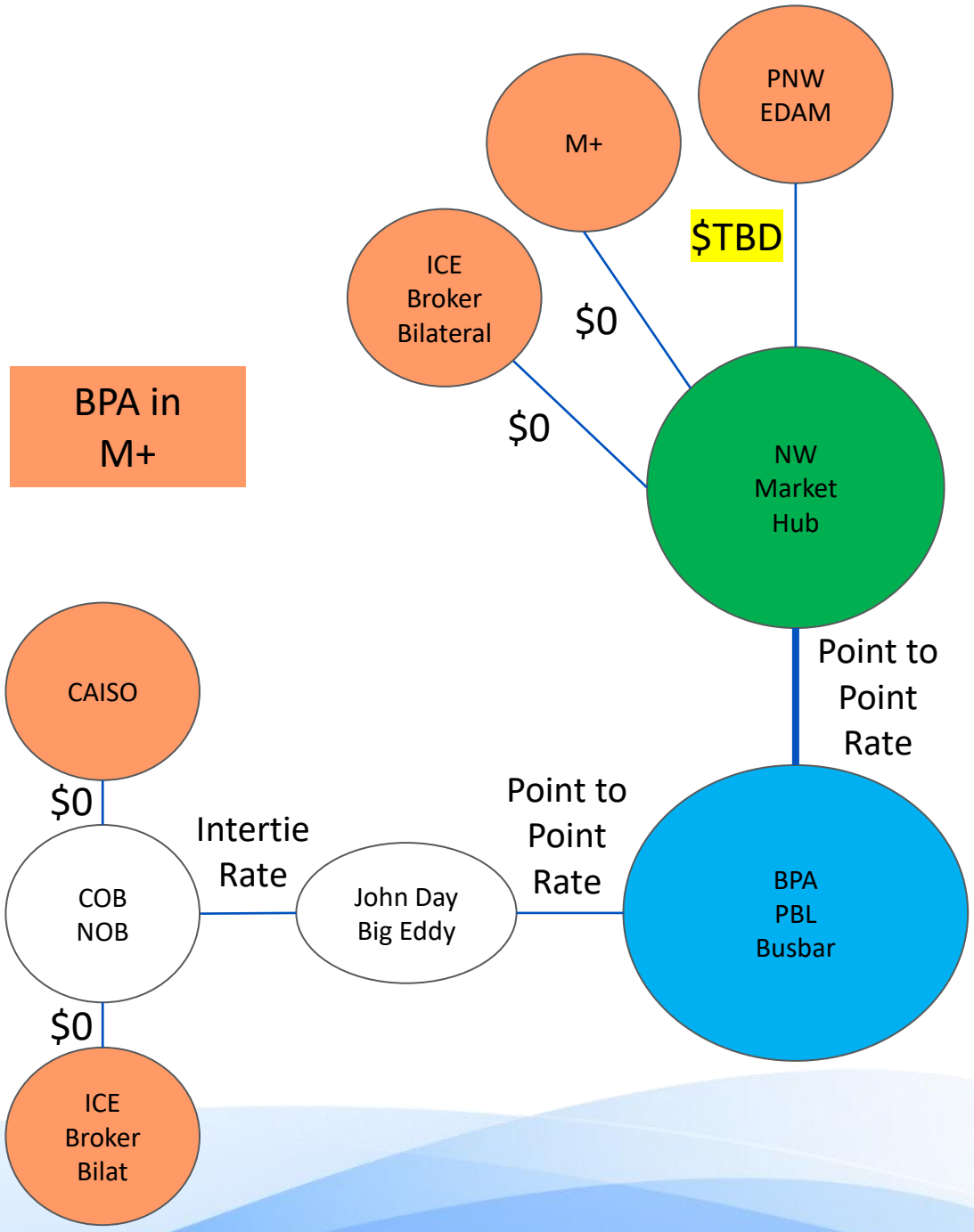


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BPA in EDAM
M+
PNW EDAM
ICE Broker Bilateral
$0
$0
$0
NW Market Hub
Point to Point Rate
CAISO
$0
COB NOB
$0
Intertie Rate
John Day Big Eddy
Point to Point Rate
BPA PBL Busbar
ICE Broker Bilat


BPA in M+
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