2024 PJM CONE Updates

ATWACC IMPACTS ON CONE AND REVIEW OF ESCALATION RATES

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Effect of ATWACC Update on CONE Values

- Increasing ATWACC from 8.85% to 10% increases the capital charge rate by 135 basis points
- This raises CONE by $40-44/MW-day, to $569/MW-day to $591/MW-day
- Final CONE values for the 2027/28 auction would also include escalation applied to the adjusted CONE values shown in the bottom row of the table
- Similar for the auctions for 2028/29 and 2029/30

Capital Charge Rates and CONE Values for 2026/27 Base Year

As of Date	Variable	Units	EMAAC	SWMAAC	Rest of RTO	WMAAC
[1]	[2]	[3]	[4]	[5]	[6]	[7]
Old (Aug 2022)	ATWACC	%	8.77%	8.86%	8.81%	8.81%
	Capital Charge Rate	%	13.3%	13.2%	13.3%	13.3%
	CONE	2026$/MW-day	$543	$529	$542	$547
Updated (May 2024)	ATWACC	%	9.91%	10.01%	9.96%	9.96%
	Capital Charge Rate	%	14.7%	14.5%	14.6%	14.6%
	CONE	2026$/MW-day	$587	$569	$584	$591

Note: The ATWACCs above vary slightly from the base 8.85% and 10% ATWACCs because they use actual state corporate income tax rates, whereas the base values assume a state with a corporate income tax rate of 8.5%.

Source: The capital charge rates and CONE values shown above are derived using the CONE model and all assumptions consistent the September 2022 affidavit to PJM, other than updating the ATWACC.

Capital Charge Rates for Each Candidate ATWACC

For the auctions for 2028/29 and 2029/30, PJM would use these charge rates to recalculate the base CONE values from the September 2022 filing, then apply escalation as usual

Capital Charge Rates by Technology, CONE Area and Candidate ATWACC

Potential Updated ATWACCs for 2028/29 or 2029/30	Combined Cycle Capital Charge Rates (%)				Combined Turbine Capital Charge Rates (%)				BESS Capital Charge Rates (%)			
	EMAAC	SWMAAC	Rest of RTO	WMAAC	EMAAC	SWMAAC	Rest of RTO	WMAAC	EMAAC	SWMAAC	Rest of RTO	WMAAC
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
7.0%	11.4%	11.2%	11.3%	11.3%	10.8%	10.6%	10.7%	10.7%	10.3%	10.2%	10.2%	10.2%
7.5%	11.9%	11.7%	11.8%	11.8%	11.3%	11.1%	11.2%	11.2%	10.7%	10.6%	10.7%	10.7%
8.0%	12.5%	12.2%	12.4%	12.4%	11.7%	11.6%	11.7%	11.7%	11.1%	11.0%	11.1%	11.1%
8.5%	13.0%	12.8%	12.9%	12.9%	12.2%	12.1%	12.2%	12.2%	11.6%	11.5%	11.6%	11.6%
8.85%	13.3%	13.2%	13.3%	13.3%	12.5%	12.4%	12.5%	12.5%	11.8%	11.8%	11.8%	11.8%
9.0%	13.6%	13.4%	13.5%	13.5%	12.8%	12.6%	12.7%	12.7%	12.1%	12.0%	12.0%	12.0%
9.5%	14.2%	13.9%	14.1%	14.1%	13.3%	13.1%	13.2%	13.2%	12.5%	12.4%	12.5%	12.5%
10.0%	14.7%	14.5%	14.6%	14.6%	13.7%	13.6%	13.6%	13.6%	12.9%	12.9%	12.9%	12.9%
10.5%	15.4%	15.1%	15.3%	15.2%	14.3%	14.1%	14.2%	14.2%	13.5%	13.4%	13.4%	13.4%
11.0%	16.0%	15.7%	15.9%	15.9%	14.9%	14.6%	14.8%	14.8%	14.0%	13.9%	13.9%	13.9%
11.5%	16.6%	16.3%	16.5%	16.5%	15.4%	15.2%	15.3%	15.3%	14.5%	14.4%	14.4%	14.4%
12.0%	17.3%	16.9%	17.1%	17.1%	16.0%	15.7%	15.9%	15.9%	15.0%	14.9%	15.0%	15.0%
12.5%	17.9%	17.6%	17.8%	17.7%	16.6%	16.3%	16.4%	16.4%	15.6%	15.4%	15.5%	15.5%
13.0%	18.6%	18.2%	18.4%	18.4%	17.1%	16.9%	17.0%	17.0%	16.1%	15.9%	16.0%	16.0%

Note: Even at the same ATWACC, different technologies have different capital charge rates due to different construction periods and different depreciation schedules: 32 mo for CC, 20 mo for CT, and 16 mo for BESS. The depreciation schedules are 20-yr MACRS for CC, 15-yr for CT, and 7-yr for BESS. Even if we hold the technology type and ATWACC constant, the capital charge rate varies by CONE area due to differences in the income tax rate.

BLS Indices Compared to Projections in 2022 CONE Filing

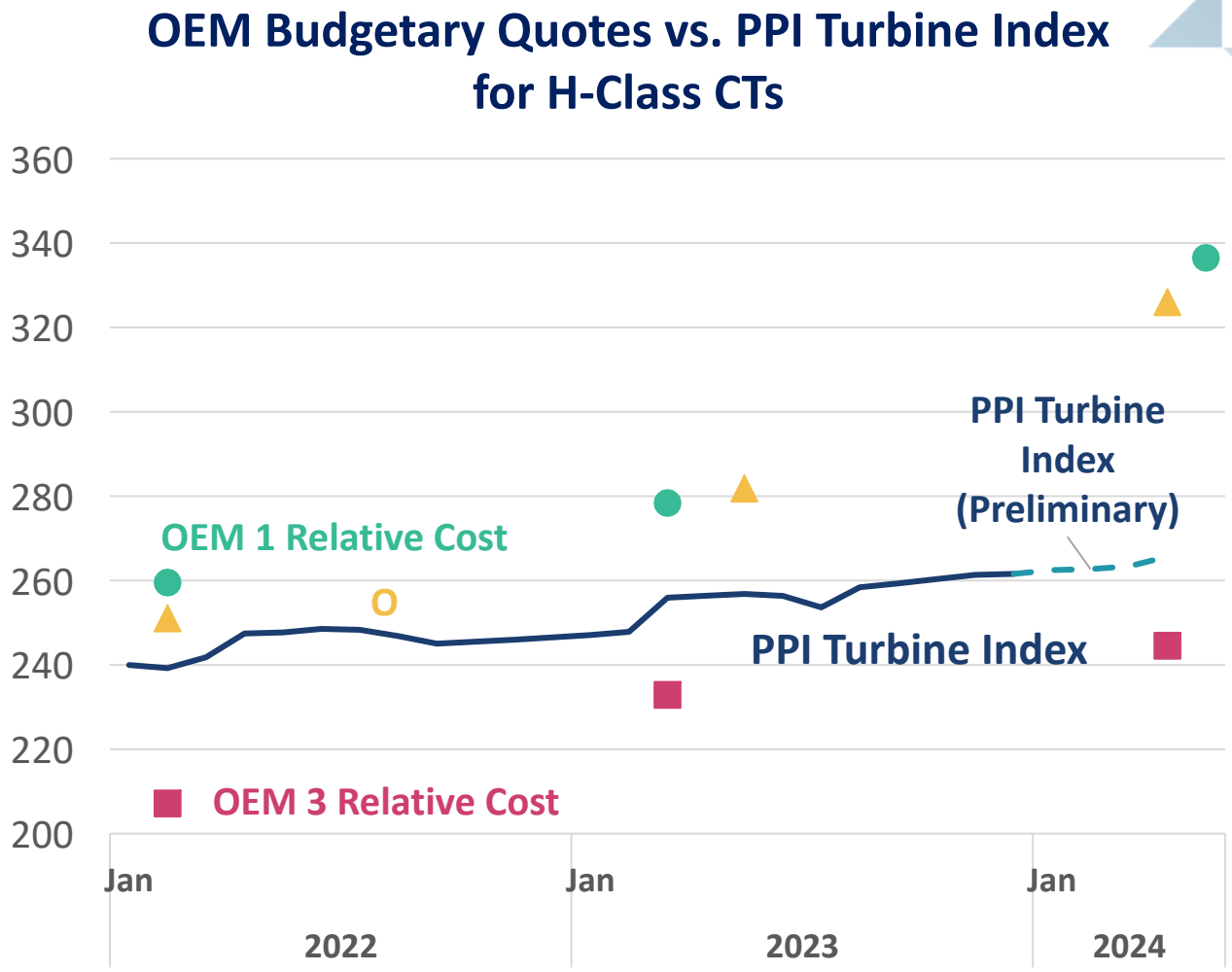
Project Costs	CT % Weight	CC % Weight	BLS Indices Used for Escalation
Turbines	25%	15%	PCU333611333611: Turbine and turbine generator set units mfg
Labor	30%	40%	**EMAAC:** ENU340005052371: NJ Average Annual Pay for Utility system construction **SWMAAC:** ENU240005052371: MD Average Annual Pay for Utility system construction **Rest of RTO:** ENU390005052371: OH Average Annual Pay for Utility system construction **WMAAC:** ENU420005052371: PA Average Annual Pay for Utility system construction
Materials	45%	45%	WPUID612: Materials and components for construction

Project Costs	Projected 12/21 to Construction	Realized for Index so far, for 12/21 to 12/23 (% per year)			
		EMAAC	SWMAAC	Rest of RTO	WMAAC
Turbines	3.92	4.91	4.91	4.91	4.91
Labor	5.52	5.60	5.90	4.76	-2.32
Materials	3.92	4.35	4.35	4.35	4.35

Notes: the most recent regional BLS index values for annual pay in 2023 are preliminary, as are the 2024 values in the PPI indices for materials and turbines. Thus, 2023 regional labor index values used for the final year of escalation may be subject to change, but those for turbines and materials have been published as final.

Revisiting the BLS Indices

- S&L's comparison to OEM quotes showed reasonable tracking.
- Recent cost data from H-Class turbine OEMs has shown greater disparities in CT pricing among OEMs, and with two OEMs appearing 25% above the line and another below.
- This does not clearly indicate a need to adjust our use of indexes
  - No index will perfectly represent the specific inputs for a particular plant
  - Even if the turbine costs were understated by 20%, that would understate CC CONE by only 3%.



Sources and Notes: OEM Cost data from S&L internal database of OEM furnished budgetary quotes for H-class simple cycle CTs solicited for annual cost studies. Average of quoted values from Feb 2022 scaled to PPI index value of 239.24 for the same date. Data points in subsequent years illustrate nominal cost escalation for each OEM.

APPENDIX

For Reference: CONE Components from 2022 Filing

CONE for 2026/27 DY ($2026)

				Combined Cycle				Combustion Turbine				BESS			
				EMAAC	SWMAAC	Rest of RTO	WMAAC	EMAAC	SWMAAC	Rest of RTO	WMAAC	EMAAC	SWMAAC	Rest of RTO	WMAAC
	Gross Costs														
[1]	Overnight	*$m*		$1,413	$1,290	$1,314	$1,360	$340	$321	$325	$331	$342	$326	$330	$335
[2]	Installed (inc. IDC)	*$m*		$1,541	$1,408	$1,434	$1,484	$357	$338	$342	$348	$362	$346	$349	$355
[3]	First Year FOM	*$m/yr*		$37	$54	$48	$39	$10	$15	$14	$11	$7	$9	$7	$7
[4]	**Net Summer ICAP**	***MW***		**1,171**	**1,174**	**1,144**	**1,133**	**361**	**363**	**353**	**350**	**200**	**200**	**200**	**200**
	Unitized Costs														
[5]	Overnight	*$/kW*	= [1] / [4]	$1,207	$1,100	$1,148	$1,200	$942	$883	$921	$946	$1,710	$1,630	$1,648	$1,675
[6]	Installed (inc. IDC)	*$/kW*	= [2] / [4]	$1,316	$1,200	$1,253	$1,309	$991	$931	$970	$996	$1,811	$1,728	$1,745	$1,775
[7]	Levelized FOM	*$/kW-yr*		$37	$48	$45	$41	$31	$43	$43	$37	$62	$65	$60	$60
[8]	**After-Tax WACC**	*%*		**8.77%**	**8.86%**	**8.81%**	**8.81%**	**8.77%**	**8.86%**	**8.81%**	**8.81%**	**8.77%**	**8.86%**	**8.81%**	**8.81%**
[9]	Effective Charge Rate	*%*		13.3%	13.2%	13.3%	13.3%	12.5%	12.4%	12.5%	12.5%	11.8%	11.8%	11.8%	11.8%
[10]	**Levelized CONE**	***$/MW-yr***	= [5] x [9] + [7]	**$198,200**	**$193,100**	**$197,800**	**$199,700**	**$149,100**	**$152,300**	**$157,800**	**$154,900**	**$264,800**	**$258,000**	**$255,000**	**$258,600**
[11]	**Levelized CONE**	***$/MW-day***	= [10] / 365	**$543**	**$529**	**$542**	**$547**	**$408**	**$417**	**$432**	**$424**	**$725**	**$707**	**$699**	**$708**