

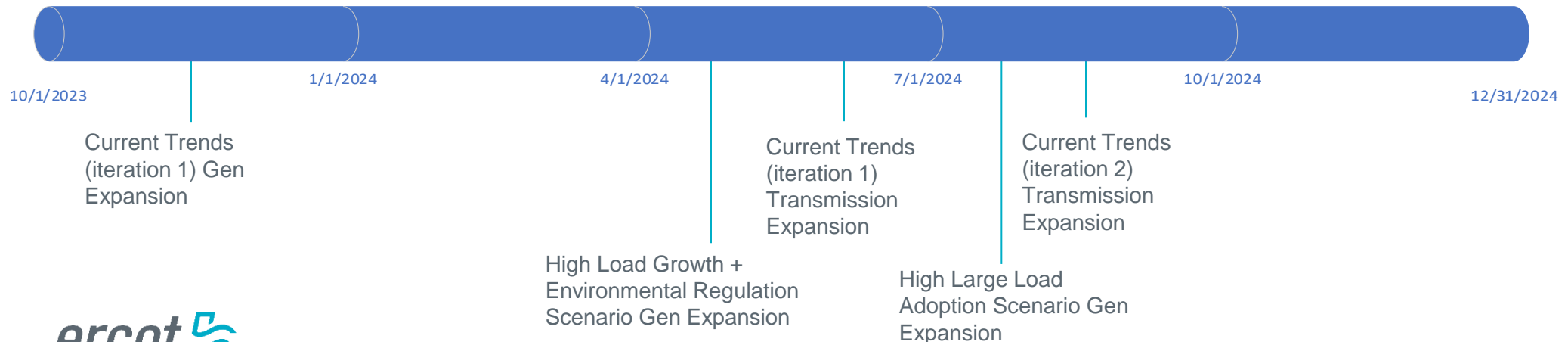


# 2024 Long-Term System Assessment (LTSA): High Large Load Adoption Scenario

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# Status of Studies

- March 2023 RPG meeting  
[2024 LTSA Overview](#)
- May 2023 RPG meeting  
[2024 LTSA Stakeholder Survey Results and Current Trends Capacity Expansion Input Assumptions](#)
- September 2023 RPG meeting  
[Preliminary Generation Expansion and Retirement Results for 2024-LTSA Current Trends](#)
- June 2024 RPG meeting  
[2024 LTSA High Load Growth and Environmental Regulations Scenario Preliminary Capacity Expansion Results](#)



\*transmission interface constraints (iteration 2) modeled as a separate set of sensitivity analyses

# High Large Load Adoption Scenario

- Based on the stakeholder feedbacks from June 11<sup>th</sup> RPG meeting, ERCOT developed a High Large Load Adoption scenario.
  - Assumed continuation of Current Technology Trends and Market Conditions, with a high load growth projected by TSPs
  - TSPs projected a total of 70,273 MW additional load (Price Responsive Load: 4,050 MW\*, Flat Load: 66,223 MW) in the next 10 to 15 year, which has not been included in Current Trends

\*TSPs estimated that 4,050 MW of new loads will be price responsive based on the limited information presented to them

# Scenario Assumptions for 2024 LTSA: Comparison for 2039

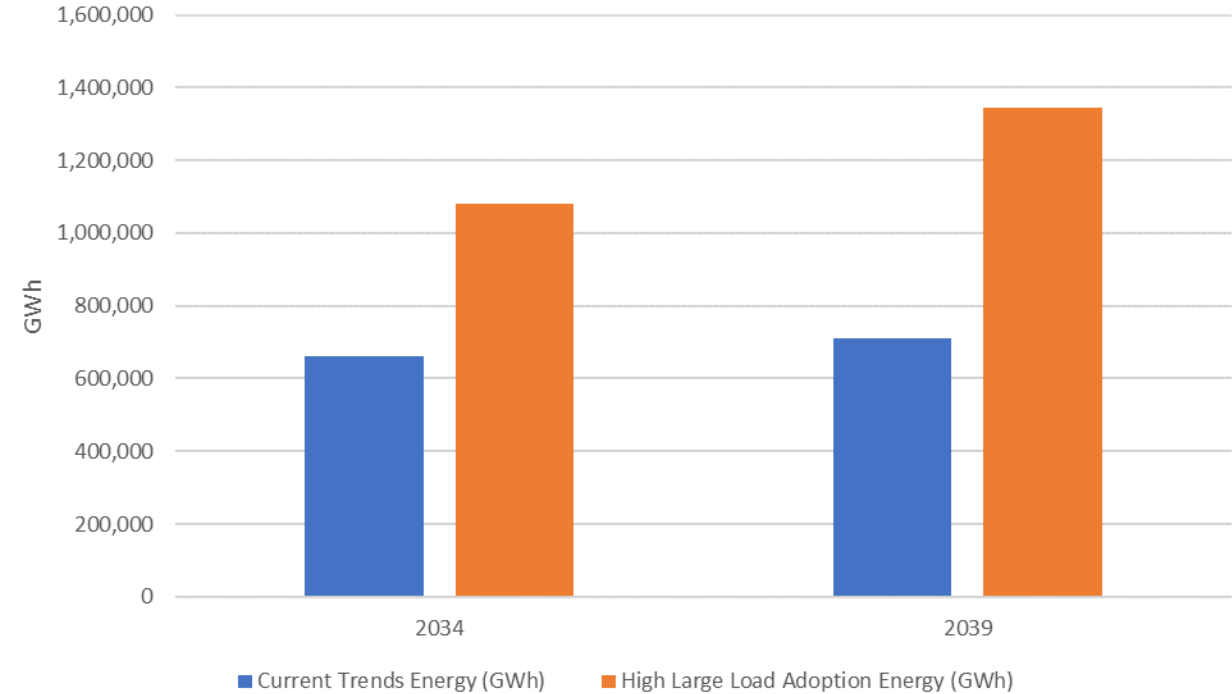
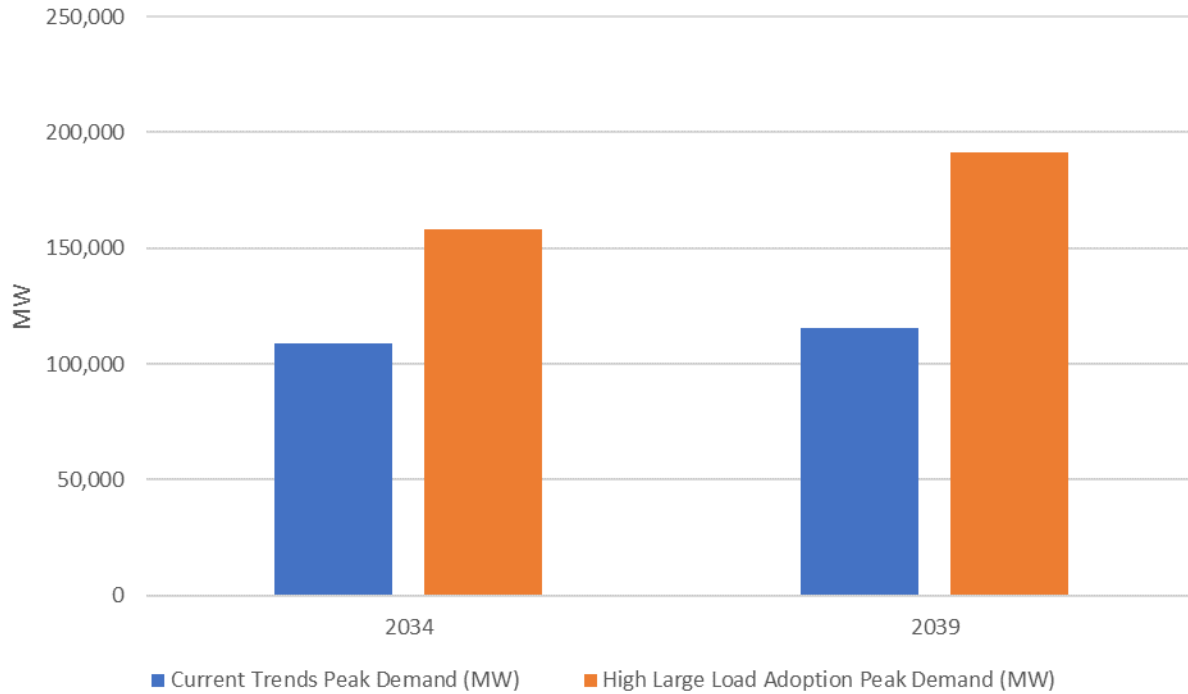
2039		Current Trends	High Load Growth and Environment Regulation Scenario	High Large Load Adoption Scenario
Gross Load	Weather Condition	2013 weather condition (96,959 MW Peak Demand/563,841 GWh Annual Energy)	2011 weather condition (99,900 MW Peak Demand/581,012 GWh Annual Energy)	2013 weather condition (96,959 MW Peak Demand/563,841 GWh Annual Energy)
	Adjusted for IHS Load in Far West	None	Applied	Applied
	Gross Peak Demand /Annual Energy After IHS Load Adjustment	96,959 MW/563,841 GWh	104,106 MW/615,329 GWh	100,792 MW/595,639 GWh
Roof-top PV/EV/LFL/Flat Load	Roof-top PV	6,011 MW	6,011 MW	6,011 MW
	EV (LDV) Annual Energy	21,228 GWh	26,012 GWh	26,012 GWh
	EV (MHDV) Annual Energy	24,844 GWh	32,387 GWh	32,387 GWh
	Price-responsive Load (LFL)	4,479 MW <sup>1</sup> +2,881 MW <sup>5</sup>	4,479 MW <sup>1</sup> + 4,050 MW <sup>6</sup>	4,479 MW <sup>1</sup> + 4,050 MW <sup>6</sup>
	Additional Flat Load from TSPs Load Projection	0 MW	66,223 MW	66,223 MW
Peak Demand/Annual Energy <sup>7</sup>		115,734 MW/711,078 GWh	195,976 MW/1,363,494 GWh	191,100 MW/1,346,200 GWh
Environment Rules	Carbon Price	0\$/ton	0\$/ton	0\$/ton
	Impact of EPA Rules for Gas Units	None	1) CCS <sup>2</sup> needed for new CCs 2) existing CCs (>300 MW/unit) capacity factor < 50% <sup>3</sup> 3) new CTs capacity factor < 20%	None
	Coal Retirement	10,228 MW coal retirement by 2032 and 10,987 MW by 2038 <sup>4</sup>	12,697 MW coal retirement before 2035	10,228 MW coal retirement by 2032 and 10,987 MW by 2038

<sup>1</sup> in operation as of Feb. 2024 <sup>2</sup> carbon capture and storage (CCS)

<sup>3</sup> only two existing CCs impacted <sup>4</sup> 951 MW of retirement due to economics

<sup>5</sup> estimated new LFL <sup>6</sup> from TSP load projection <sup>7</sup> including roof-top PV/EV/LFL/flat load

# Current Trends vs. High Large Load Adoption

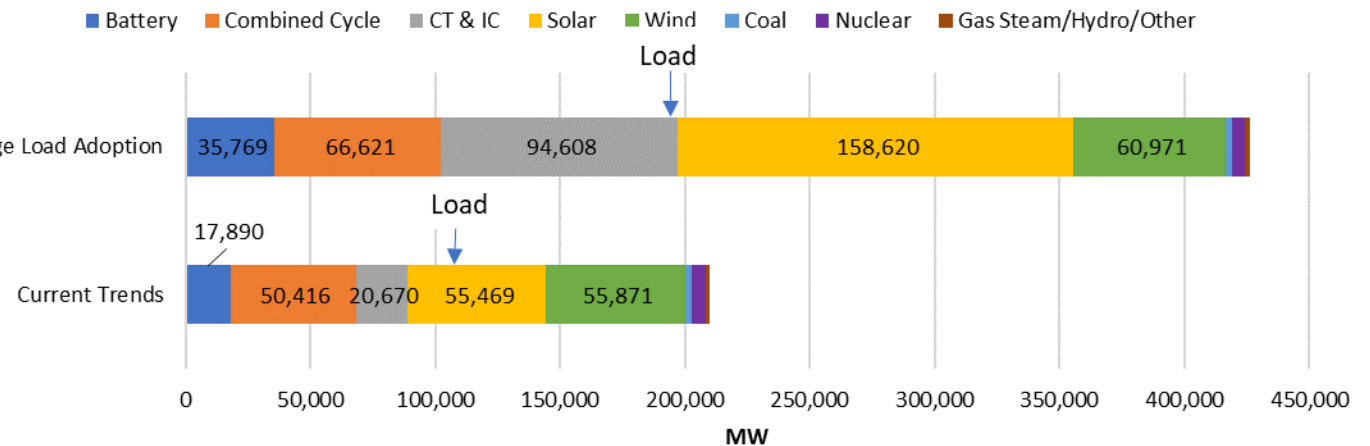


<sup>1</sup> Peak Demand and Annual Energy include gross load, EV, roof-top PV, 100% of price-responsive load (LFL) and incremental loads from TSPs if applicable

# 15-Year Total Capacity Mix Comparison (2025 to 2039)

				2024LTSA - Current Trends (MW)			2024LTSA - High Large Load Adoption (MW)		
	Operational Resources	Planned Resources	Total Starting Capacity Mix	Retirements	Capacity Expansion	Net Total	Retirements	Capacity Expansion	Net Total
Battery	2,335	6,523	8,858	-	9,032	17,890	-	26,911	35,769
Combined Cycle	40,138	551	40,689	4,352	14,079	50,416	2,226	28,158	66,621
CT & IC	11,733	900	12,633	1,206	9,243	20,670	1,212	83,187	94,608
Gas Steam	11,155	60	11,215	10,766	-	449	10,766	-	449
Solar	9,940	23,312	33,252	-	22,217	55,469	-	125,368	158,620
Wind	31,495	7,276	38,771	-	17,100	55,871	-	22,200	60,971
Coal	13,630	-	13,630	10,987	-	2,643	10,987	-	2,643
Hydro	593	-	593	-	-	593	-	-	593
Nuclear	5,153	-	5,153	-	-	5,153	-	-	5,153
Other	790	-	790	105	-	685	105	-	685
<b>Total</b>	<b>126,961</b>	<b>38,622</b>	<b>165,583</b>	<b>27,416</b>	<b>71,671</b>	<b>209,838</b>	<b>25,296</b>	<b>285,824</b>	<b>426,111</b>

- In High Large Load Adoption scenario:
  - The same starting capacity mix (operational and planned resources)
  - Compared to Current Trends, the same coal retired, and 2,126 MW more of CCs remaining in operations
  - It requires the large-scale buildout of Solar, Battery and Gas Resources to serve the load



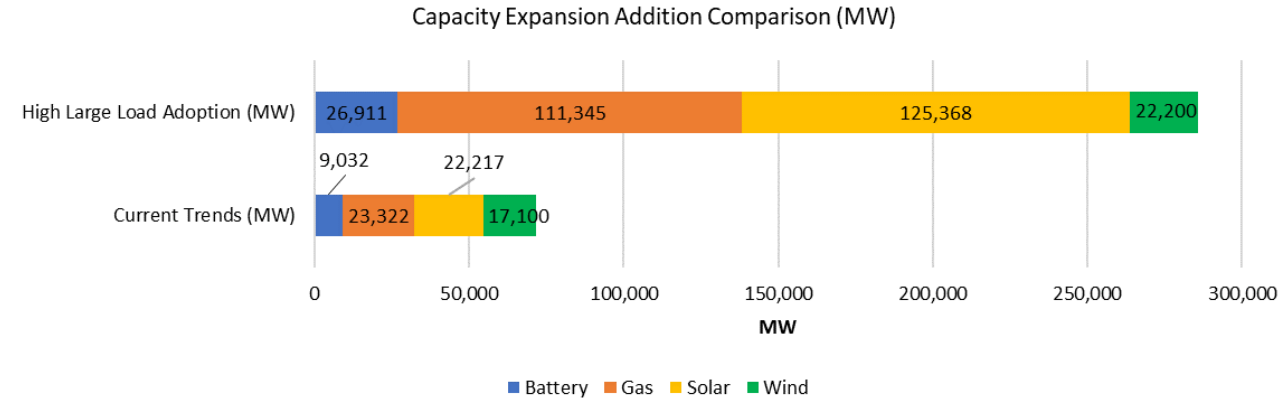
# Preliminary Results of 2024 LTSA High Large Load Adoption Scenario

Description	Units	2025	2029	2034	2039	Total
CC Adds	MW	-	6,498	10,830	10,830	28,158
CT Adds	MW	1,896	22,752	27,492	31,047	83,187
Storage Adds	MW	1,976	4,727	16,392	3,816	26,911
Solar Adds	MW	2,676	25,700	55,681	41,312	125,368
Wind Adds	MW	1,400	7,200	11,800	1,800	22,200
Annual Capacity Additions	MW	7,947	66,877	122,194	88,805	
Cumulative Capacity Additions	MW	7,947	74,825	197,019	285,824	
Retirements	MW	9,956	6,997	6,613	1,730	
Cumulative Retirements	MW	9,956	16,953	23,566	25,296	
Coincident Peak	MW	102,214	126,524	158,118	191,100	
Annual Energy	GWh	613,065	822,784	1,081,723	1,346,200	
Peak Net Load (1)	MW	75,381	97,265	123,370	153,456	
Minimum Net load (1)	MW	9,642	9,143	9,478	9,080	
Average Market Price	\$/MWh	36.3	33.0	40.9	47.2	
Natural Gas Price	\$/MMbtu	3.80	3.35	4.75	5.64	
Natural Gas Generation	%	45.7	50.2	45.6	48.6	
Coal Generation	%	9.3	3.5	1.8	1.3	
Wind Generation	%	24.5	23.0	22.7	18.8	
Solar Generation	%	13.3	18.1	26.0	28.3	
Scarcity Hours	HRS	-	-	-	-	
Unserved Energy	GWhs	-	-	-	-	
Large Flexible Load Curtailment Hours	Hours	161	49	3	9	
Large Flexible Load Curtailment Energy	GWhs	491	136	8	5	

(1) Hourly Net Load = Total Demand – Hourly Wind Output – Hourly Solar Output

# Observations for High Large Load Adoption Results

- The model adds significantly more gas, solar and battery resources to meet the load compared to Current Trends.
- The new battery resources are all 2-hour batteries. The model didn't find it economic to build 4- or 8-hour batteries even though the options were available.
  - The model builds both Co-Located Batteries (13,868 MW) and Standalone Batteries (13,043 MW).
- Small Modular Reactor was also provided as an option in capacity expansion analysis, but it was found uneconomic under current market conditions and without subsidies in High Load Growth scenario.



	Battery	Solar
Co-Located	13,868	13,868
Stand Alone	13,043	111,500
Total	26,911	125,368

## Next Step

- ERCOT is working on the transmission expansion assessment of Current Trends, and will bring the results to future RPG meetings for stakeholder discussion.

# Questions

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