CREPC-TC Monthly Meeting

E3 WestTEC Capacity Expansion Results

June 13th, 2025

Arne Olson, Senior Partner
Jack Moore, Senior Director
Femi Sawyerr, Senior Managing Consultant

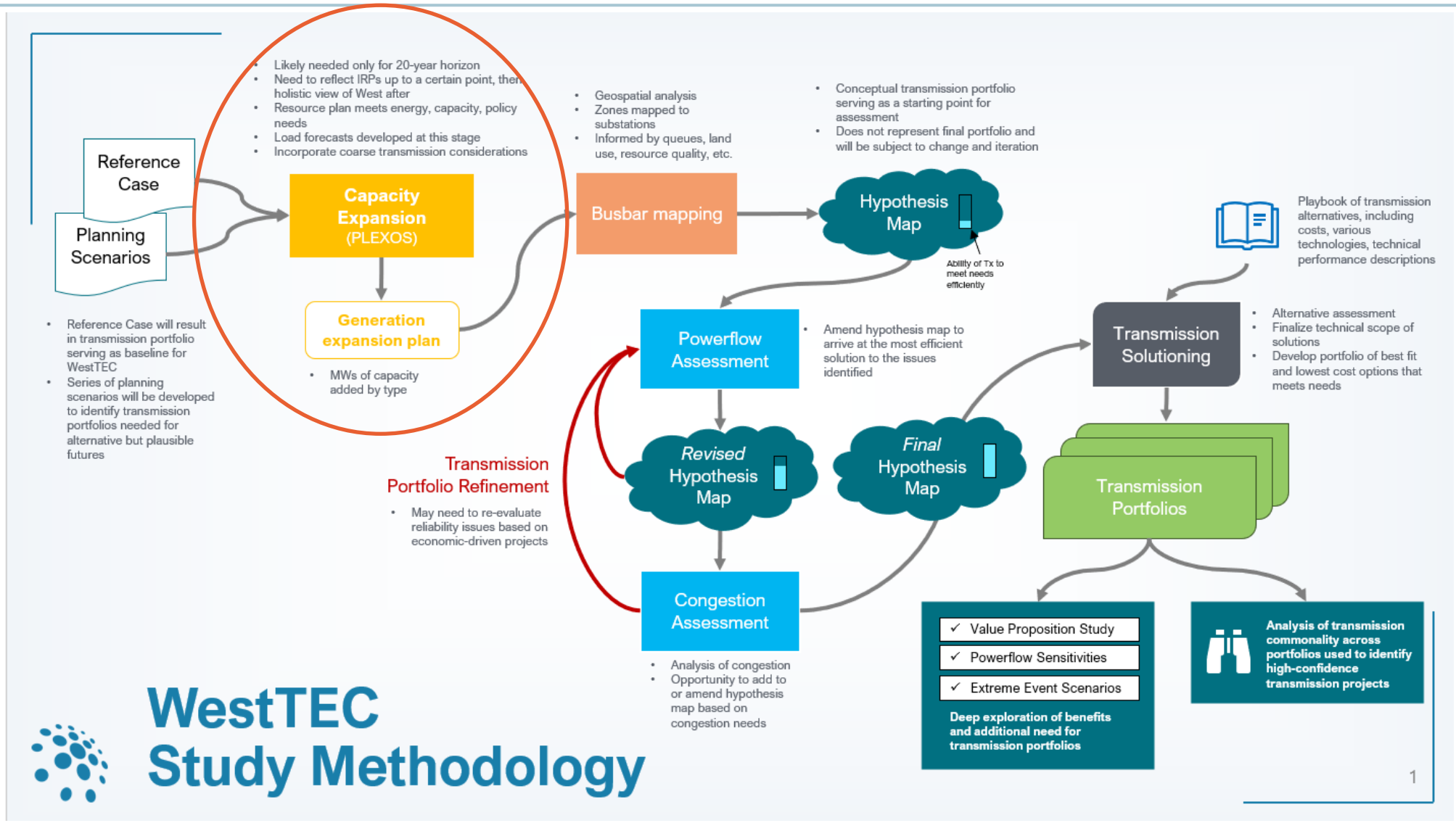
Energy+Environmental Economics

Content

Analytical Background and Scenario Definition

Energy+Environmental Economics

Capacity Expansion Role in WestTEC Project Workflow



Overview of Capacity Expansion Analysis

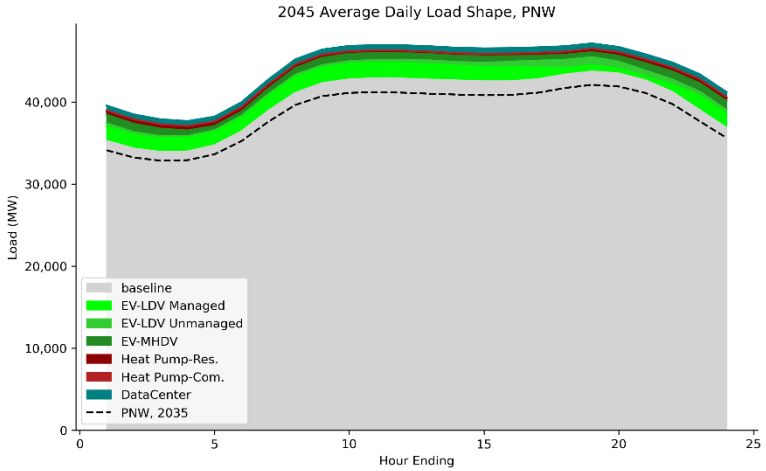
- **E3 is leading the capacity expansion analysis, utilizing the PLEXOS LT model to co-optimize intrazonal generation and storage resource portfolios, and inter-zonal transmission resources over the entire Western Interconnection.**
- **The optimization will create portfolios that will incorporate the following in each of the modeled zones:**
  - Meet hourly load and reserve requirements
  - Respect policy and voluntary goals
  - Respect resource availability limits
  - Result in the lowest Western-system-wide capital, dispatch, and penalty costs (if applicable)
- **The goal of the capacity expansion analysis is to create 20-year resource portfolios for each zone, which:**
  - incorporate generation, load, and transmission information from the 10-year study as base inputs
  - utilize new load forecasts data that are being developed using a bottom-up approach
  - utilize the latest generation, storage, and transmission resource costs and performance assumptions
  - utilize scenario analysis to consider multiple potential future realities

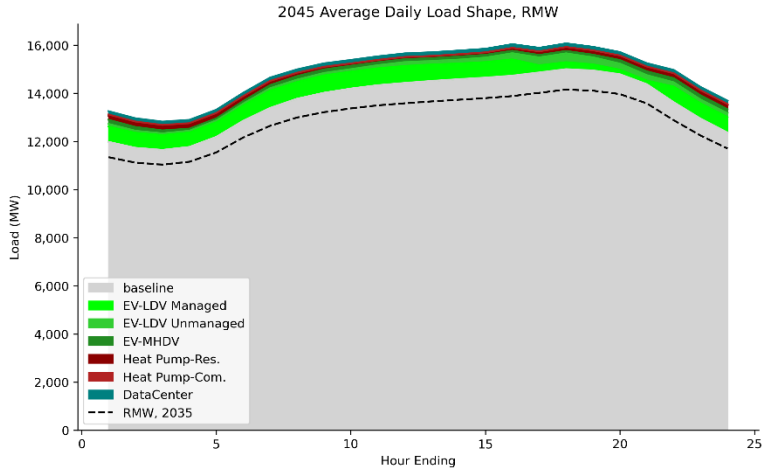
20-Year Reference Scenario Definition

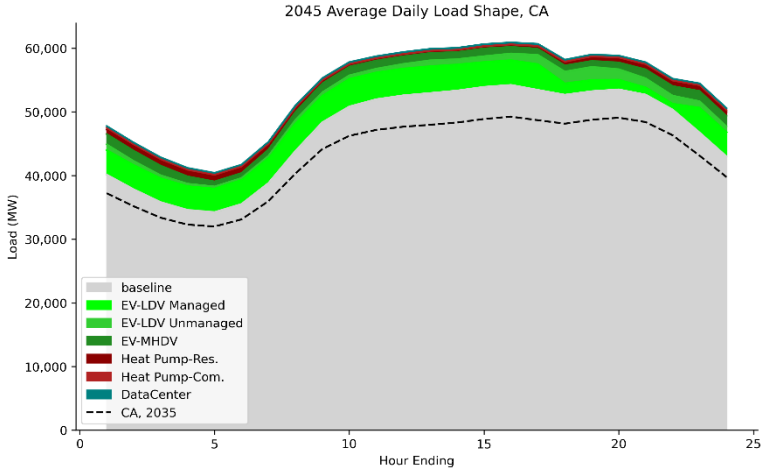
- **The 20-Year Reference Scenario optimizes resource and transmission expansion for 2035 and 2045**
  - The optimization samples 72 days per year with 24 hours per each sample day
- **This 20-Year Reference Scenario uses a load forecast that has a 2.2% CAGR between 2025 and 2045, building on the load forecast used in the 10-Year Reference Scenario**
- **The clean energy standard (CES) adopted represents only the mandatory CES across all the jurisdictions in the WECC**
  - No voluntary utility or balancing area CES commitments are modeled
  - In jurisdictions with no mandatory clean energy standards, all clean energy levels (as a percent share of load) that are achieved by 2035 (in the reference case) are assumed to be preserved through 2045
  - CA, WA, and OR have carbon prices of $57/metric ton in 2035 and $106/metric ton in 2045 (nominal $)
- **Planning reserve margin (PRM) requirements are modeled at a regional level using the perfect capacity (PCAP) method, which can be met by (a) resources located within that region or (b) remote resources selected and specifically dedicate to serve load in that region; regional PRM targets are:**
  - CA – 15.6%
  - Pacific Northwest – 5.6%
  - Rockies – 10.8%
  - Desert Southwest – 12.9%

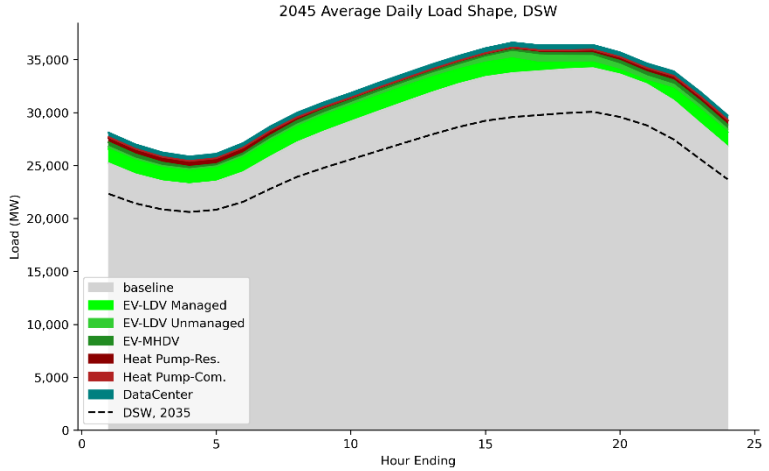
Key Inputs

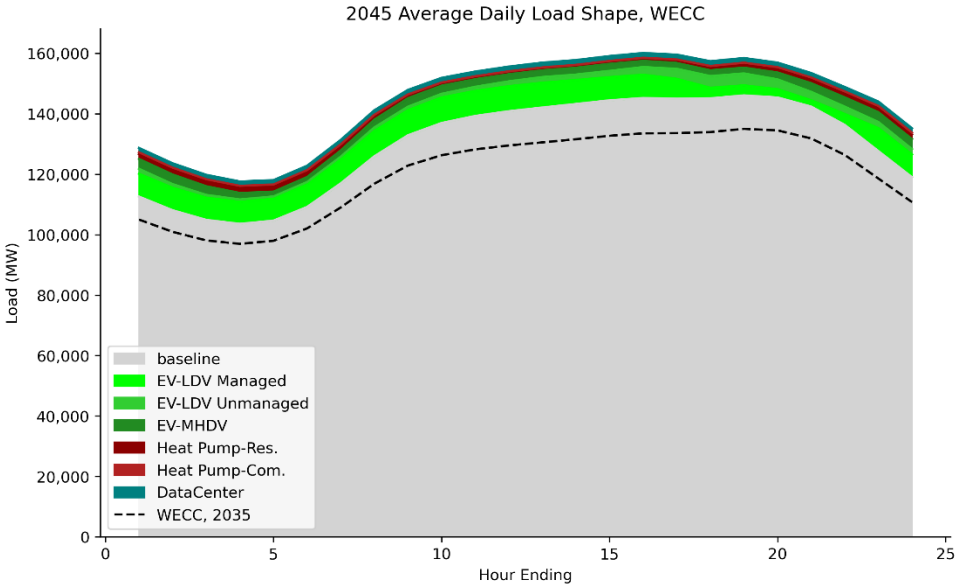
2045 Loads are stacked over the 10-Year Reference Scenario Loads







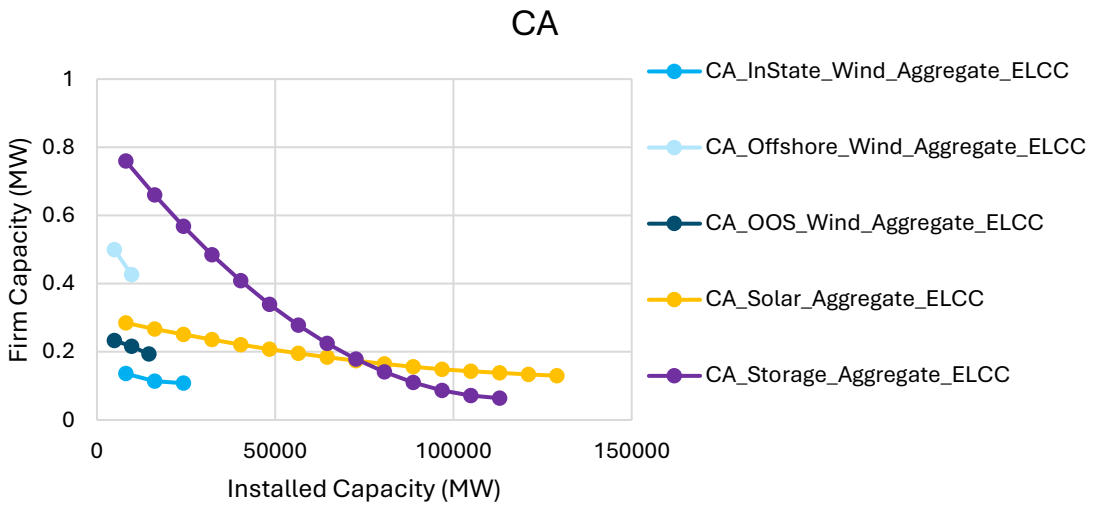


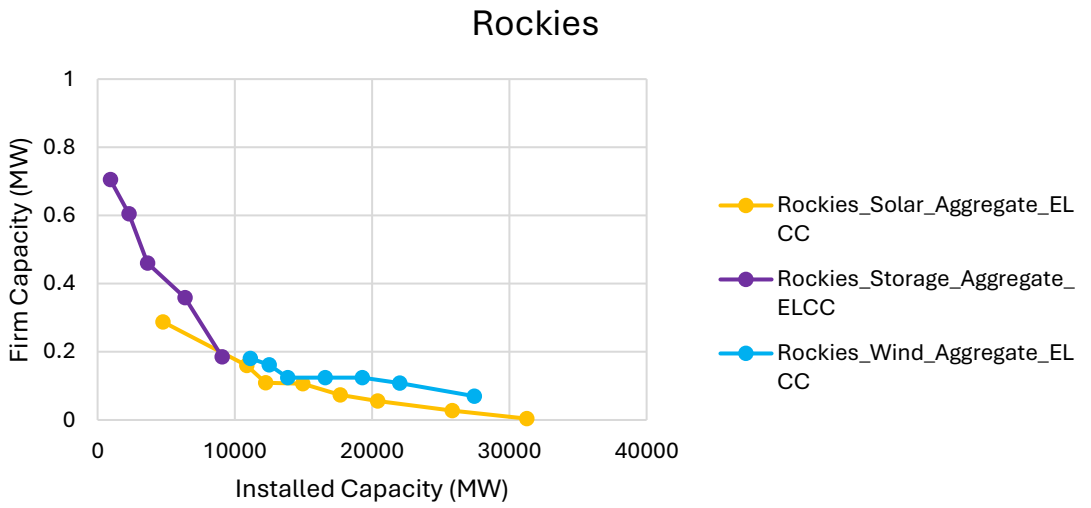


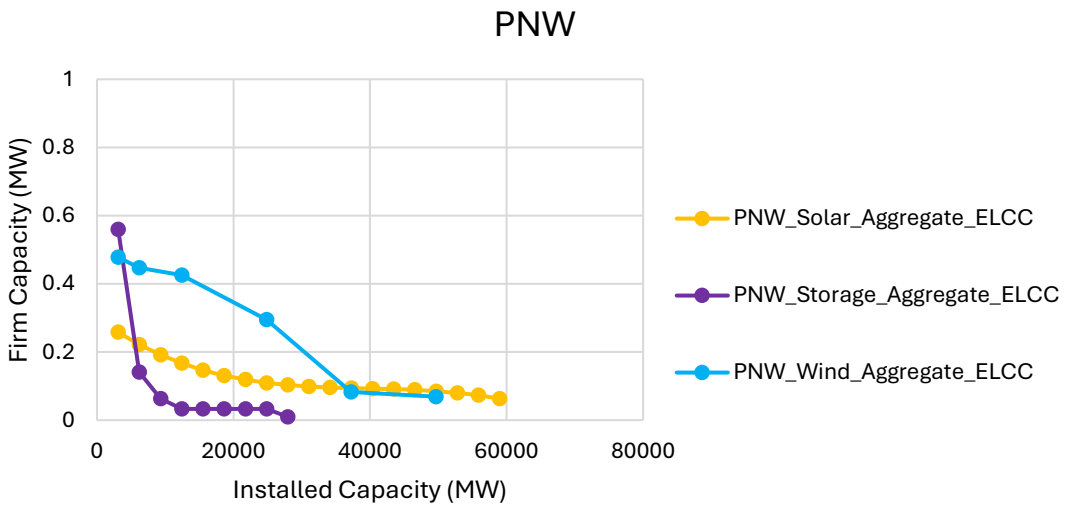
Note: E3 load components above shown for 2035-45 incremental additions

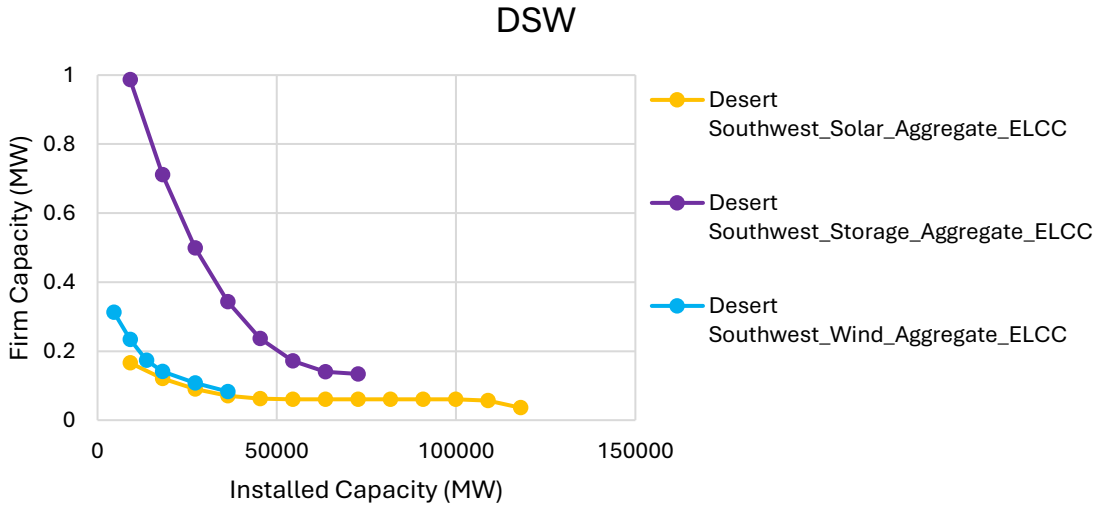
Electrification & data center load components in 2035 ((in previous slide) are included in grey ”baseline” area (broken out in next slide)

Marginal ELCC Curves by Region for Achieving PRM Requirement





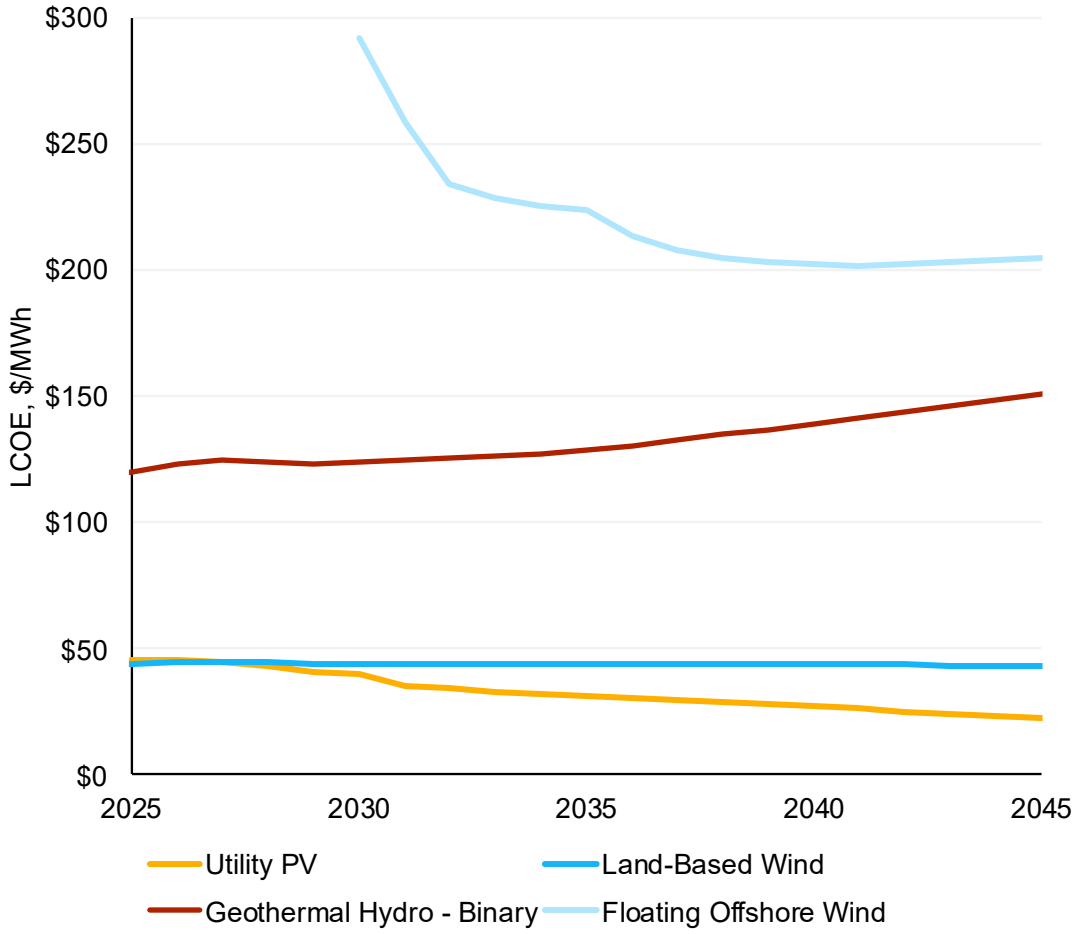




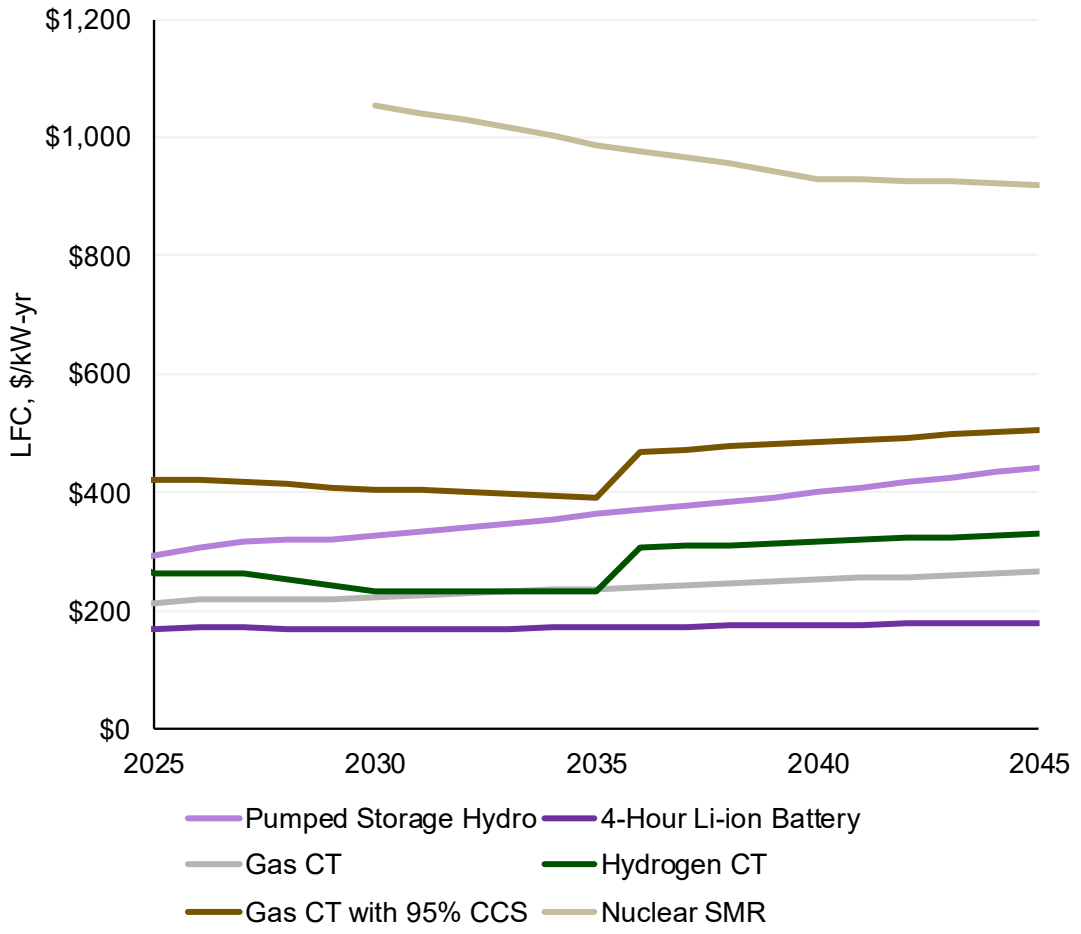
Nominal-Levelized Resource Costs (Average Across Regions)

Years correspond to Project COD (Vintage)

LCOE of Variable Renewable Resources



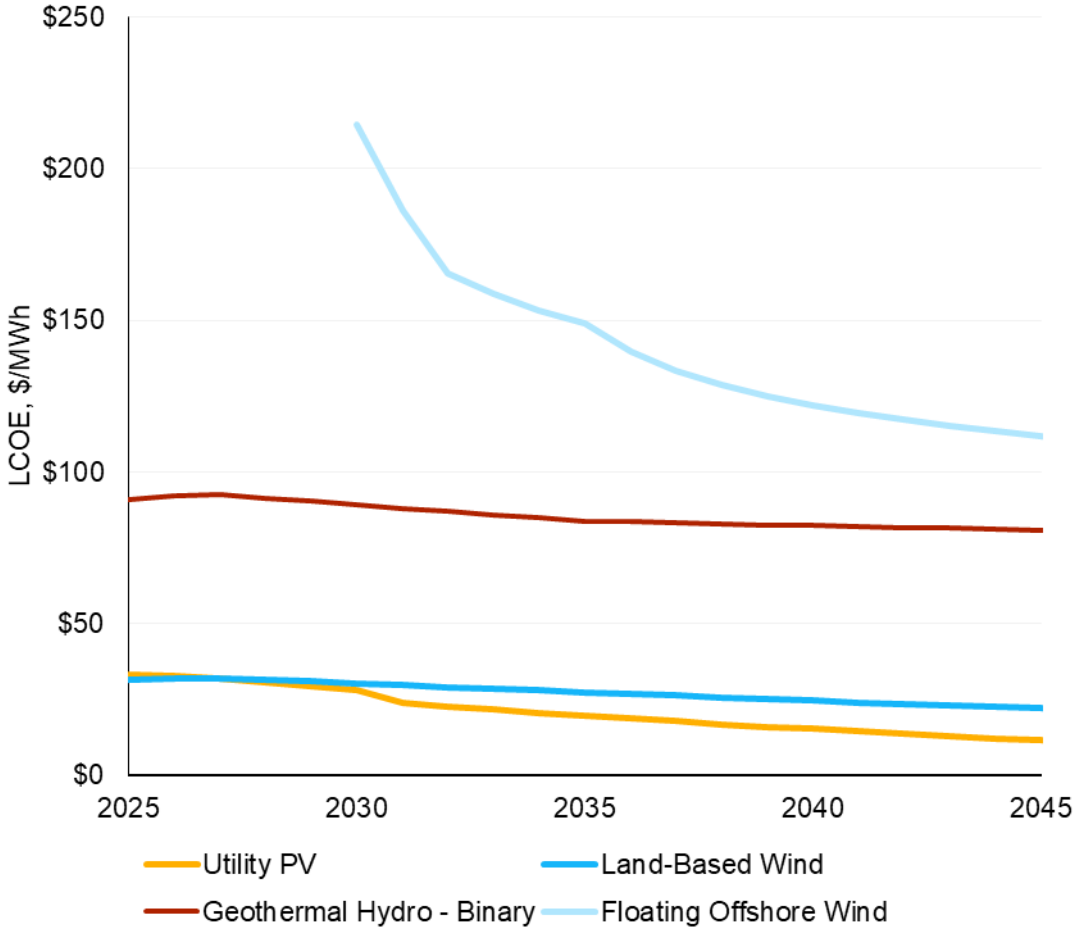
LFC of Firm Capacity Resources



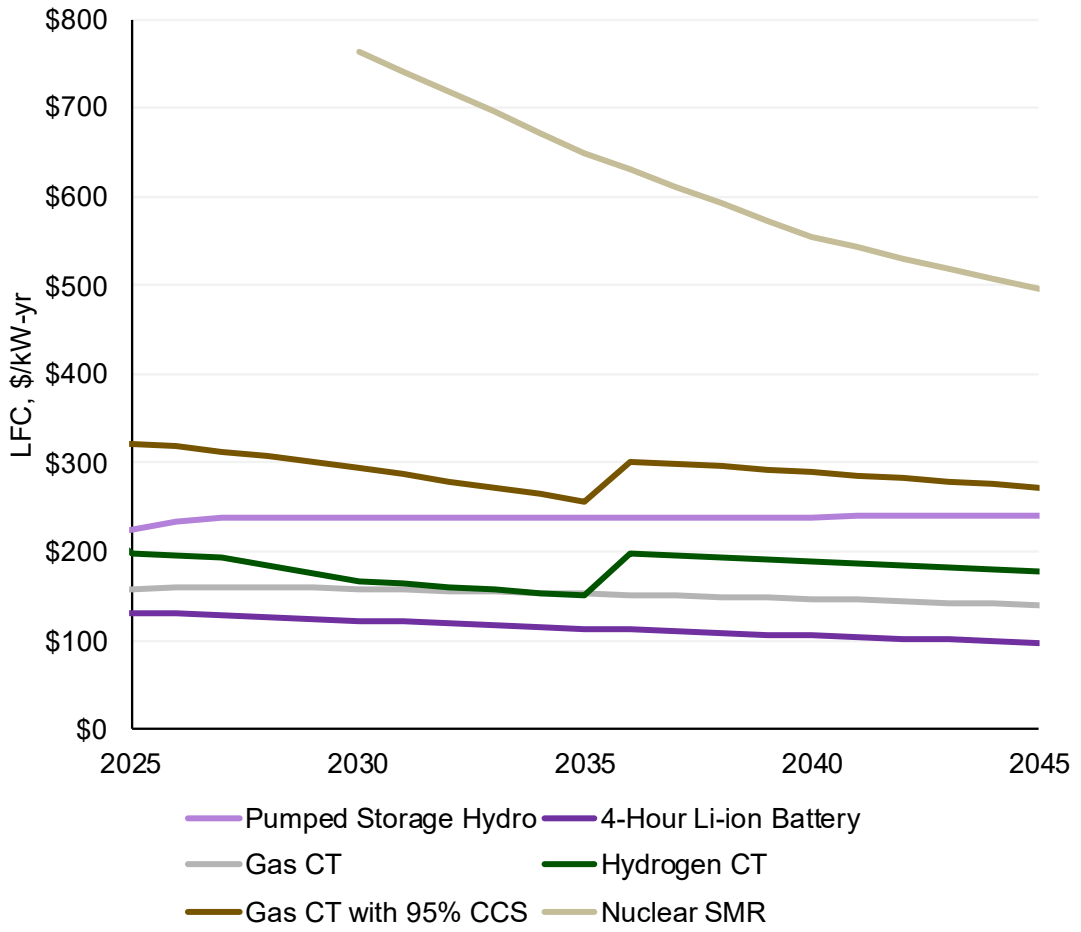
Real-Levelized Resource Costs (Average Across Regions), 2023$

Years correspond to Project COD (Vintage)

LCOE of Variable Renewable Resources



LFC of Firm Capacity Resources

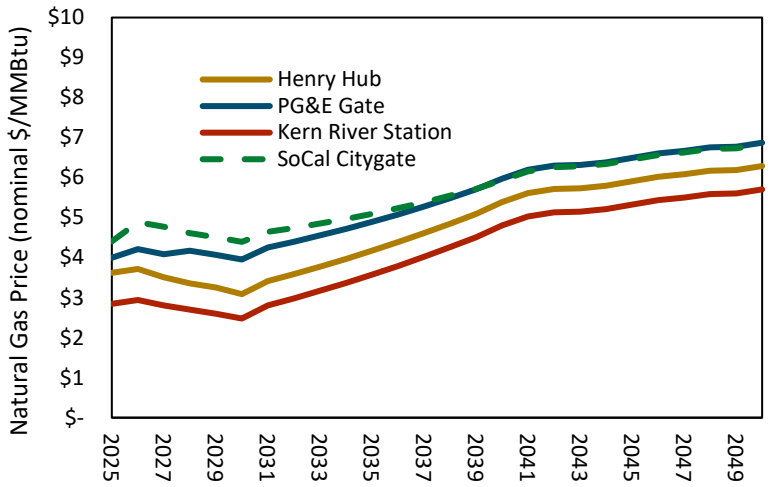


Candidate Resource Availability

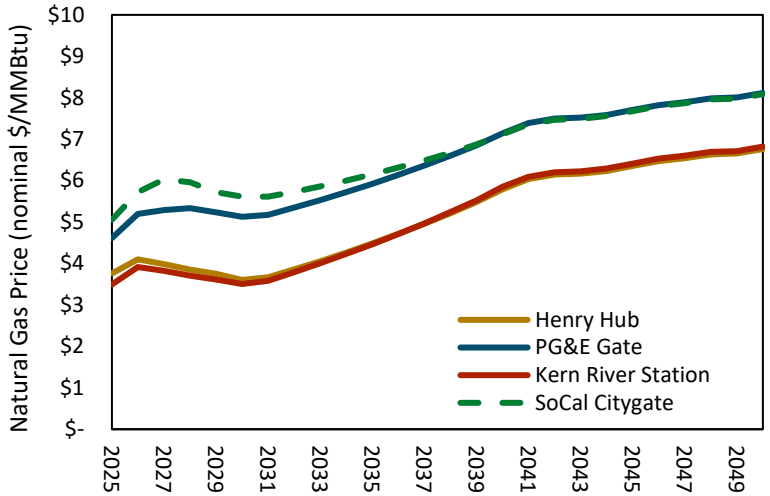
Technology	Notes
Solar	
Wind	Excluded west of Cascades (PNW_NW and PNW_SW)
Offshore Wind	Specific project locations
Geothermal	Specific project locations
EGS	Specific project locations
Pumped Hydro	Specific project locations
Li-ion Battery	
Gas CT	Excluded from CA, WA, OR
Hydrogen	Not available until 2045
CCS	Excluded from CA, WA, OR
Nuclear SMR	Excluded from CA and OR

Fuel Price Forecast

Summer Gas Price (Nominal $/MMBtu)



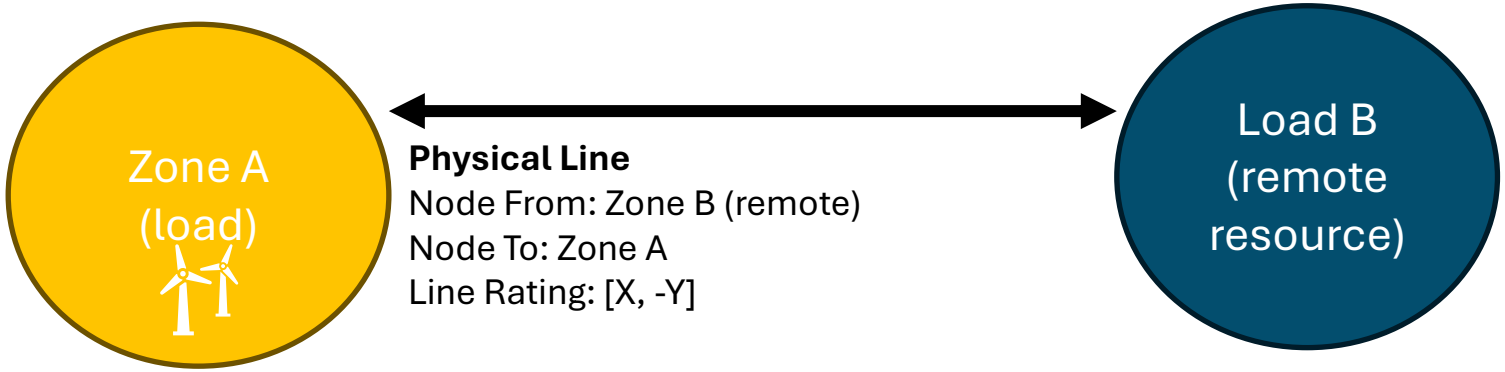
Winter Gas Price (Nominal $/MMBtu)



+ **Core gas prices derived using a combination of forwards in the near-term and AEO fundamentals-based forecasts for the longer term**
  - Monthly SNL forwards for Henry Hub used through 2028
  - Past 2028, Henry Hub forecast is trended to EIA forecasts by 2040
+ **For all other hubs, monthly basis differentials are derived from SNL forwards in the near term**
  - 3 years of monthly basis derived from forwards are averaged and assumed to hold constant through the forecast

Out-of-state/remote resource modeling

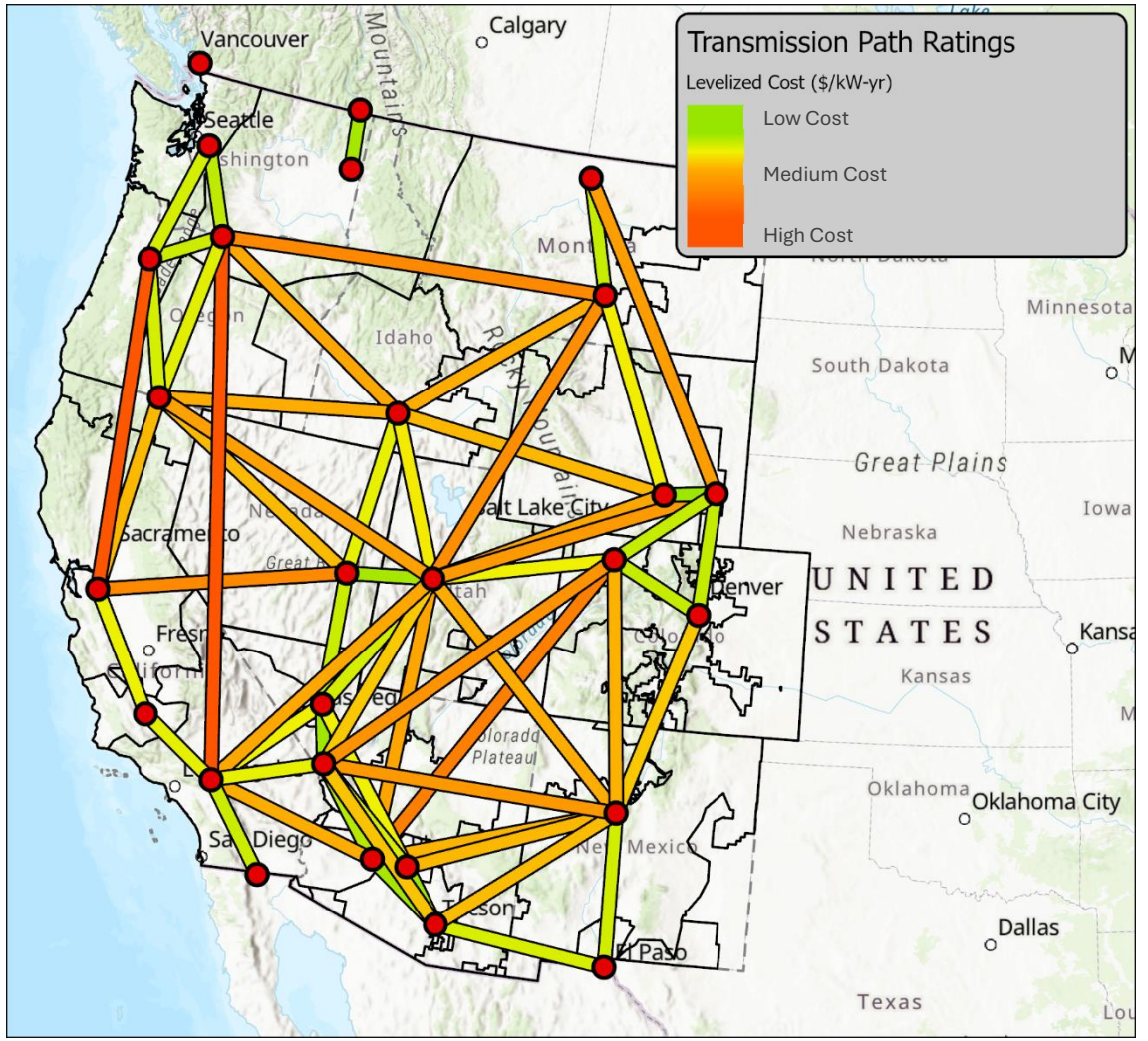
- **Out-of-state resources are placed in the load zone they are contracted to serve, rather than their physical remote zone, in the model. However, the transmission capacity required for the resource to flow from the remote zone to the load zone (which reduces headroom on the transmission line for other flows) is accounted for using the following constraint:**



- **Subtract remote wind generator's generation from the line rating**
  - Physical Line Flow Coefficient * 1 + remote wind Generator Generation Coefficient * 1 <= X
  - This should not be applied to candidate remote gen that comes with dedicated new Tx
  - Can be applied to multiple lines in a selected path between the load zone and the remote resource zone

Transmission Expansion Costs Methodology

1. Identify a major high-voltage substation within each PLEXOS region to represent each region as a single node (presented previously)
2. Calculate the straight-line path between each region's representative node
3. Calculate routing distance multipliers that consider both greenfield and existing ROW alternative paths[1]
4. Using single-circuit compensated 500-kV per unit costs and transfer capabilities from MISO 2024 MTEP [2] with the line distance, adjusted by routing multipliers (from 3), for overnight project costs in $/MW
5. Using the cost levelization parameters from the CPUC Draft I&A,[3] to then calculate the LFC (2024 $/kW-yr) for each line using the overnight projects costs (from 4) and additional regional cost adjustments

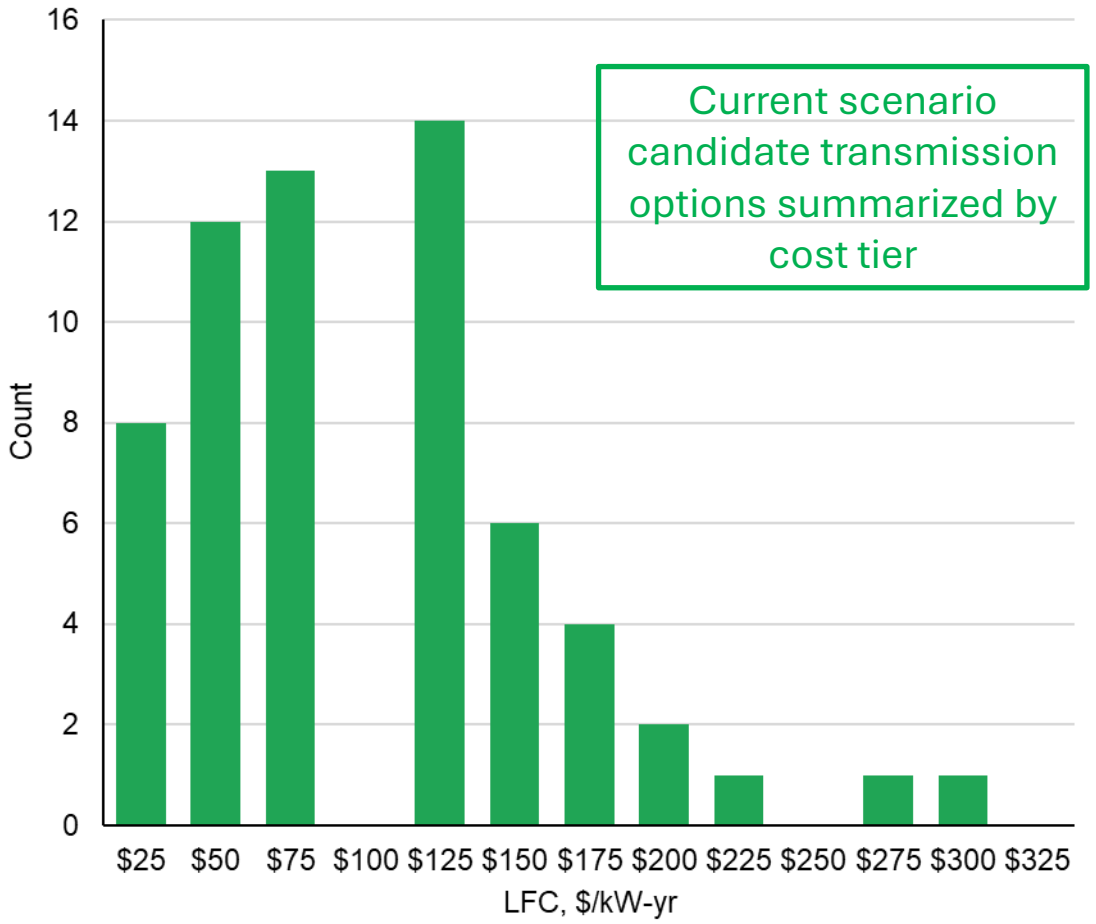


[1] https://www.pnas.org/doi/10.1073/pnas.2204098120
[2] https://www.energy.gov/gdo/national-transmission-needs-study
[3] https://www.caiso.com/documents/2024-20-year-transmission-outlook-jul-31-2024.pdf

Transmission Cost Benchmarking

+ ***The generic transmission expansion costs we calculated were consistently in alignment with costs shown for certain in-development reference projects including:***
  - *SWIP North*
  - *New ONLine*
  - *Transwest*
  - *SunZia*

Histogram of Candidate Transmission Costs



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Resource Expansion Results

Total Resource Capacity and Generation Summaries

2045 Total Resource Capacity

WECC - US	Solar	Customer Solar	Wind	Offshore Wind	Battery Storage	Geothermal	Hydro	Hydrogen	Nuclear	Pumped Hydro	Gas CCS	Gas	Oil	Coal	Other	Total
Baseline Capacity *(10-yr Reference Portfolio)*	103,411	56,943	74,104	3,855	67,243	6,255	52,250	-	5,433	6,860	-	70,415	1,726	4,111	260	452,867
2035 Selected Candidate Resource Capacity *(Incremental to Baseline)*	383		16,432									2,925				19,740
2045 Selected Candidate Resource Capacity *(Incremental to Baseline and 2035 Selected)*	86,731		36,969	676	22,693			7,654		50		9,022				163,795
2045 Total Capacity	**190,525**	**56,943**	**127,505**	**4,531**	**89,936**	**6,255**	**52,250**	**7,654**	**5,433**	**6,910**	**-**	**82,362**	**1,726**	**4,111**	**260**	**636,401**

For simplicity, "Baseline Capacity" above includes the existing/planned resources remaining online in 2045 in the 10-yr Reference Portfolio. While the model does not optimize for economic retirement, it accounts for planned retirements of some baseline resources from 2035 to 2045, which can be found by comparing the next two slides.

2035 Total Resource Capacity (MW) (10-yr Reference Portfolio + Selected Candidate Resources)

+ ***Note***
  - *Generators built for a remote load center are included in the origination zone. E.g. NM wind for CA shows up in PNM.*
  - *There are 5 regional capacity/PRM zones – CA, PNW Core, Rest of PNW, DSW, and Rockies. Resources built in any of the regions within the same capacity zone can contribute equally to meeting that region's PRM.*
+ ***Total builds in 2035 largely reflect portfolios identified in the 10-Year Reference Scenario with some additional wind resources added primarily based on economics***
  - *Model runs intertemporally so 2035 builds include consideration & anticipation of 2045 needs and value*

	Solar	Customer Solar	Wind	Offshore Wind	Battery Storage	Geothermal	Hydro	Hydrogen	Nuclear	Pumped Hydro	Gas CCS	Gas	Oil	Coal	Other	Total
CA																
WECC_CA-NP15+	7,113	11,228	4,710	931	7,113	1,275	8,699	-	-	2,047	-	12,658	335	-	694	56,803
WECC_CA-SP15+	34,252	16,909	13,805	-	30,391	3,483	1,585	-	-	2,302	-	18,216	59	25	762	121,788
WECC_CA_PGandE_ZP26	5,778	4,728	411	2,924	1,974	-	28	-	-	-	-	3,209	-	-	44	19,097
PNW NW																
BPA-NW	-	-	6	-	4	-	238	-	-	-	-	850	-	-	230	1,329
PNW Core_NW	-	-	0	-	-	-	677	-	-	-	-	1,586	-	-	-	2,264
PugetSound	16	1,059	1,423	-	1,992	-	368	-	-	400	-	1,493	3	-	35	6,788
SeattleCL	-	73	-	-	-	-	844	-	-	-	-	3	12	-	5	937
TacomaPower	-	27	-	-	-	-	697	-	-	-	-	-	-	-	-	724
PNW NE																
Avista	19	46	609	-	1	-	1,252	-	-	-	-	753	3	-	131	2,814
BPA-NE	828	-	5,530	-	1,215	-	20,165	-	1,151	314	-	615	-	-	27	29,844
ChelanCountyPUD	-	1	-	-	-	-	1,984	-	-	-	-	-	-	-	-	1,985
DouglasCountyPUD	-	2	-	-	-	-	840	-	-	-	-	-	-	-	-	842
GrantCountyPUD	280	3	144	-	-	-	2,192	-	-	-	-	-	-	-	-	2,619
PACW-NE	1,246	942	4,026	-	940	-	2	-	-	-	-	464	-	-	-	7,620
PNW Core_NE	1,890	-	10,237	-	-	-	1,104	-	-	-	-	924	-	-	-	14,155
PNW SW																
BPA-SW	-	-	-	-	-	-	1,913	-	-	-	-	235	-	-	121	2,268
PACW-SW	3	-	-	-	-	-	269	-	-	-	-	-	-	-	163	435
PNW Core_SW	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
PortlandGeneral	81	145	334	-	645	-	241	-	-	-	-	-	-	-	19	1,464
PNW SE																
BPA-SE	679	15	-	-	-	38	2	-	-	-	-	-	-	-	-	735
PACW-SE	565	-	21	-	-	-	15	-	-	-	-	-	-	-	-	601
PNW Core_SE	1,811	-	2,516	-	-	-	482	-	-	-	-	590	-	-	-	5,399
Rest of PNW																
IdahoPower	2,397	154	3,399	-	1,055	36	2,344	-	-	-	-	723	5	-	35	10,149
NWMT	418	171	3,253	-	100	-	751	-	-	-	-	186	-	1,587	132	6,598
PacificorpEast	5,118	2,077	2,631	-	844	484	281	-	-	-	-	3,811	28	2,730	109	18,112
PacificorpEastWY	92	133	11,581	-	660	-	4	-	345	-	-	2,762	1	1,711	112	17,401
MISO																
North Dakota Wind (forced-in)			3,000													3,000
DSW																
NevadaNorth	6,192	151	150	-	2,380	903	1	-	-	-	-	1,530	-	219	3	11,529
NevadaSouth	3,982	1,667	-	-	2,473	4	1,039	-	-	-	-	4,981	-	-	13	14,160
AZPublicService	8,103	3,765	2,902	-	3,819	-	-	-	3,937	-	-	6,469	1,086	-	25	30,106
ElPasoElectric	1,888	162	159	-	1,141	-	-	-	-	-	-	1,091	2	-	54	4,497
PublicServiceNM	4,350	527	7,959	-	2,856	29	62	-	-	-	-	1,680	31	-	2	17,496
SaltRiverProject	11,837	1,270	880	-	4,635	-	80	-	-	1,176	-	9,003	2	-	-	28,883
TucsonElectric	2,408	478	1,003	-	1,956	-	-	-	-	40	-	1,316	-	415	3	7,619
WAPA_LwrCO	3,682	144	680	-	275	-	2,746	-	-	-	-	1,552	-	-	-	9,078
Rockies																
PublicServiceCO	4,757	2,765	9,992	-	2,707	5	33	-	-	342	-	5,992	51	-	32	26,676
WAPA_ColMo	1,680	164	748	-	609	-	1,368	-	-	239	-	886	100	-	6	5,800
WAPA_ColMo_WY	-	-	3,113	-	0	-	-	-	-	-	-	2,008	10	1,822	1	6,954
WAPA_UprMO	-	12	110	-	0	-	226	-	-	-	-	7	5	-	2	361
Total	**111,466**	**48,818**	**95,332**	**3,855**	**69,783**	**6,255**	**52,533**	**-**	**5,433**	**6,860**	**-**	**85,595**	**1,732**	**8,509**	**2,757**	**498,928**

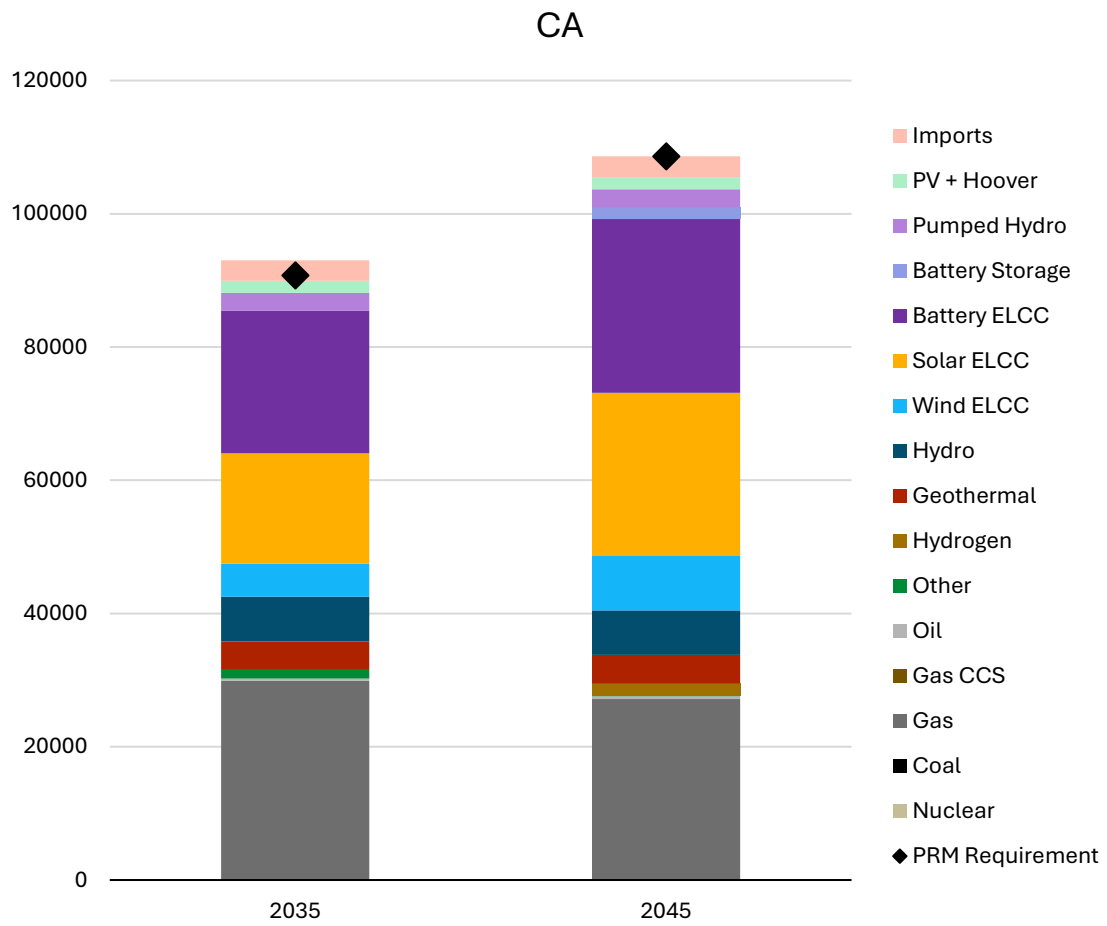
2045 Total Resource Capacity (MW) (10-yr Reference Portfolio + Selected Candidate Resources)

+ ***Note***
  - *Generators built for a remote load center are included in the origination zone. E.g. NM wind for CA shows up in PNM.*
  - *There are 5 regional capacity/PRM zones – CA, PNW Core, Rest of PNW, DSW, and Rockies. Resources built in any of the regions within the same capacity zone can contribute equally to meeting that region's PRM.*
+ ***Total builds in 2045 represent significant resource additions relative to 2035, with a diverse set of generation and capacity resources***

	Solar	Customer Solar	Wind	Offshore Wind	Battery Storage	Geothermal	Hydro	Hydrogen	Nuclear	Pumped Hydro	Gas CCS	Gas	Oil	Coal	Other	Total
CA																
WECC_CA-NP15+	24,555	12,809	7,813	1,607	12,111	1,275	8,699	2,182	-	2,047	-	11,561	335	-	3	84,996
WECC_CA-SP15+	41,119	19,766	15,385	-	36,055	3,483	1,585	0	-	2,352	-	16,757	57	25	97	136,681
WECC_CA_PGandE_ZP26	17,606	5,601	1,885	2,924	3,633	-	28	0	-	-	-	2,664	-	-	-	34,341
PNW NW																
BPA-NW	-	-	6	-	4	-	238	-	-	-	-	850	-	-	2	1,100
PNW Core_NW	-	-	0	-	-	-	512	0	-	-	-	1,109	-	-	-	1,621
PugetSound	16	1,270	1,423	-	1,792	-	368	-	-	400	-	1,214	3	-	-	6,485
SeattleCL	-	82	-	-	-	-	844	-	-	-	-	3	12	-	-	941
TacomaPower	-	28	-	-	-	-	697	-	-	-	-	-	-	-	-	725
PNW NE																
Avista	19	49	609	-	1	-	1,252	-	-	-	-	576	3	-	-	2,510
BPA-NE	818	-	5,530	-	1,215	-	20,125	-	1,151	314	-	615	-	-	2	29,768
ChelanCountyPUD	-	1	-	-	-	-	1,984	-	-	-	-	-	-	-	-	1,985
DouglasCountyPUD	-	3	-	-	-	-	840	-	-	-	-	-	-	-	-	843
GrantCountyPUD	280	4	144	-	-	-	2,192	-	-	-	-	-	-	-	-	2,620
PACW-NE	946	1,130	3,976	-	940	-	1	-	-	-	-	464	-	-	-	7,458
PNW Core_NE	15,920	-	16,954	-	-	-	1,104	0	-	-	-	924	-	-	-	34,902
PNW SW																
BPA-SW	-	-	-	-	-	-	1,909	-	-	-	-	235	-	-	-	2,144
PACW-SW	3	-	-	-	-	-	203	-	-	-	-	-	-	-	-	206
PNW Core_SW	1,005	-	-	-	-	-	-	5,472	-	-	-	-	-	-	-	6,477
PortlandGeneral	81	174	334	-	645	-	241	-	-	-	-	-	-	-	1	1,476
PNW SE																
BPA-SE	679	16	-	-	-	38	2	-	-	-	-	-	-	-	-	736
PACW-SE	565	-	21	-	-	-	12	-	-	-	-	-	-	-	-	597
PNW Core_SE	10,247	-	2,516	-	-	-	482	0	-	-	-	100	-	-	-	13,345
Rest of PNW																
IdahoPower	2,397	169	7,031	-	1,055	36	2,344	-	-	-	-	723	5	-	-	13,761
NWMT	418	198	4,702	-	100	-	751	-	-	-	-	186	-	1,587	38	7,981
PacificorpEast	9,431	2,337	2,714	-	844	484	279	-	-	-	-	4,429	28	458	2	21,005
PacificorpEastWY	92	143	12,408	-	660	-	3	-	345	-	-	5,043	1	-	112	18,807
MISO																
North Dakota Wind (forced-in)			3,000													3,000
DSW																
NevadaNorth	5,912	170	150	-	2,615	903	1	-	-	-	-	737	-	219	-	10,706
NevadaSouth	2,882	1,924	1,485	-	2,193	4	1,039	-	-	-	-	2,611	-	-	-	12,138
AZPublicService	8,103	4,568	4,044	-	4,702	-	-	-	3,937	-	-	5,073	1,086	-	-	31,512
ElPasoElectric	5,086	196	1,433	-	3,445	-	-	-	-	-	-	1,138	2	-	4	11,305
PublicServiceNM	4,797	652	9,631	-	2,386	29	62	-	-	-	-	4,501	31	-	-	22,088
SaltRiverProject	10,697	1,474	880	-	3,658	-	80	-	-	1,176	-	8,995	2	-	-	26,961
TucsonElectric	11,599	564	873	-	7,580	-	-	-	-	40	-	1,155	-	-	-	21,811
WAPA_LwrCO	3,622	187	680	-	662	-	2,746	-	-	-	-	1,552	-	-	-	9,448
Rockies																
PublicServiceCO	8,052	3,225	11,602	-	3,031	5	33	-	-	342	-	5,043	48	-	-	31,382
WAPA_ColMo	3,580	187	4,697	-	609	-	1,368	-	-	239	-	886	100	-	-	11,665
WAPA_ColMo_WY	0	-	5,468	-	0	-	-	-	-	-	-	3,212	10	1,822	-	10,512
WAPA_UprMO	-	16	110	-	0	-	226	-	-	-	-	7	5	-	-	363
Total	**190,525**	**56,943**	**127,505**	**4,531**	**89,936**	**6,255**	**52,250**	**7,654**	**5,433**	**6,910**	**-**	**82,362**	**1,726**	**4,111**	**260**	**636,401**

Preliminary results. Subject to change.

PRM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2035
2045
Imports
PV + Hoover
Pumped Hydro
Battery Storage
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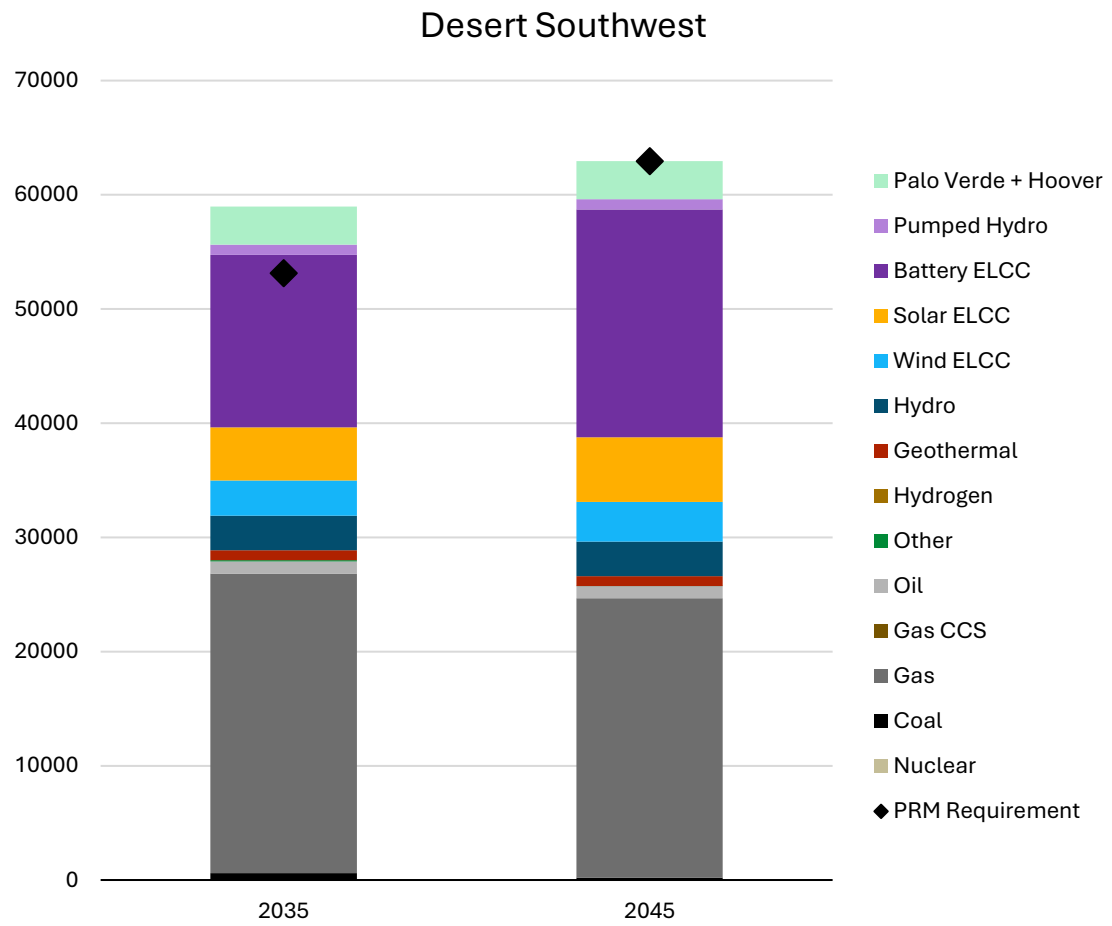
Solar ELCC
Wind ELCC
Hydro
Geothermal
Hydrogen
Other
Oil
Gas CCS
Gas
Coal
Nuclear
PRM Requirement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2035
2045
Palo Verde + Hoover
Pumped Hydro
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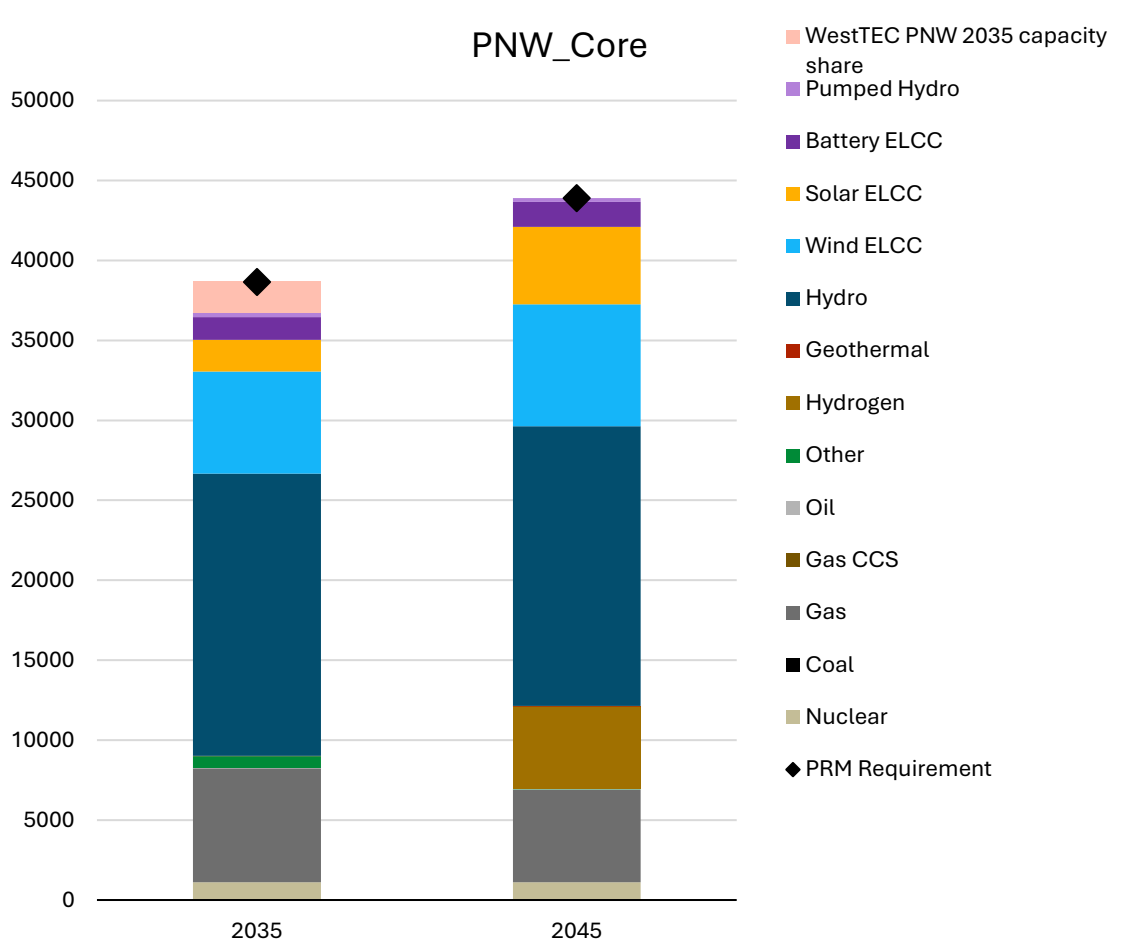
Wind ELCC
Hydro
Geothermal
Hydrogen
Other
Oil
Gas CCS
Gas
Coal
Nuclear
PRM Requirement

PRM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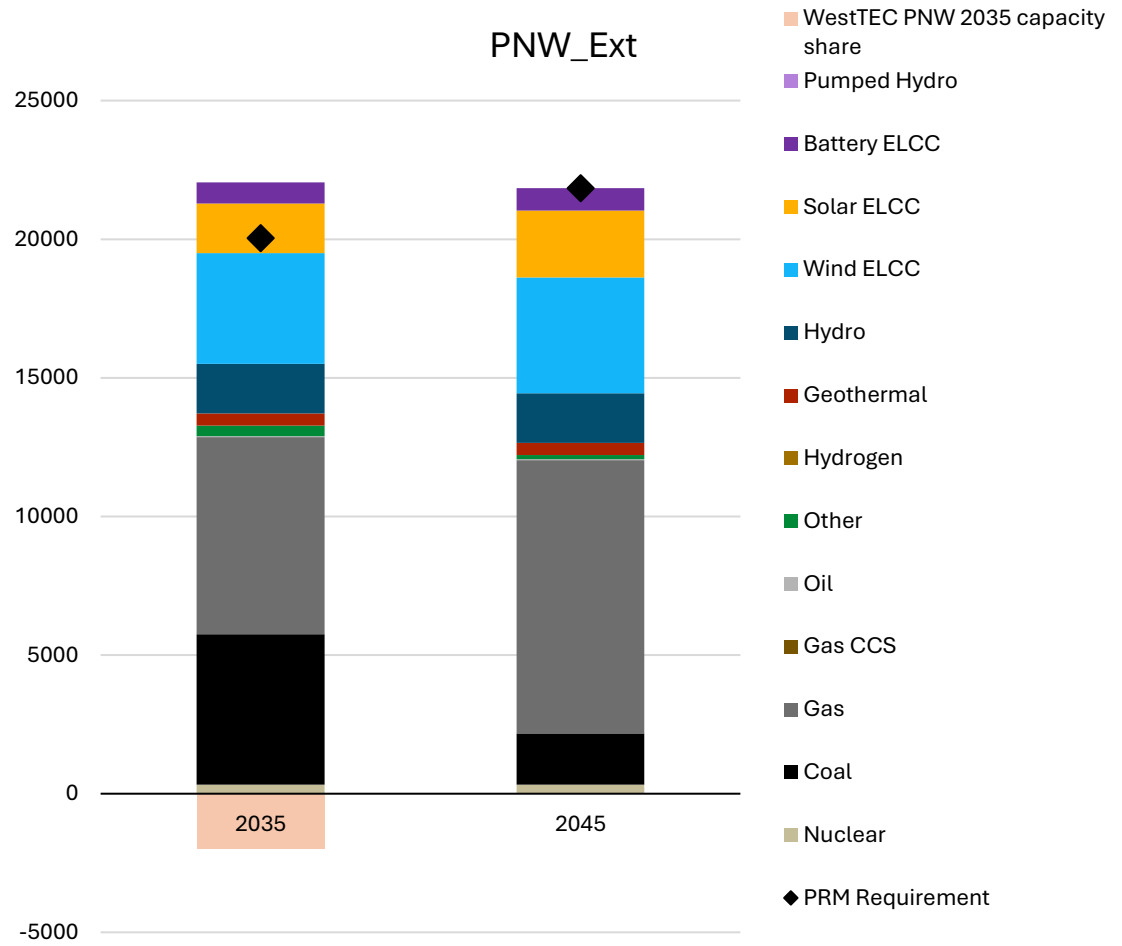
2035
2045
WestTEC PNW 2035 capacity share
Pumped Hydro
Battery ELCC
Solar ELCC
Wind ELCC
Hydro
Geothermal
Hydrogen
Other
Oil
Gas CCS
Gas
Coal
Nuclear
PRM Requirement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2045
WestTEC PNW 2035 capacity share
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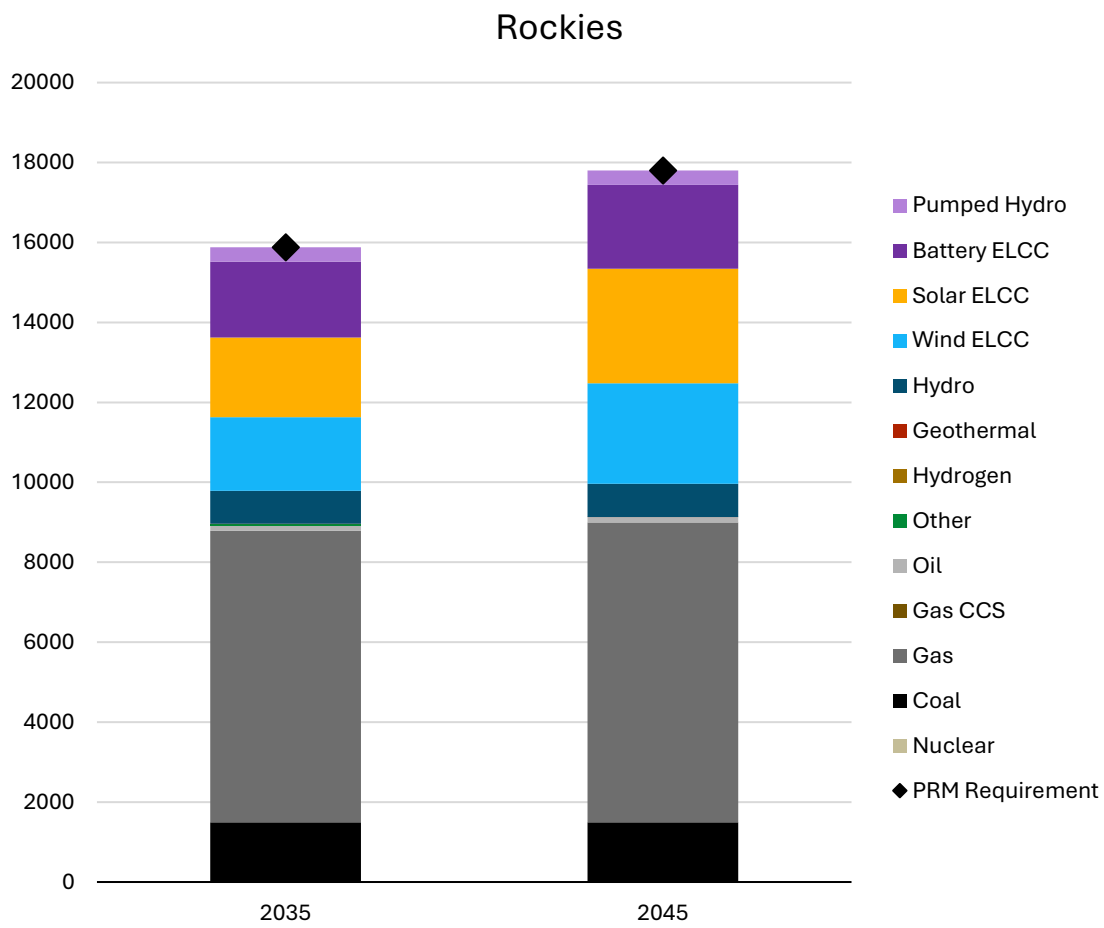
Other
Oil
Gas CCS
Gas
Coal
Nuclear
PRM Requirement

PRM


Rockies
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14000
12000
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8000
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4000
2000
0
2035
2045
Pumped Hydro
Battery ELCC
Solar ELCC
Wind ELCC
Hydro
Geothermal
Hydrogen
Other
Oil
Gas CCS
Gas
Coal
Nuclear
PRM Requirement

2035 Total Resource Generation (GWh)
(10-yr Reference Portfolio + Selected Candidate Resources)

+ ***Note***
  - *For this energy generation summary, the generators built for a remote load center are included in the load delivery zone. E.g. NM wind for CA shows up in CA.*

+ ***The significant portion of generation is from renewable resources***
  - *Fossil generation accounts for about 15% of total generation*

	Solar	Customer Solar	Wind	Offshore Wind	Battery Storage	Hydro	Geothermal	Hydrogen	Nuclear	Pumped Hydro	Gas CCS	Gas	Coal	Oil	Other	Total
CA																
WECC_CA-NP15+	19,265	20,681	13,986	1,739	(1,232)	20,957	6,124	-	-	(760)	-	19,266	-	-	4,957	104,982
WECC_CA-SP15+	87,782	31,144	48,078	-	(8,265)	4,188	26,210	-	-	(1,351)	-	8,005	66	-	4,842	200,699
WECC_CA_PGandE_ZP26	13,957	8,708	1,159	11,482	(539)	74	-	-	-	-	-	4,468	-	-	302	39,612
PNW NW																
BPA-NW	-	-	18	-	(0)	874	-	-	-	-	-	1,596	-	-	1,626	4,114
PNW Core_NW	0	-	2,144	-	(0)	1,949	-	-	-	-	-	2,681	-	-	-	6,774
PugetSound	28	1,610	5,443	-	(47)	1,133	-	-	-	(12)	-	3,176	-	-	236	11,566
SeattleCL	-	111	-	-	-	2,663	-	-	-	-	-	6	-	-	34	2,814
TacomaPower	-	41	-	-	-	2,368	-	-	-	-	-	-	-	-	-	2,409
PNW NE																
Avista	38	70	2,038	-	(0)	4,476	-	-	-	-	-	1,116	-	-	889	8,626
BPA-NE	1,683	-	15,541	-	(191)	73,922	-	-	8,282	(186)	-	570	-	-	189	99,809
ChelanCountyPUD	-	2	-	-	-	9,856	-	-	-	-	-	-	-	-	-	9,857
DouglasCountyPUD	-	3	-	-	-	4,451	-	-	-	-	-	-	-	-	-	4,454
GrantCountyPUD	502	5	392	-	-	10,284	-	-	-	-	-	-	-	-	-	11,183
PACW-NE	2,752	1,432	9,073	-	(138)	6	-	-	-	-	-	1,704	-	-	-	14,829
PNW Core_NE	3,265	-	30,787	-	(0)	3,482	-	-	-	-	-	1,062	-	-	-	38,597
PNW SW																
BPA-SW	-	-	-	-	-	7,012	-	-	-	-	-	22	-	-	893	7,927
PACW-SW	5	-	-	-	-	773	-	-	-	-	-	-	-	-	1,217	1,995
PNW Core_SW	0	-	-	-	(0)	-	-	-	-	-	-	-	-	-	-	0
PortlandGeneral	150	220	1,161	-	(22)	668	-	-	-	-	-	-	-	-	109	2,286
PNW SE																
BPA-SE	1,556	25	-	-	-	7	288	-	-	-	-	-	-	-	-	1,875
PACW-SE	1,395	-	45	-	-	44	-	-	-	-	-	-	-	-	-	1,484
PNW Core_SE	3,738	-	7,455	-	(0)	1,339	-	-	-	-	-	1,454	-	-	-	13,986
Rest of PNW																
IdahoPower	4,180	253	10,347	-	(337)	9,495	271	-	-	-	-	542	-	-	212	24,964
NWMT	623	261	6,821	-	(45)	4,364	-	-	-	-	-	133	244	-	650	13,052
PacificorpEast	11,790	3,822	8,106	-	(241)	1,050	3,640	-	-	-	-	6,930	2,805	-	760	38,662
PacificorpEastWY	108	219	37,986	-	(362)	3	-	-	2,186	-	-	24	82	-	354	40,600
MISO																
North Dakota Wind (forced-in)			10,776													10,776
DSW																
NevadaNorth	16,407	279	370	-	(705)	3	6,793	-	-	-	-	1,665	414	-	21	25,245
NevadaSouth	11,888	2,760	0	-	(899)	1,766	26	-	-	-	-	10,174	-	-	91	25,807
AZPublicService	15,740	7,436	7,898	-	(1,198)	-	-	-	27,127	-	-	1,388	-	-	165	58,556
ElPasoElectric	5,624	316	617	-	(300)	-	-	-	-	-	-	2,335	-	6	403	9,000
PublicServiceNM	8,977	1,028	31,375	-	(974)	102	220	-	-	-	-	2,985	-	-	10	43,723
SaltRiverProject	32,087	2,508	3,662	-	(1,347)	113	-	-	-	(659)	-	6,276	-	-	-	42,641
TucsonElectric	7,029	944	2,785	-	(504)	-	-	-	-	(30)	-	15	537	-	17	10,794
WAPA_LwrCO	7,502	241	1,768	-	(85)	7,330	-	-	-	-	-	529	-	-	-	17,284
Rockies																
PublicServiceCO	11,407	4,629	34,092	-	(675)	110	34	-	-	(199)	-	11,225	-	-	251	60,875
WAPA_ColMo	4,057	275	3,239	-	(161)	4,048	-	-	-	(160)	-	1,270	-	-	41	12,608
WAPA_ColMo_WY	0	-	4,114	-	(0)	-	-	-	-	-	-	150	573	-	6	4,844
WAPA_UprMO	-	18	335	-	(0)	619	-	-	-	-	-	0	-	-	11	983
Total	**273,535**	**89,041**	**301,611**	**13,221**	**(18,269)**	**179,528**	**43,606**	**-**	**37,594**	**(3,356)**	**-**	**90,769**	**4,721**	**6**	**18,288**	**1,030,295**

2045 Total Resource Generation (GWh)
(10-yr Reference Portfolio + Selected Candidate Resources)

+ ***Note***
  - *For this energy generation summary, the generators built for a remote load center are included in the load delivery zone. E.g. NM wind for CA shows up in CA.*

+ ***Even more of the total generation is from renewable resources***
  - *Fossil generation now accounts for less than 10% of the total generation*

	Solar	Customer Solar	Wind	Offshore Wind	Battery Storage	Hydro	Geothermal	Hydrogen	Nuclear	Pumped Hydro	Gas CCS	Gas	Coal	Oil	Other	Total
CA																
WECC_CA-NP15+	68,258	23,593	26,828	5,029	(3,786)	20,904	5,766	417	-	(1,233)	-	7,008	-	-	4	152,786
WECC_CA-SP15+	109,050	36,407	77,001	-	(10,347)	4,257	26,287	0	-	(1,539)	-	4,450	0	-	357	245,922
WECC_CA_PGandE_ZP26	20,380	10,316	5,128	9,249	(1,216)	74	-	0	-	-	-	1,058	-	-	-	44,988
PNW NW																
BPA-NW	-	-	18	-	(1)	861	-	-	-	-	-	968	-	-	10	1,856
PNW Core_NW	0	-	7,352	-	(0)	1,920	-	0	-	-	-	784	-	-	-	10,056
PugetSound	29	1,930	5,359	-	(213)	1,155	-	-	-	(91)	-	812	-	-	-	8,981
SeattleCL	-	125	-	-	-	2,624	-	-	-	-	-	2	-	-	-	2,751
TacomaPower	-	43	-	-	-	2,270	-	-	-	-	-	-	-	-	-	2,313
PNW NE																
Avista	39	74	1,808	-	(0)	4,425	-	-	-	-	-	535	-	-	-	6,881
BPA-NE	1,198	-	12,354	-	(438)	72,788	-	-	7,872	(407)	-	450	-	-	2	93,819
ChelanCountyPUD	-	2	-	-	-	9,816	-	-	-	-	-	-	-	-	-	9,818
DouglasCountyPUD	-	5	-	-	-	4,434	-	-	-	-	-	-	-	-	-	4,438
GrantCountyPUD	456	6	306	-	-	10,243	-	-	-	-	-	-	-	-	-	11,011
PACW-NE	2,070	1,718	7,733	-	(271)	5	-	-	-	-	-	464	-	-	-	11,719
PNW Core_NE	31,027	-	55,343	-	(0)	3,431	-	0	-	-	-	674	-	-	-	90,475
PNW SW																
BPA-SW	-	-	-	-	-	6,904	-	-	-	-	-	9	-	-	-	6,913
PACW-SW	5	-	-	-	-	762	-	-	-	-	-	-	-	-	-	767
PNW Core_SW	2,225	-	-	-	(0)	-	-	967	-	-	-	-	-	-	-	3,192
PortlandGeneral	153	264	1,141	-	(97)	657	-	-	-	-	-	-	-	-	5	2,124
PNW SE																
BPA-SE	1,108	26	-	-	-	7	288	-	-	-	-	-	-	-	-	1,429
PACW-SE	1,411	-	45	-	-	44	-	-	-	-	-	-	-	-	-	1,500
PNW Core_SE	16,665	-	7,479	-	(0)	1,317	-	0	-	-	-	0	-	-	-	25,461
Rest of PNW																
IdahoPower	5,461	278	10,643	-	(277)	9,265	272	0	-	-	0	745	-	-	-	26,386
NWMT	904	302	7,697	-	(32)	4,350	-	-	-	-	-	111	471	-	181	13,984
PacificorpEast	21,721	4,300	7,626	-	(261)	1,034	3,651	0	-	-	0	6,828	760	-	7	45,668
PacificorpEastWY	134	235	36,660	-	(284)	3	-	-	2,219	-	0	242	-	-	355	39,565
MISO																
North Dakota Wind (forced-in)			6,109													6,109
DSW																
NevadaNorth	16,783	314	394	-	(764)	3	6,813	-	-	-	0	677	719	-	-	24,938
NevadaSouth	8,767	3,186	4,657	-	(812)	1,764	26	-	-	-	0	7,205	-	-	-	24,794
AZPublicService	18,817	9,022	10,173	-	(1,446)	-	-	-	27,133	-	-	3,252	-	-	-	66,951
ElPasoElectric	12,469	382	4,951	-	(1,120)	-	-	-	-	-	0	1,893	-	0	27	18,602
PublicServiceNM	10,633	1,272	21,931	-	(791)	102	220	-	-	-	0	2,124	-	-	-	35,491
SaltRiverProject	31,236	2,911	3,588	-	(975)	113	-	-	-	(674)	-	14,667	-	-	-	50,865
TucsonElectric	27,368	1,114	2,085	-	(2,375)	-	-	-	-	(29)	-	17	-	-	-	28,180
WAPA_LwrCO	9,567	313	1,617	-	(199)	7,279	-	-	-	-	-	2,393	-	-	-	20,970
Rockies																
PublicServiceCO	19,512	5,400	39,414	-	(941)	111	34	0	-	(272)	0	4,931	-	-	-	68,189
WAPA_ColMo	4,380	313	17,600	-	(247)	4,021	-	-	-	(207)	-	742	-	-	-	26,602
WAPA_ColMo_WY	0	-	3,895	-	(0)	-	-	0	-	-	0	152	807	-	-	4,853
WAPA_UprMO	-	24	333	-	(0)	627	-	-	-	-	0	0	-	-	-	984
Total	**441,826**	**103,875**	**387,265**	**14,278**	**(26,892)**	**177,571**	**43,358**	**1,384**	**37,224**	**(4,452)**	**0**	**63,192**	**2,757**	**0**	**947**	**1,242,332**

Incremental Selected Capacity (Beyond 10-Year Reference Portfolio)

2035 Selected Candidate Resource Capacity (MW) (Incremental to 10-yr Reference Portfolio)

+ ***The model choses to primarily add wind beyond the resources in the 10-year Reference portfolio***
  - ***Note:*** *Generators built for a remote load center are included in the origination zone. E.g. NM wind for CA shows up in PNM.*
  - *Model runs intertemporally so 2035 builds include consideration & anticipation of 2045 needs and value*
+ ***The optimization also adds some capacity resources in the PNW and in the Rockies, which are capacity short***
  - *There are 5 regional capacity/PRM zones – CA, PNW Core, Rest of PNW, DSW, and Rockies. Resources built in any of the regions within the same capacity zone can contribute to the regional PRM.*
  - *Busbar mapping and powerflow analyses will determine the final placement of gas and hydrogen capacity resources within regions*

	Solar	Wind	Offshore Wind	Battery Storage	Geothermal	Hydrogen	Nuclear	Pumped Hydro	Gas CCS	Gas	Total
CA											
WECC_CA-NP15+	-	0	-	-	-	-	-	-	-	-	0
WECC_CA-SP15+	-	(0)	-	-	-	-	-	0	-	-	(0)
WECC_CA_PGandE_ZP26	-	0	-	-	-	-	-	-	-	-	0
PNW NW											
PNW Core_NW	-	0	-	-	-	-	-	-	-	-	0
PNW NE											
PNW Core_NE	0	4,170	-	-	-	-	-	-	-	-	4,170
PNW SW											
PNW Core_SW	0	-	-	-	-	-	-	-	-	-	0
PNW SE											
PNW Core_SE	383	2,516	-	-	-	-	-	-	-	-	2,899
Rest of PNW											
IdahoPower	-	-	-	-	-	-	-	-	-	0	0
NWMT	-	617	-	-	-	-	-	-	-	-	617
PacificorpEast	-	0	-	-	-	-	-	-	-	0	0
PacificorpEastWY	-	-	-	-	-	-	-	-	-	1,335	1,335
MISO											
North Dakota Wind (forced-in)		3,000									3,000
DSW											
NevadaNorth	-	-	-	-	-	-	-	-	-	-	-
NevadaSouth	-	-	-	-	-	-	-	-	-	-	-
AZPublicService	-	-	-	-	-	-	-	-	-	-	-
ElPasoElectric	-	0	-	-	-	-	-	-	-	-	0
PublicServiceNM	-	0	-	-	-	-	-	-	-	-	0
SaltRiverProject	-	-	-	-	-	-	-	-	-	-	-
TucsonElectric	-	-	-	-	-	-	-	-	-	-	-
WAPA_LwrCO	-	-	-	-	-	-	-	-	-	-	-
Rockies											
PublicServiceCO	-	3,981	-	0	-	-	-	-	-	0	3,981
WAPA_ColMo	-	0	-	0	-	-	-	-	-	0	0
WAPA_ColMo_WY	-	2,147	-	0	-	-	-	-	-	1,590	3,737
WAPA_UprMO	-	-	-	0	-	-	-	-	-	-	0
Total	**383**	**16,432**	**-**	**0**	**-**	**-**	**-**	**0**	**-**	**2,925**	**19,740**

Preliminary results. Subject to change.

2045 Selected Candidate Resource Capacity (MW) (Incremental to 10-yr Reference Portfolio)

+ ***Solar and wind comprise the bulk of new resource additions***
  - ***Note:*** *Generators built for a remote load center are included in the origination zone. E.g. NM wind for CA shows up in PNM.*
+ ***In most regions, new gas is the primary capacity resource added to meet PRM, along with some reliance on battery storage***
  - *Hydrogen is added as new capacity in California and PNW Core likely because new gas build is not allowed for 2045*
  - *There are 5 regional capacity/PRM zones – CA, PNW Core, Rest of PNW, DSW, and Rockies. Resources built in any of the regions within the same capacity zone can contribute to the regional PRM.*
  - *Busbar mapping and powerflow analyses will determine the final placement of gas and hydrogen capacity resources within regions*

	Solar	Wind	Offshore Wind	Battery Storage	Geothermal	Hydrogen	Nuclear	Pumped Hydro	Gas CCS	Gas	Total
CA											
WECC_CA-NP15+	17,441	3,103	676	4,998	-	2,182	-	-	-	-	28,400
WECC_CA-SP15+	6,867	1,580	-	5,664	-	0	-	50	-	-	14,161
WECC_CA_PGandE_ZP26	11,828	1,474	-	1,659	-	0	-	-	-	-	14,961
PNW NW											
PNW Core_NW	-	0	-	-	-	0	-	-	-	-	0
PNW NE											
PNW Core_NE	14,030	10,888	-	-	-	0	-	-	-	-	24,918
PNW SW											
PNW Core_SW	1,005	-	-	-	-	5,472	-	-	-	-	6,477
PNW SE											
PNW Core_SE	8,829	2,516	-	-	-	0	-	-	-	-	11,345
Rest of PNW											
IdahoPower	0	3,632	-	-	-	-	-	-	-	0	3,632
NWMT	-	2,106	-	-	-	-	-	-	-	-	2,106
PacificorpEast	5,504	143	-	-	-	-	-	-	-	648	6,295
PacificorpEastWY	0	1,237	-	-	-	-	-	-	-	4,686	5,923
MISO											
North Dakota Wind (forced-in)		3,000									3,000
DSW											
NevadaNorth	-	-	-	235	-	-	-	-	-	-	235
NevadaSouth	-	1,485	-	0	-	-	-	-	-	-	1,485
AZPublicService	0	1,141	-	974	-	-	-	-	-	-	2,115
ElPasoElectric	3,978	1,274	-	2,424	-	-	-	-	-	47	7,724
PublicServiceNM	1,656	3,582	-	320	-	-	-	-	-	3,772	9,331
SaltRiverProject	0	-	-	33	-	-	-	-	-	-	33
TucsonElectric	9,592	-	-	5,674	-	-	-	-	-	-	15,266
WAPA_LwrCO	0	0	-	387	-	-	-	-	-	-	387
Rockies											
PublicServiceCO	4,255	7,280	-	324	-	-	-	-	-	0	11,859
WAPA_ColMo	2,129	3,948	-	0	-	-	-	-	-	0	6,078
WAPA_ColMo_WY	0	5,010	-	0	-	-	-	-	-	2,793	7,803
WAPA_UprMO	-	-	-	0	-	-	-	-	-	-	0
Total	**87,114**	**53,400**	**676**	**22,693**	**-**	**7,654**	**-**	**50**	**-**	**11,947**	**183,535**

Preliminary results. Subject to change.

2045 Selected Candidate Resource Capacity (Incremental to 10-yr Reference Portfolio)

- **A significant amount of remote wind is developed through 2045 for delivery to load zones mostly in CA and the PNW**
- **This is largely driven by the availability of existing and planned transmission connected to the regions with high capacity factor wind**
  - This remote wind complements the solar and storage and local wind developed in these zones

Remote Resources and their Delivery Zones

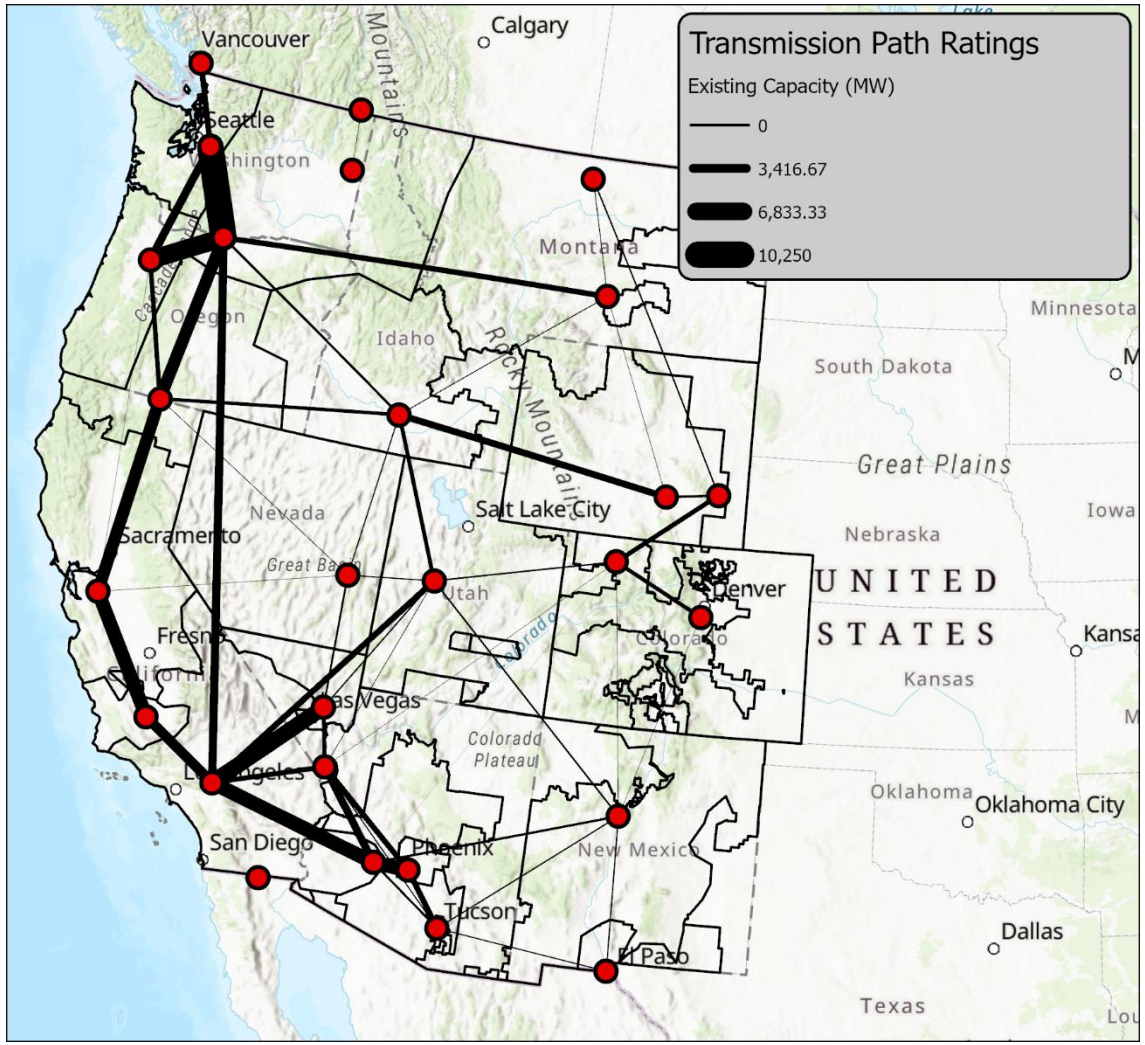
Remote Gen	Load Region	2035	2045
WY Wind	WECC_CA-NP15+	163	1,500
WY Wind	WECC_CA-SP15+	1,984	3,129
WY Wind	PNW Core_NE	-	1,094
WY Wind	NevadaSouth	-	-
WY Wind	PublicServiceCO	-	-
WY Wind	WAPA_ColMo	-	-
NM Wind	WECC_CA-SP15+	-	3,534
ID Wind	WECC_CA-SP15+	-	3,566
ID Wind	PNW Core_NE	-	209
ID Wind	PNW Core_SE	-	-
ID Wind	NevadaSouth	-	-
MT Wind	PNW Core_NW	617	2,106
AZ Solar	PNW Core_SE	-	-
NV Geo	WECC_CA-NP15+	-	-
NV Geo	WECC_CA-SP15+	-	-
UT Geo	WECC_CA-SP15+	-	-
ND Wind (forced-in)	PNW Core_NW	1,000	1,000
Total		*3,764*	*16,139*

Transmission Expansion Results

Energy+Environmental Economics

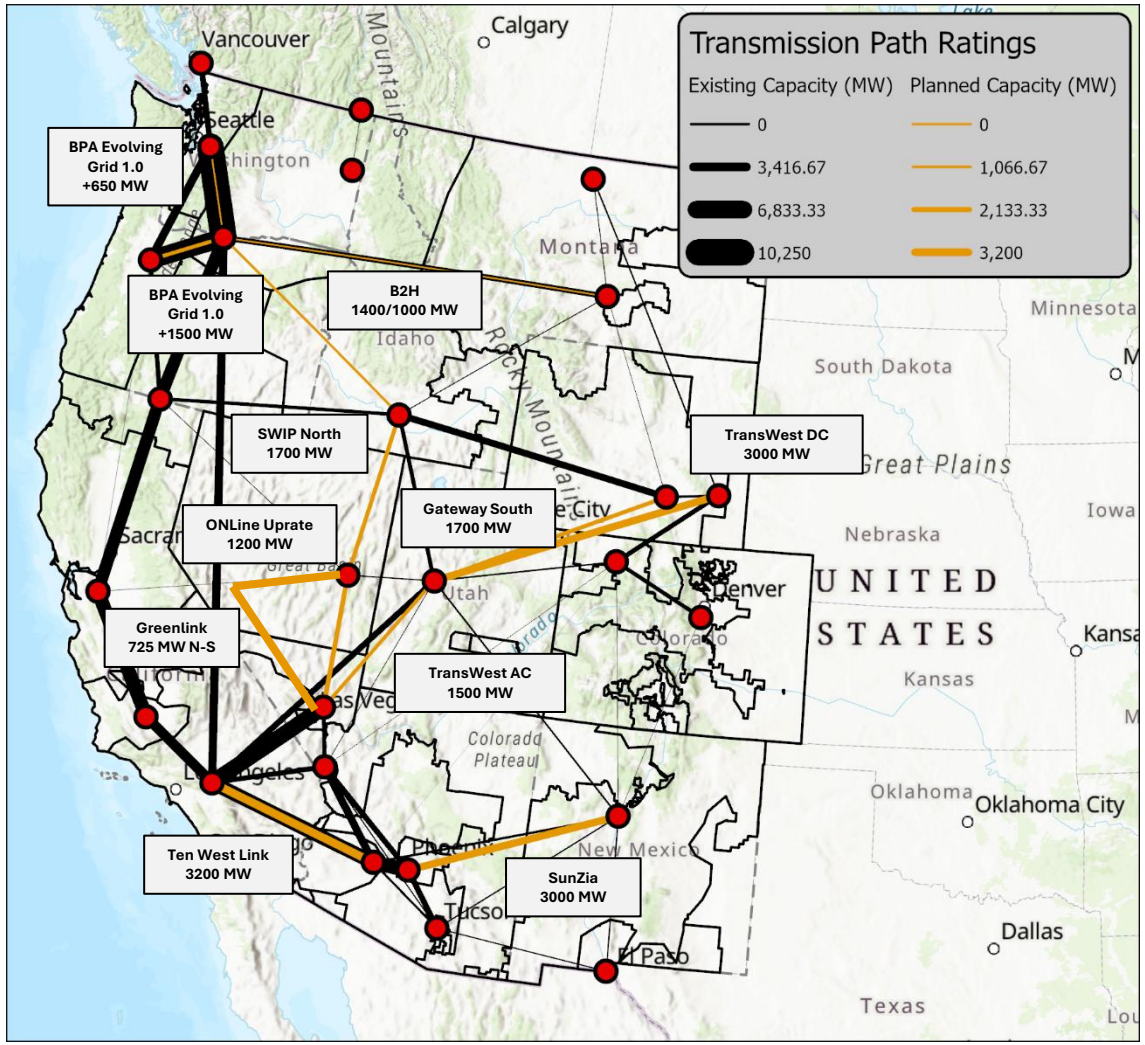
Existing Transmission Path Ratings

- The existing transmission path ratings represent present-day limits on interzonal power flow, excluding planned or in-development interregional transmission projects
- Existing transmission path ratings were primarily taken by reviewing the WECC Path Ratings
- For other interties, the maximum historical BA-BA interchange over recent historical years (2018-2024) is used to infer a path rating



Planned and In-Development Transmission Projects

- **Major planned and in-development transmission projects are incremental to the existing transmission path ratings**
- **Major interregional transmission projects are assumed to be online by 2035 and add to the total path ratings:**
  - BPA Evolving Grid 1.0
  - B2H
  - Gateway
  - TransWest Express
  - SWIP North
  - Greenlink
  - ONLine Uprate
  - SunZia
  - Ten West Link



Preliminary results. Subject to change.

Selected Transmission Lines, 2045

- Due to the significant amount of existing and planned transmission, the optimization selects about 9 GW of transmission expansion/new lines
- Lines are selected primarily to deliver WY wind to loads in Colorado and Nevada/California and to deliver resources from BC Hydro to the PNW

Path	LFC ($/kW-	New Capacity (MW
BCHA_to_PNW_NE	$ 34.79	2,100
NevadaNorth_to_PacificorpEast	$ 19.12	205
NevadaNorth_to_WECC_CA_NP15	$ 183.08	555
NevadaSouth_to_WECC_CA_SP15	$ 66.88	49
NevadaSouth_to_PacificorpEast	$ 50.08	382
NevadaSouth_to_WAPA_LwrCO	$ 14.64	113
PacificorpEastWY_to_WAPA_WY	$ 11.77	3,130
PublicServiceCO_to_WAPA_WY	$ 37.54	1,400
WAPA_LwrCO_to_WECC_CA_SP15	$ 61.33	997

Energy+Environmental Economics

Thank You

If you have any questions or feedback, please feel free contact us.

Arne Olson, arne@ethree.com

Jack Moore, jack@ethree.com

Femi Sawyerr, femi@ethree.com

Appendix

Energy+Environmental Economics

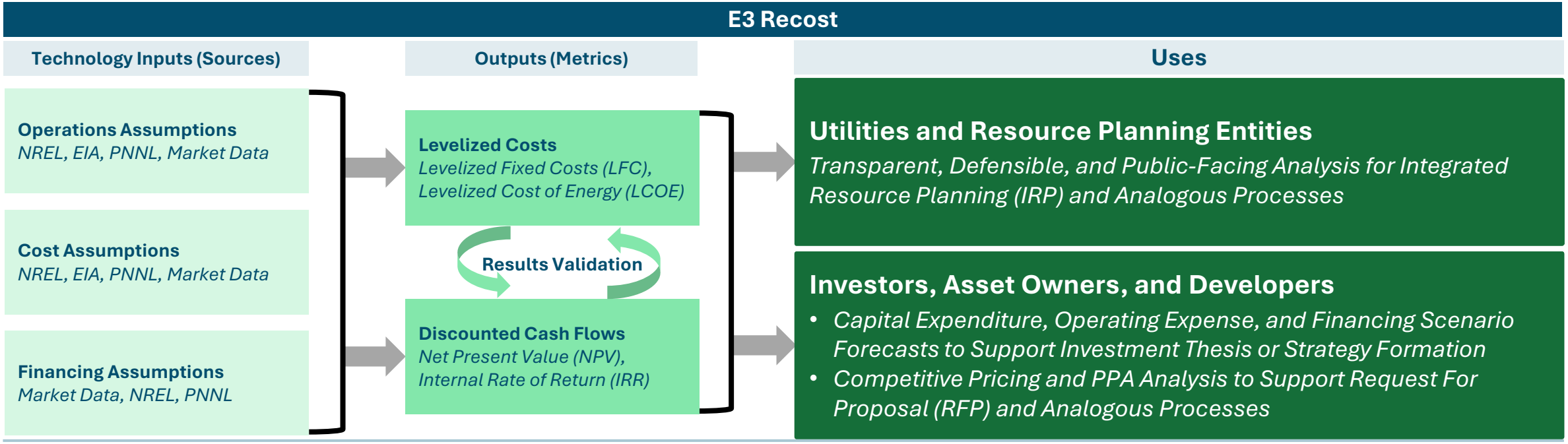
Resource Cost Assumptions

What is E3 RECOST?

Overview of Model and Use(s)

- **Recost** is E3's in-house discounted cash flow model used to calculate levelized fixed costs and levelized cost of electricity for mature and emerging technology resources, inclusive of financing costs
- **Recost** is optimized for two goals:
  1) Evaluate the fundamental economic costs of building new resources to inform energy system modeling, validate investment theses, and shape resource strategy for public and private sector stakeholders
  2) Estimate the expected cost to contract these resources under Power Purchase Agreements (PPAs), and support the calculation of Levelized Cost of Capacity (LCOC) using each resource's Effective Load Carrying Capability (ELCC)

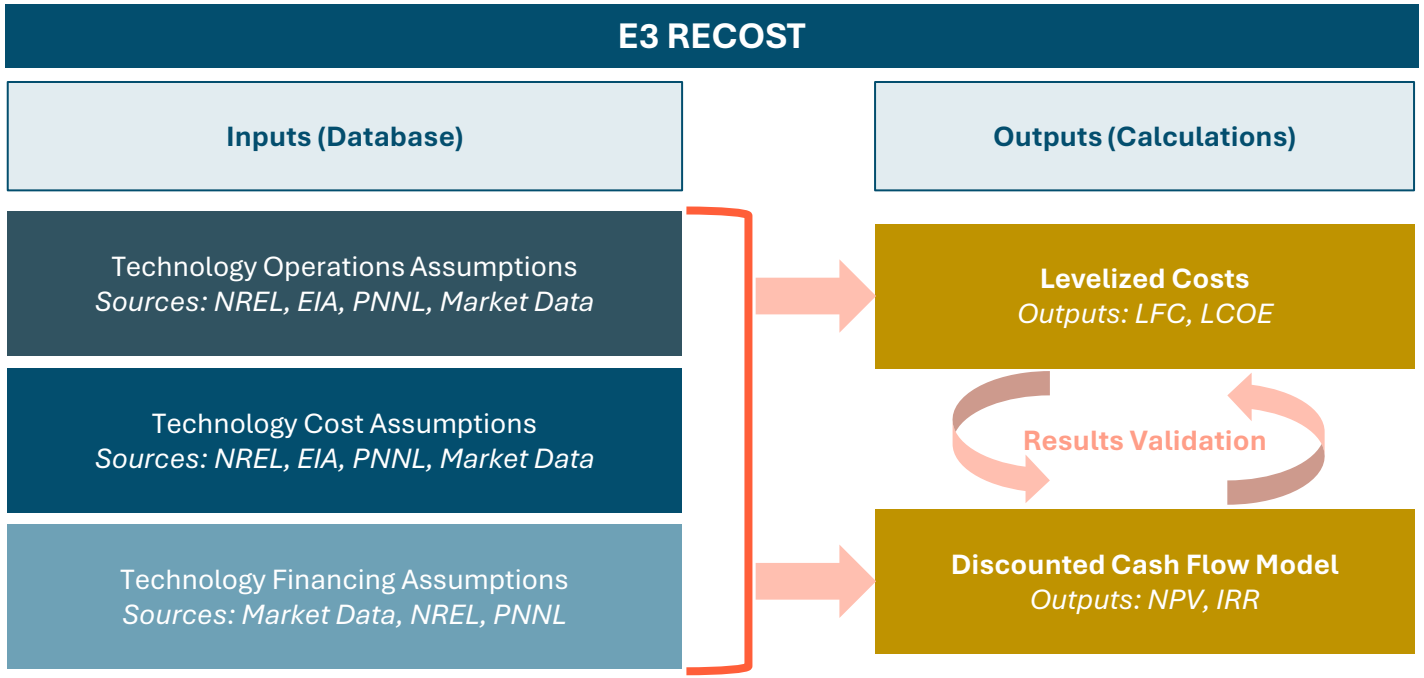
Recost is built to inform the ongoing debate around how to finance and build the resources necessary for the energy transition by leveraging E3's expertise on this topic



E3 Resource Cost Estimates

RECOST Model Overview

- **E3's RECOST model calculates levelized fixed costs (LFC) and the levelized cost of electricity (LCOE) for a range of conventional and emerging technologies**
  - LFC is reported in $/kW-yr, and LCOE is reported in $/MWh
- **LFC and LCOE are calculated by initial commercial operations date (COD), from 2025 through 2050**
- **RECOST estimates are calculated using inputs from various sources:**



Calculation of Levelized Costs

RECOST Model Overview

+ **Levelized Fixed Cost (LFC) ($/kW-yr):** the levelized ***capacity*** payment that a system would need every operating year over its useful life to cover fixed costs, including amortized capital costs (capex), fixed operations and maintenance (O&M) costs, property taxes, and investment tax credits (if applicable)
+ **Levelized Cost of Electricity (LCOE) ($/MWh):** the levelized ***energy*** payments that a system would need for every operating hour over its useful life to cover all costs, including fixed cost components as well as fuel costs, variable O&M, and the federal production tax credit (if applicable)
  - An electricity generator that collects revenue over its useful life at the LCOE will have an NPV of $0

$$\mathbf{LFC} = \frac{\text{NPV}(\text{Fixed Costs}, \$)}{\text{NPV}(\text{Capacity}, \text{kW})}$$

Fixed Costs =
+ Capital Expenditures and Interconnection Costs
+ Investment Tax Credit
+ Fixed O&M
+ Property Taxes
+ Warranty
+ Repowering & Augmentation

$$\mathbf{LCOE} = \frac{\text{NPV}(\text{Total Costs}, \$)}{\text{NPV}(\text{Energy}, \text{MWh})}$$

Total Costs =
+ LFC
+ Variable O&M
+ Fuel
+ Production Tax Credit

Resource Cost Assumptions

- The resource costs used in the WestTEC capacity expansion model are taken from public data sources, primarily NREL 2024 ATB
- Estimates for the weighted-average cost of capital (WACC) are calculated using market indicators for cost of debt, returns on equity, and debt fraction
- IRA tax credits are assumed to be available through 2045; the 45V and 45Q credits for Hydrogen and CCS, respectively, are assumed in full at 10% (H2) or 20% (CCS) capacity factor
- For compatibility with PLEXOS, the net present value (NPV) of LFC is entered into the model for each model year, along with assumptions for useful life and WACC
- The charts in subsequent slides will be expressed in nominal dollars unless otherwise specified

Technology	Data Source
Solar	Custom analysis [1]
Land-Based Wind	Custom analysis [1]
Geothermal	NREL 2024 ATB [2]
Pumped Storage Hydro	NREL 2024 ATB
Floating Offshore Wind	NREL 2024 ATB
4-Hour Li-ion Battery	Custom analysis [1]
Gas CT	Custom analysis [3]
Hydrogen CT	Custom analysis [4]
Gas CT with 95% CCS	NREL 2024 ATB
Nuclear SMR	NREL 2024 ATB

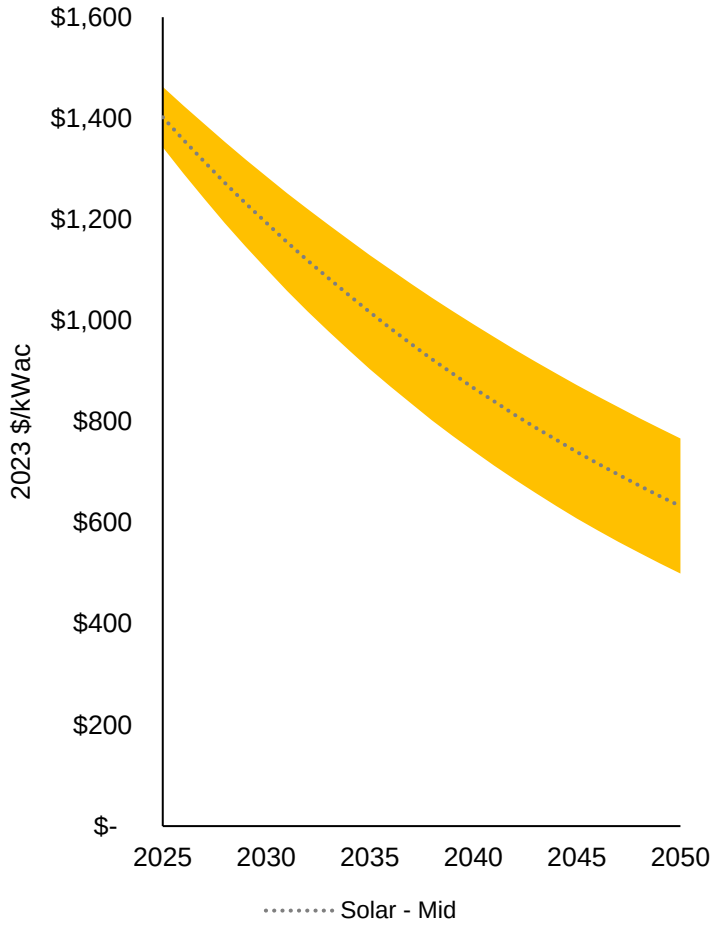
[1] CAPEX estimates derived by averaging across multiple public reports, including NREL ATB, EIA AEO, Lazard LCOS, and others. FO&M taken from NREL 2024 ATB.
[2] For both conventional (hydrothermal) and enhanced geothermal resources, a binary system using a secondary working fluid is assumed.
[3] CAPEX estimates derived by averaging across recent (2023-2025) public and confidential project quotes.
[4] Hydrogen turbine costs are assumed to be 3% higher than NGCT. In PLEXOS, hydrogen CAPEX also includes electrolyzer and location-agnostic surface tank storage sized to provide up to 4 hours of daily peaking capacity.

Upfront Capex Forecasts for Selected Resources

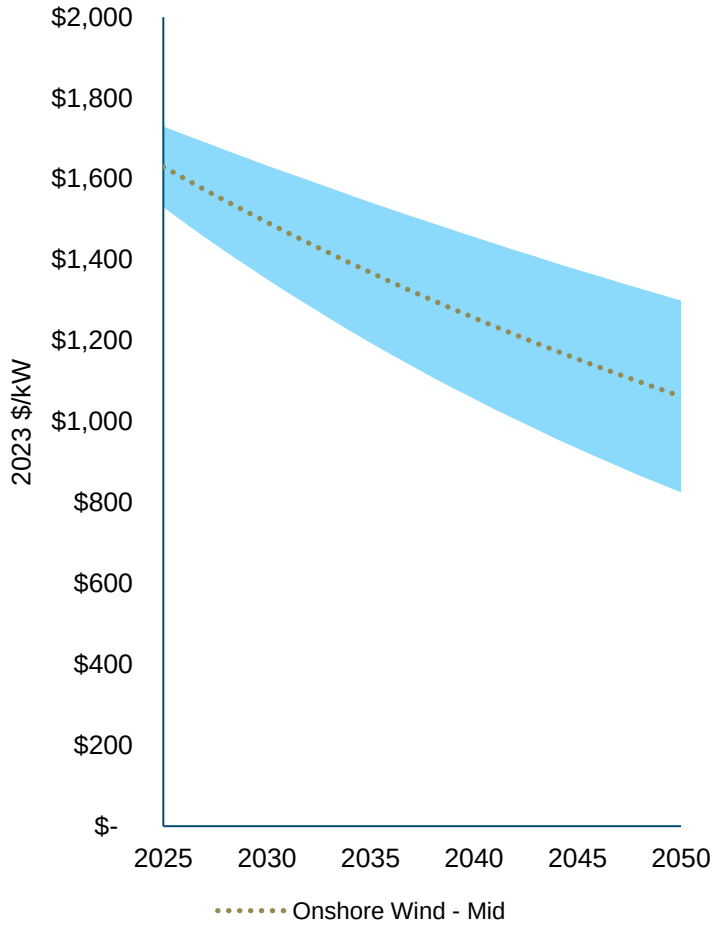
RECOST Assumptions: Q4 2024 (Results in **Real** 2023 Dollars)

Years correspond to Project COD (Vintage)

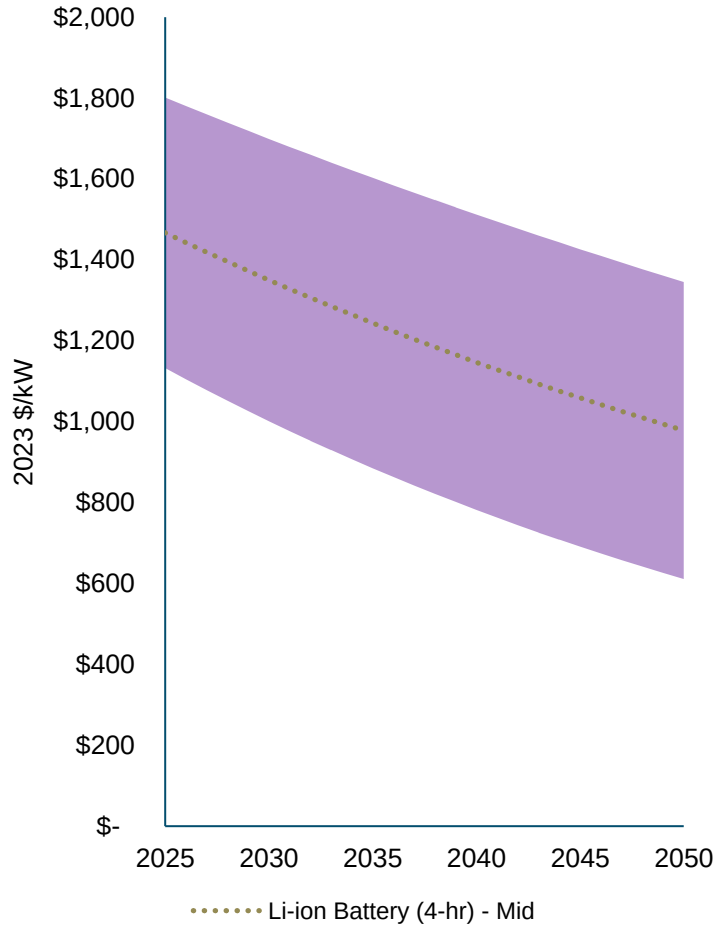
Utility-Scale Solar PV



Onshore Wind



Li-ion Battery Storage (4-hour)

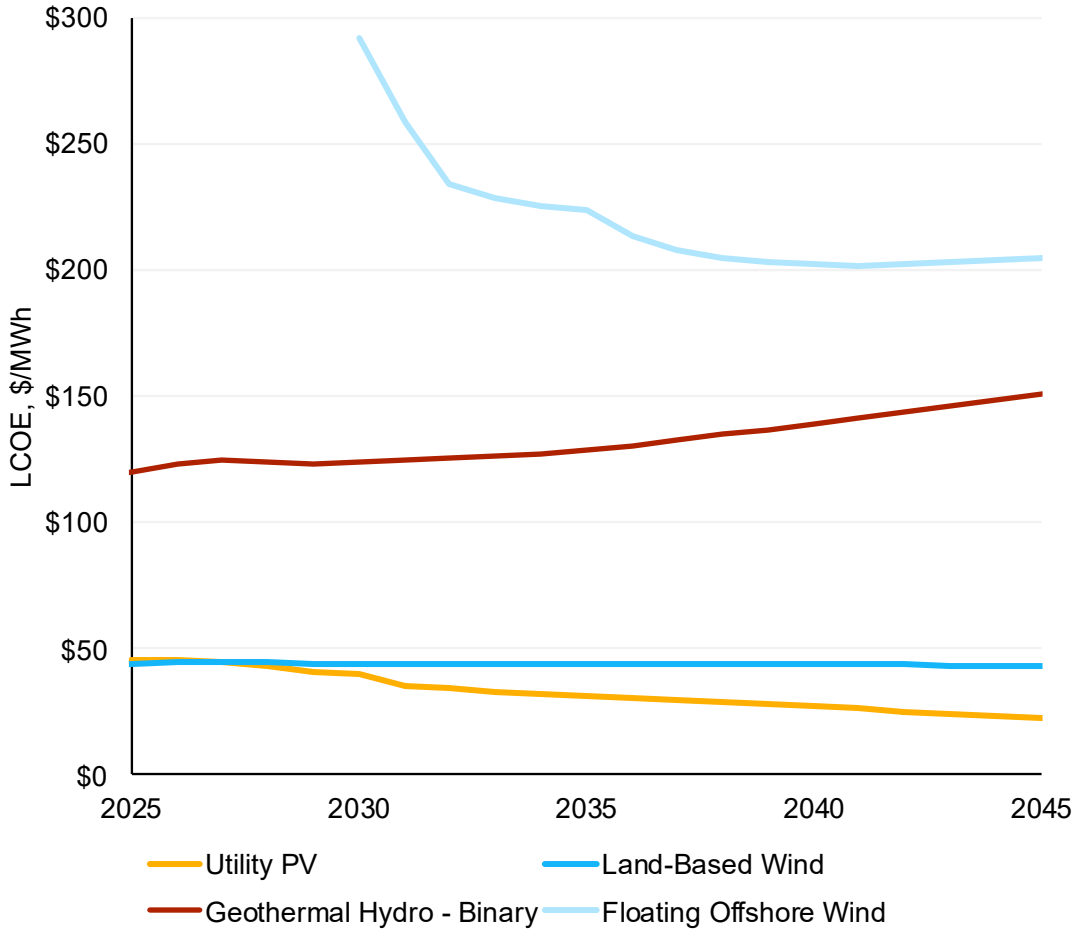


Above estimates are exclusive of AFUDC and IX; these are separately accounted in the pro forma. IX estimates calculated via geospatial analysis (ES/MME)

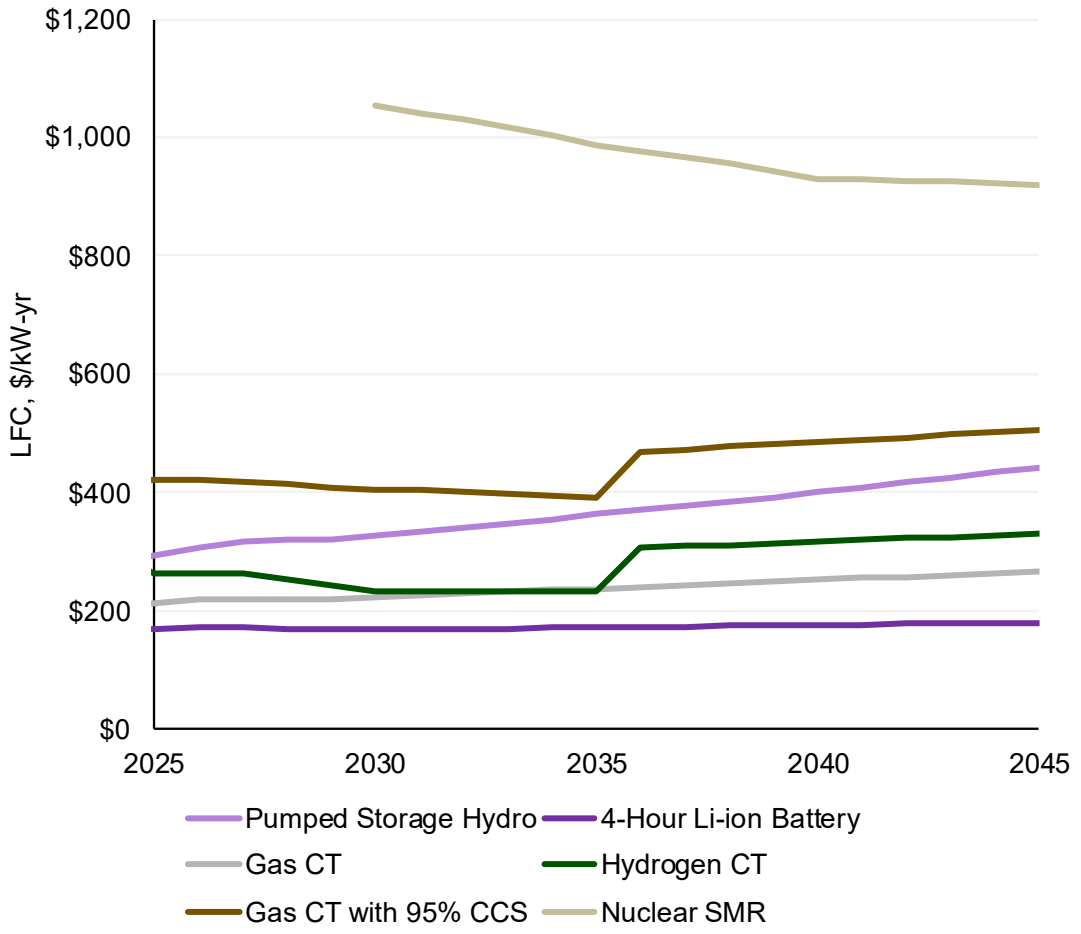
Nominal-Levelized Resource Costs (Average Across Regions)

Years correspond to Project COD (Vintage)

LCOE of Variable Renewable Resources



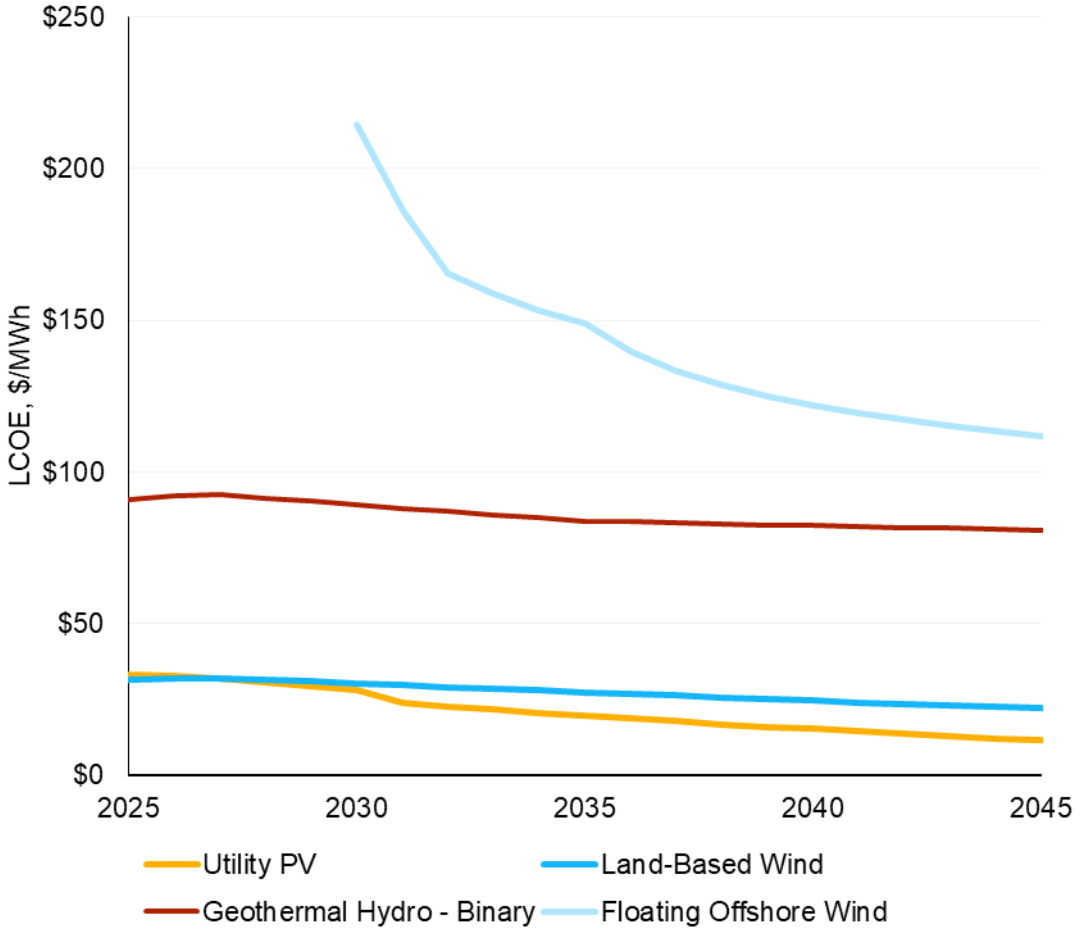
LFC of Firm Capacity Resources



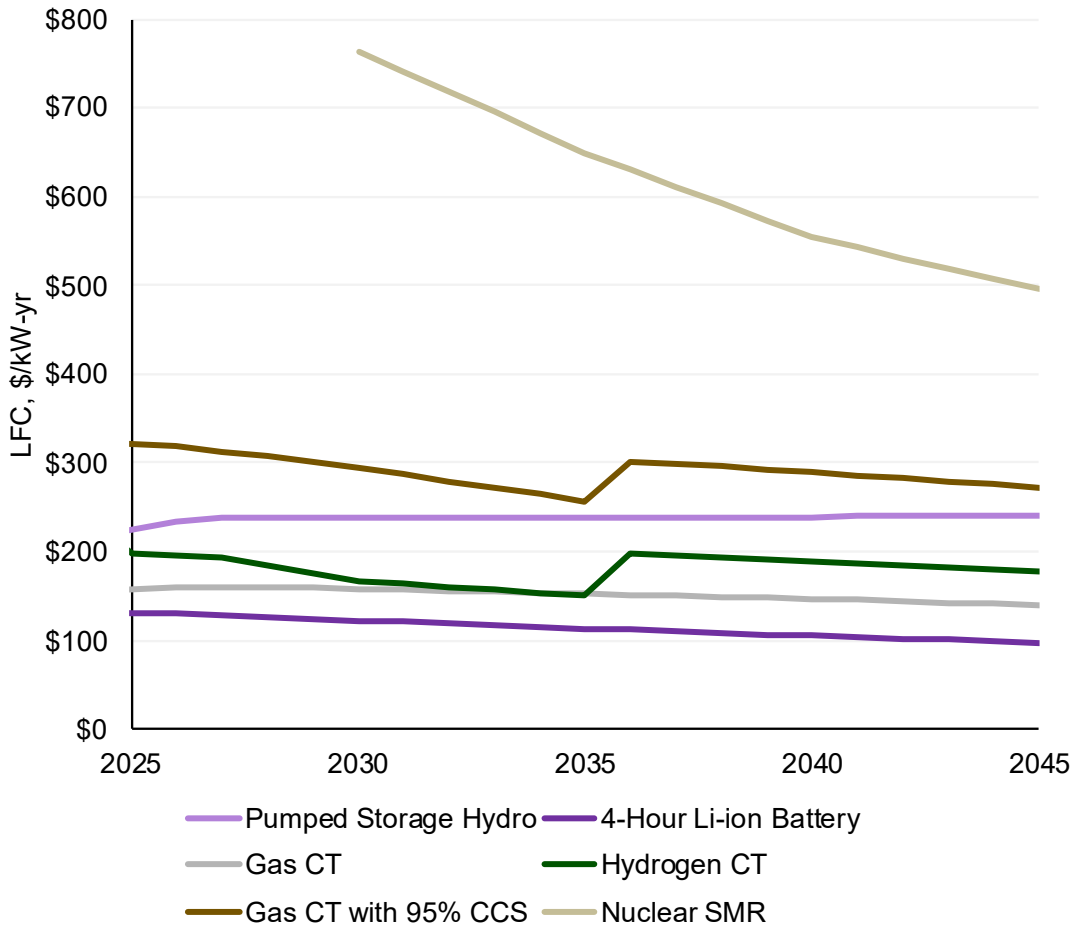
Real-Levelized Resource Costs (Average Across Regions), 2023$

Years correspond to Project COD (Vintage)

LCOE of Variable Renewable Resources

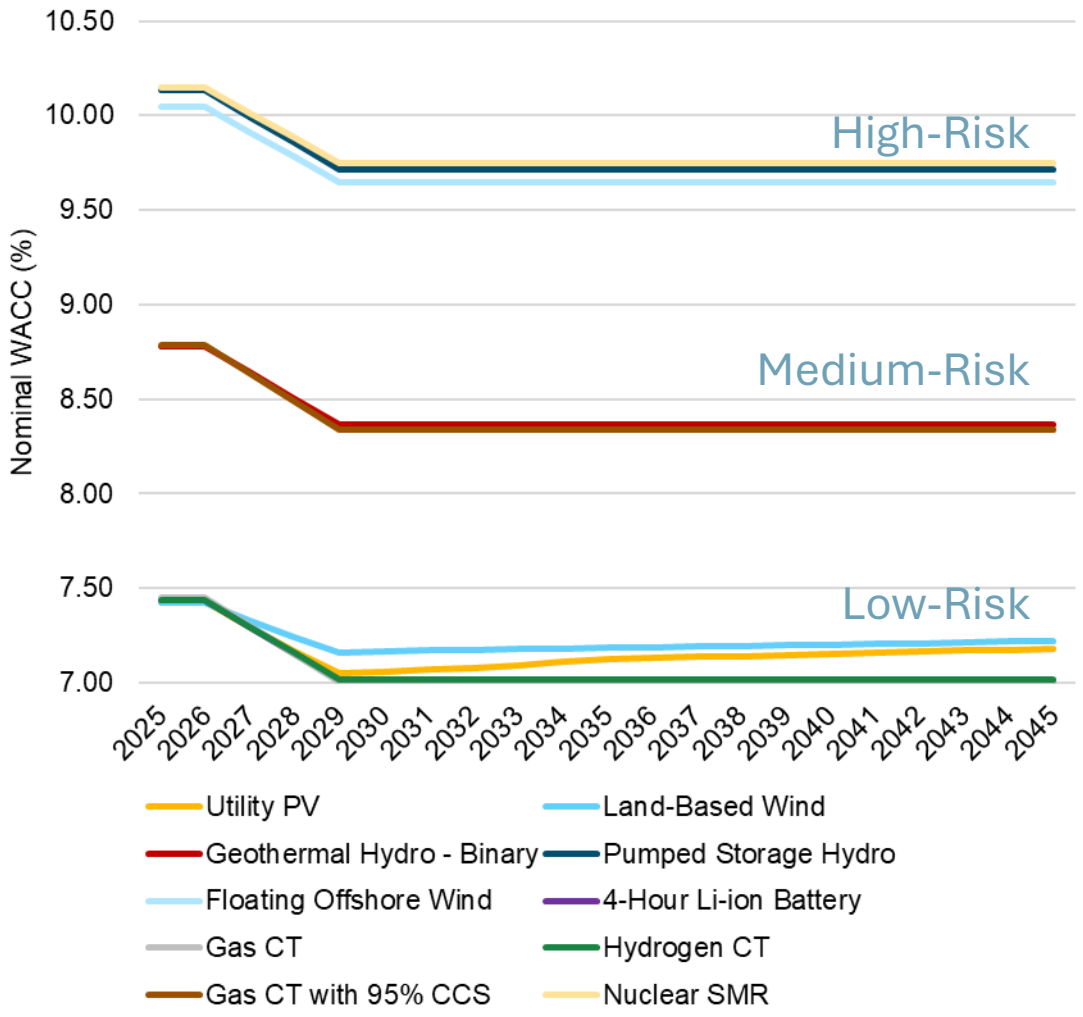


LFC of Firm Capacity Resources



Financing Assumptions

Years correspond to Project COD (Vintage)



Technology	Risk	Economic Life
Solar	Low	30
Land-Based Wind	Low	30
Geothermal	Mid	30
Pumped Storage Hydro	Mid	50
Floating Offshore Wind	High	30
4-Hour Li-ion Battery	Mid [1]	20
Gas CT	Low	30
Hydrogen CT	Low	30
Gas CT with 95% CCS	Mid	30
Nuclear SMR	High	50

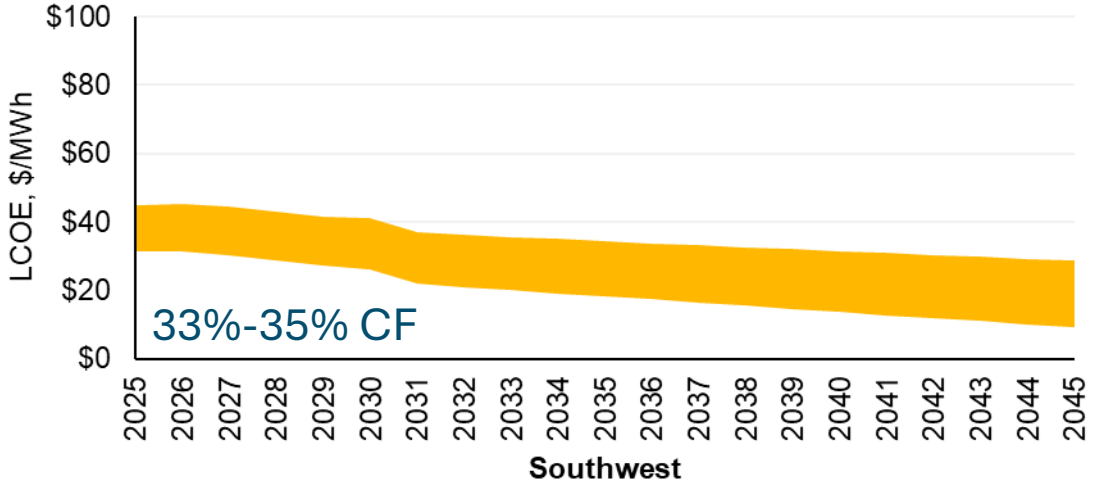
[1] Li-ion batteries will be updated to Low-Risk in the next iteration of modeling.

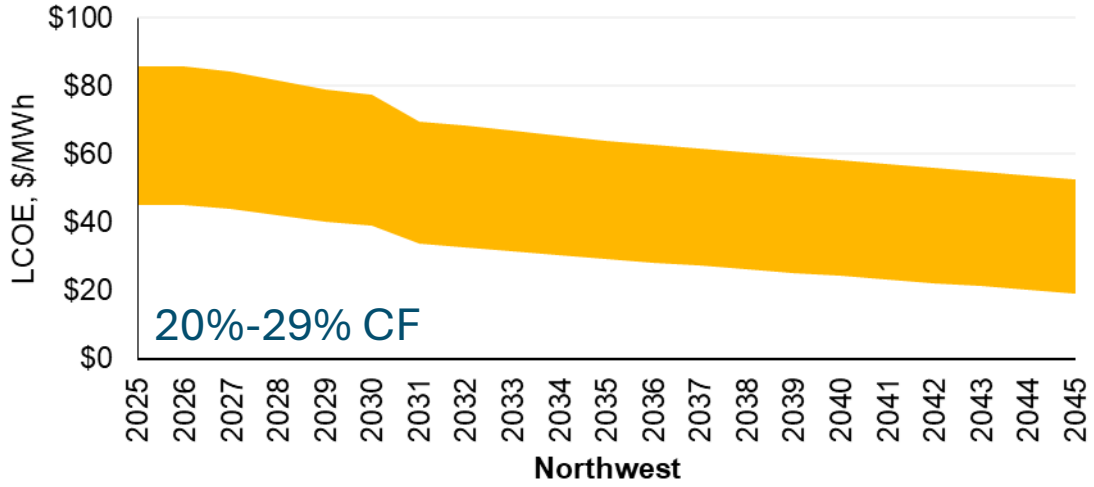
Within each risk band, variation in WACC is due to differences in assumed project debt fraction by technology and year

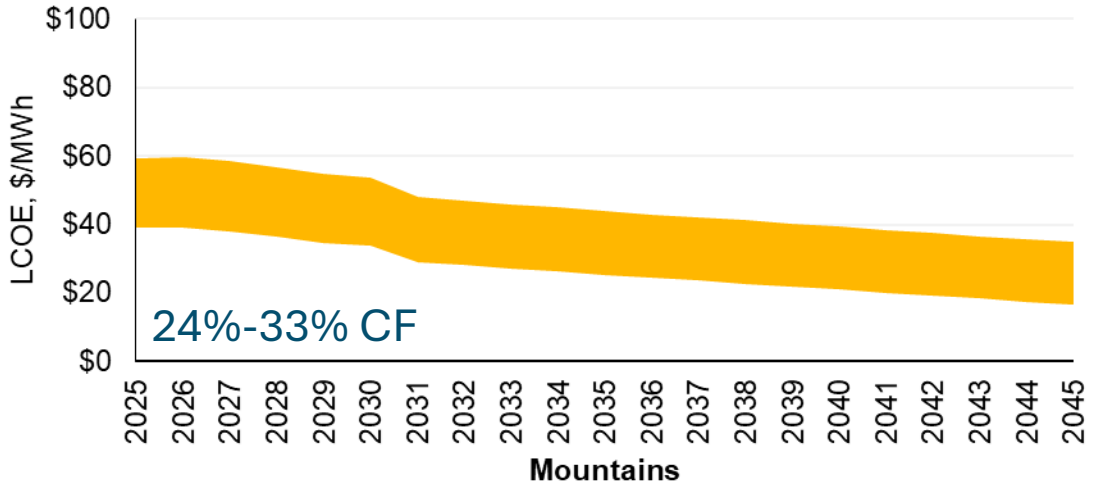
Cost Breakdown by WECC Region

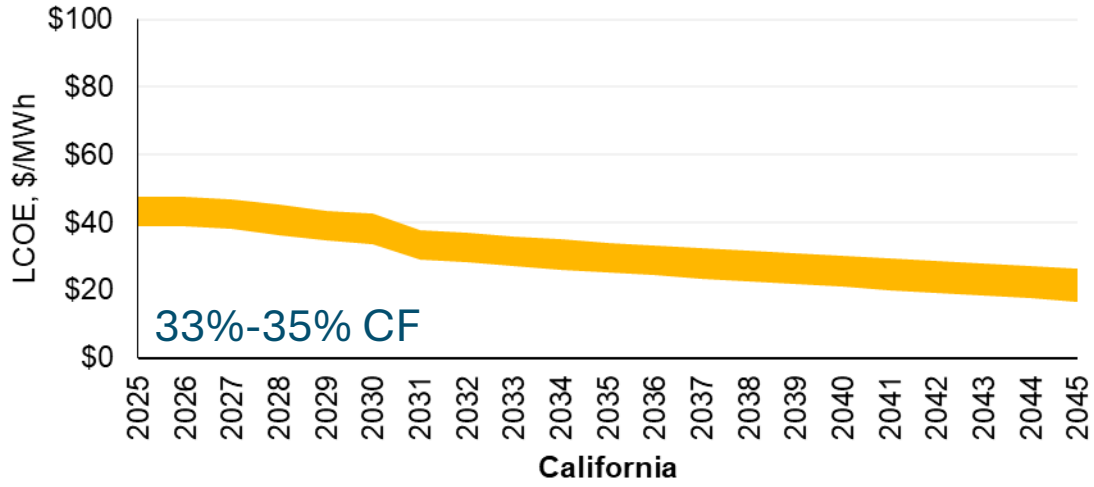
Utility Solar Nominal LCOE

Years correspond to Project COD (Vintage)



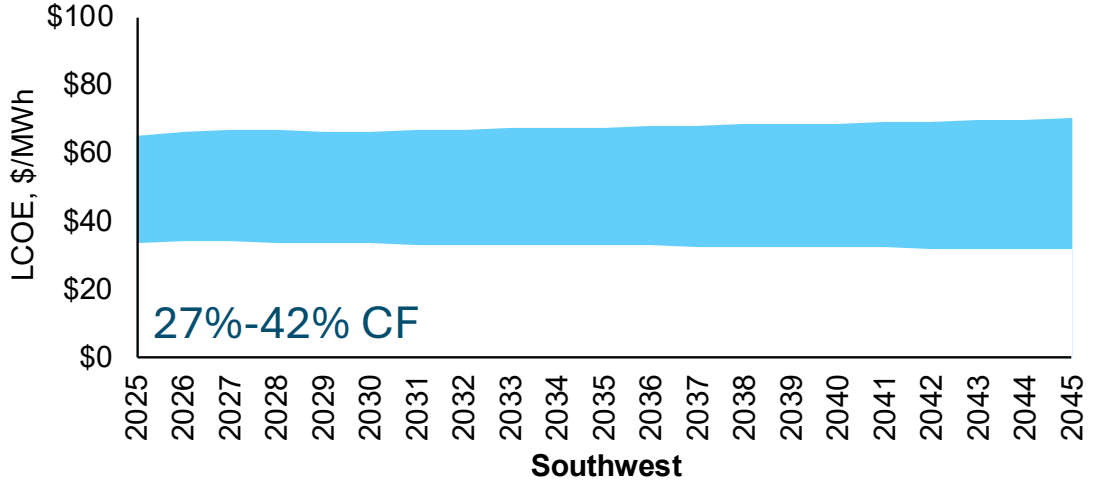


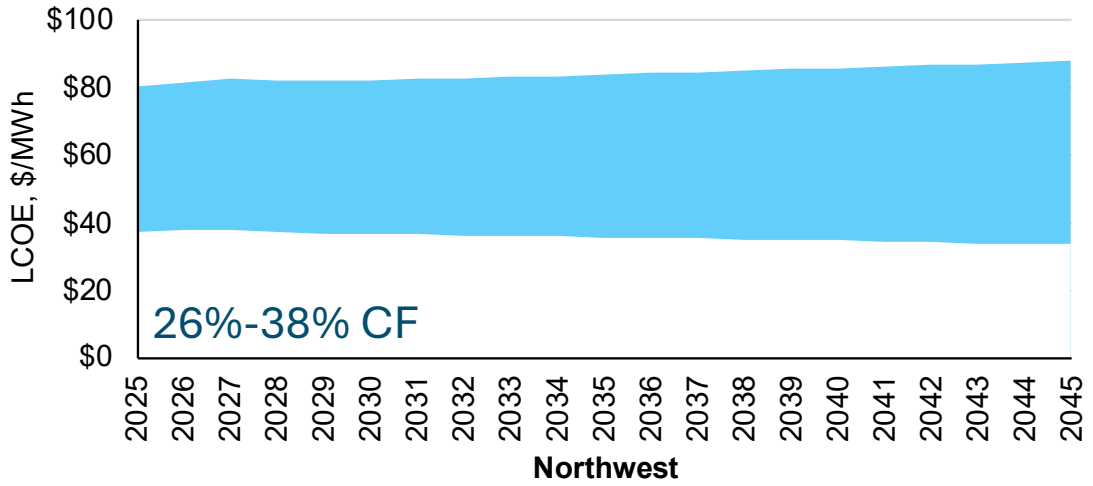


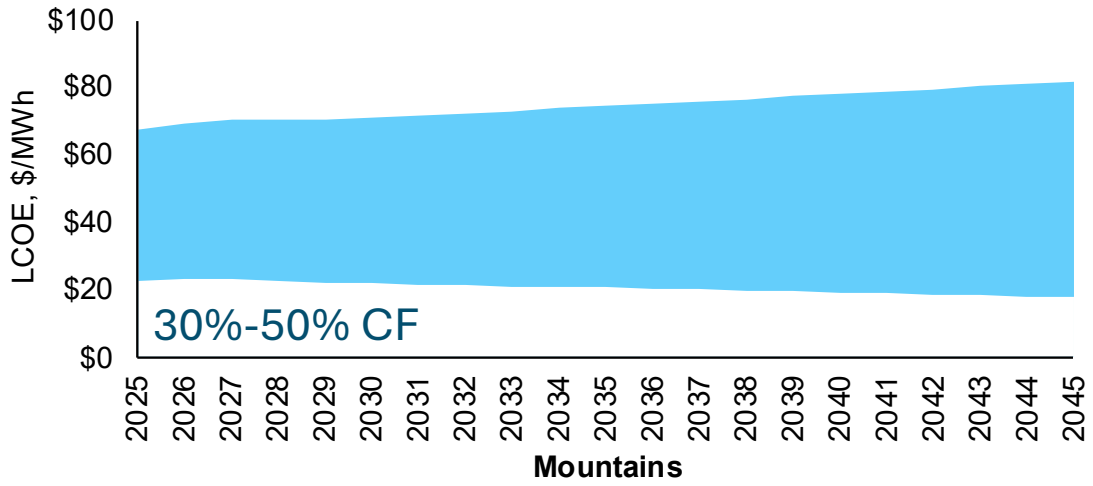


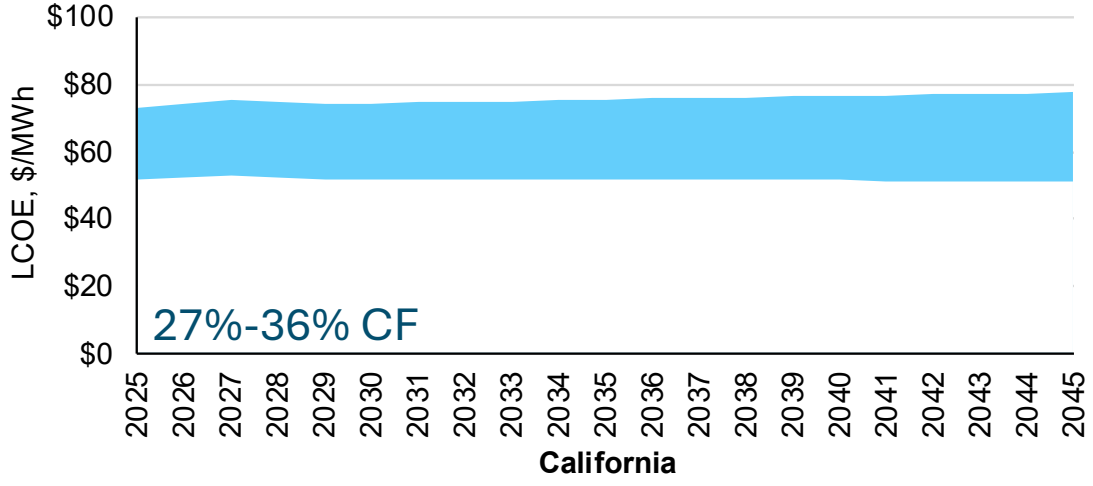
Land-Based Wind Nominal LCOE

Years correspond to Project COD (Vintage)





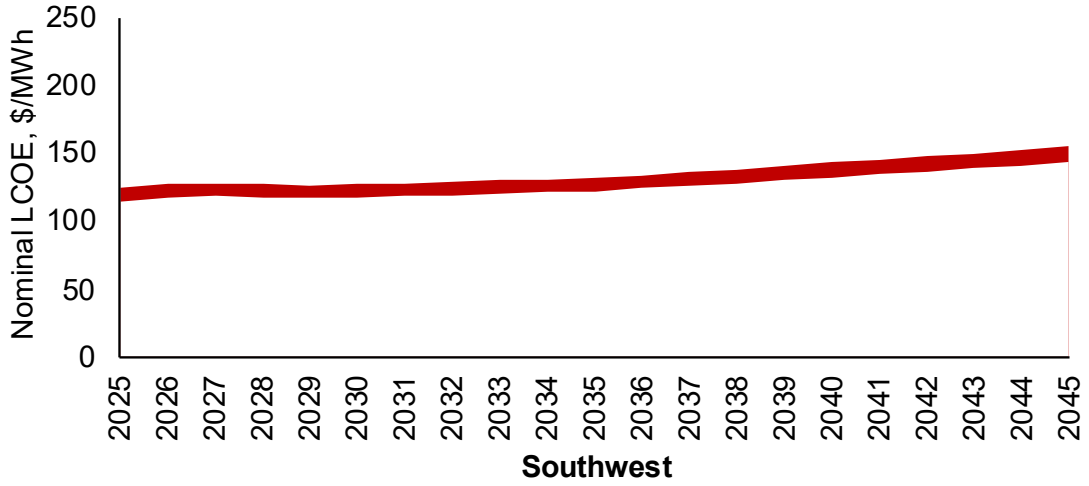


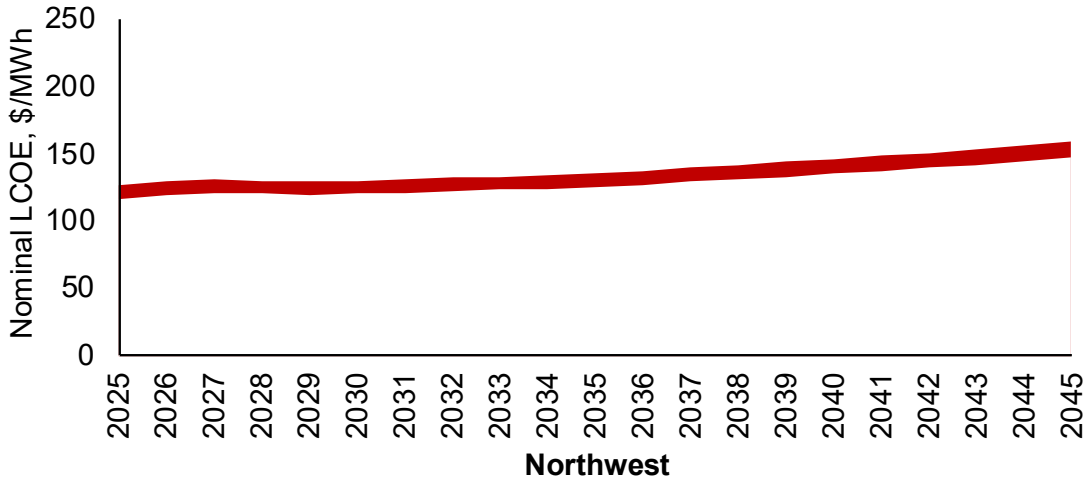


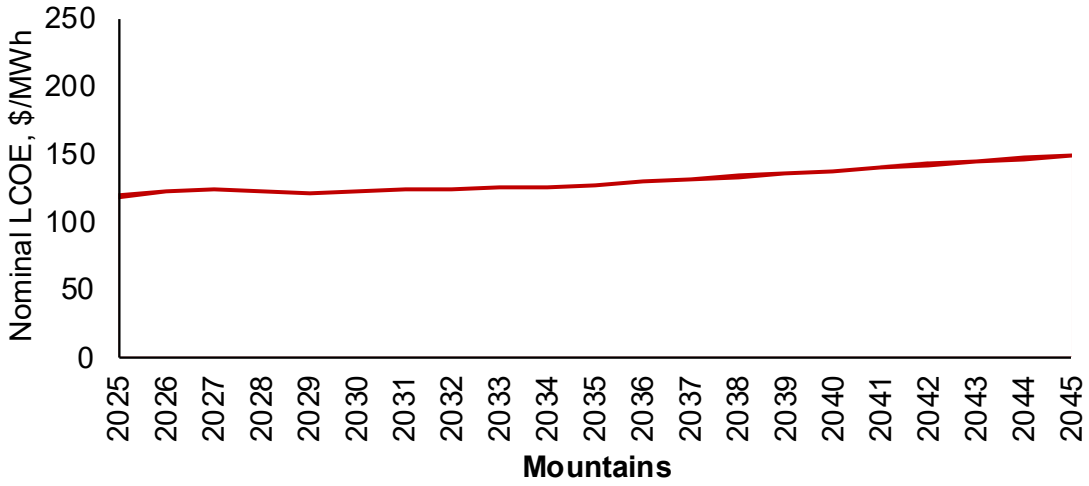
Geothermal (Hydro-Binary) Nominal LCOE

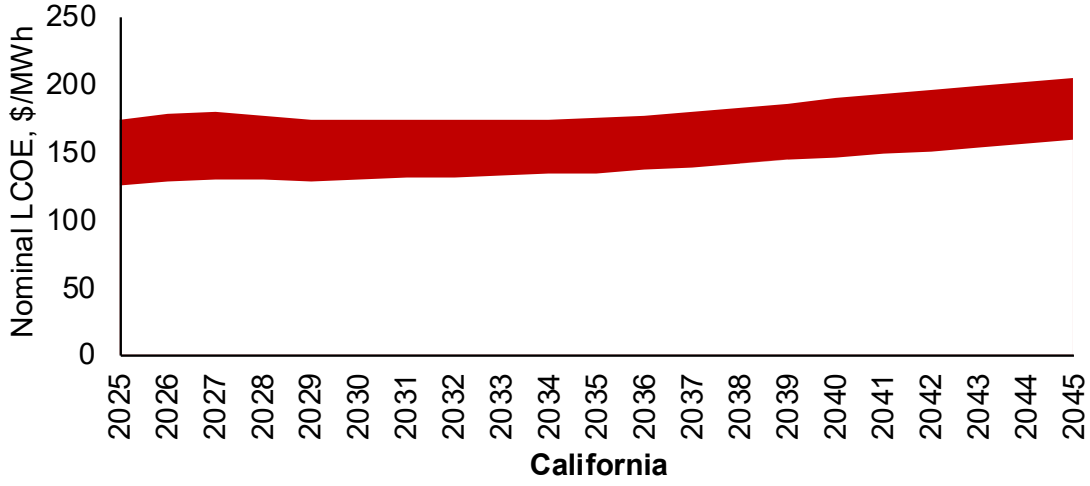
Years correspond to Project COD (Vintage)

80% CF assumed for LCOE calculation



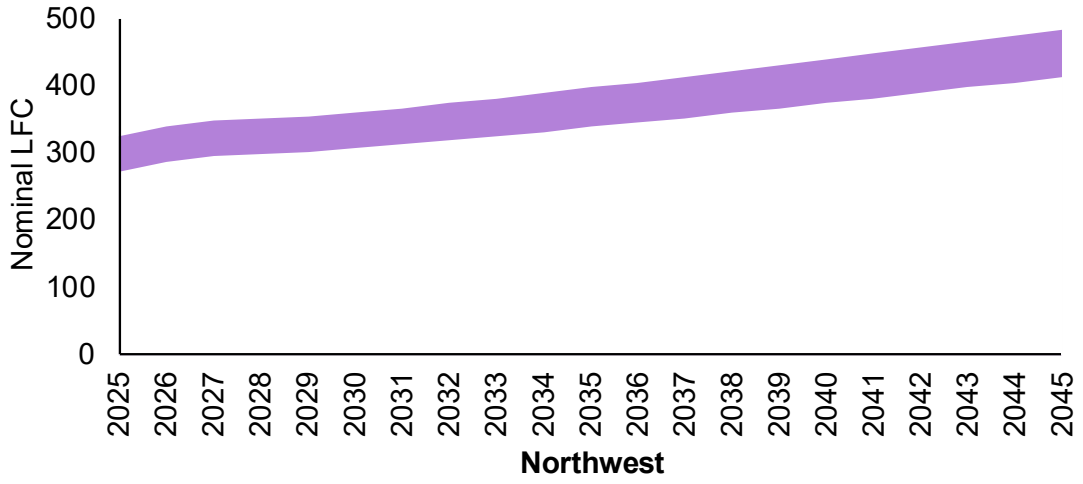


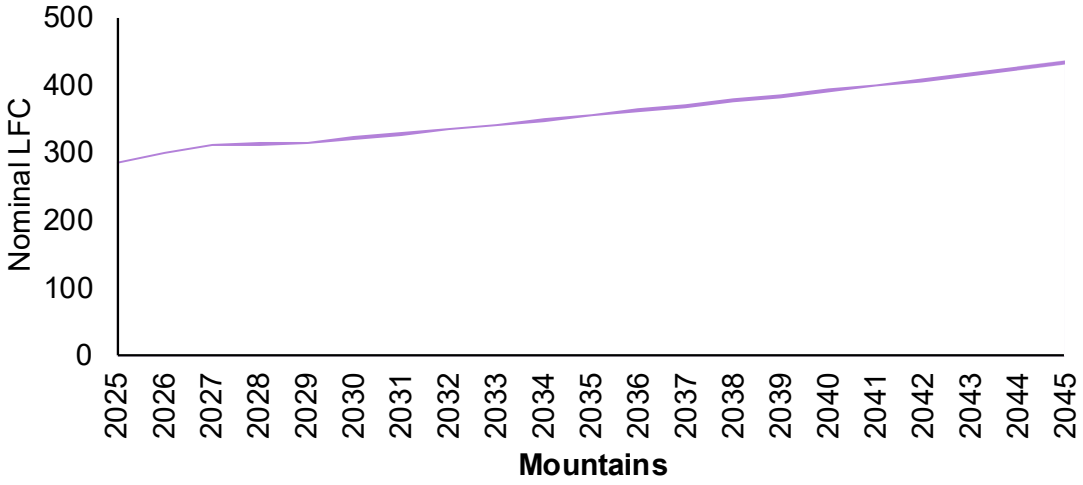


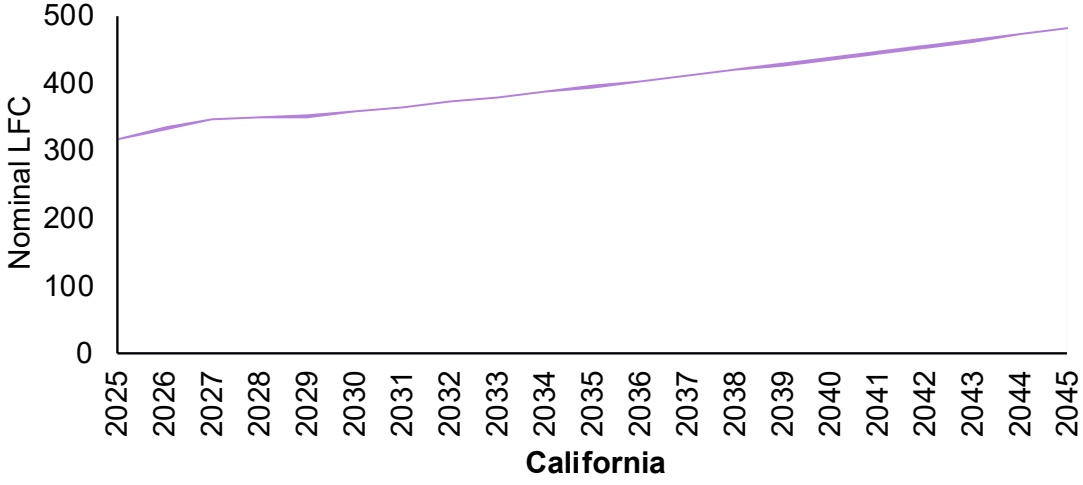


Pumped Storage Hydro Nominal LFC ($/kW-yr)

Years correspond to Project COD (Vintage)

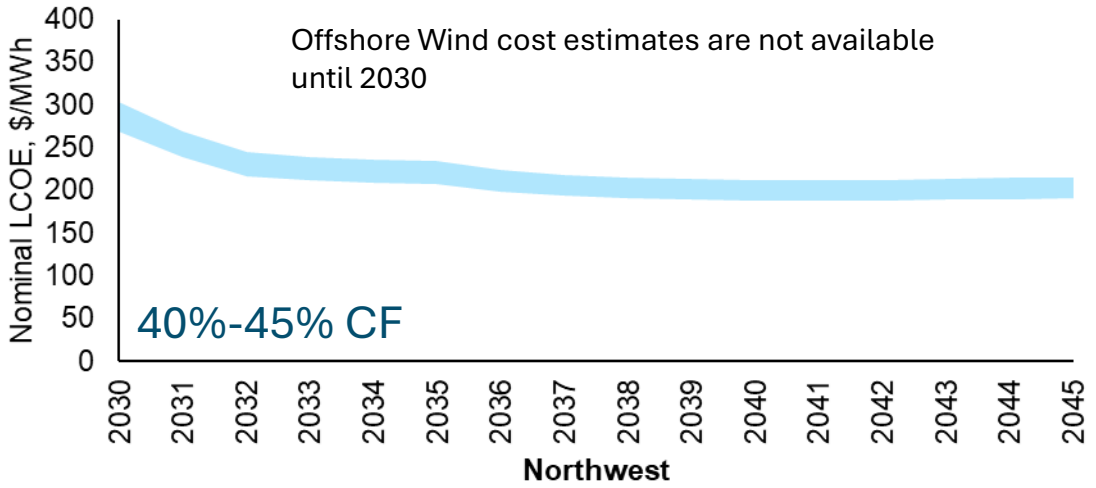


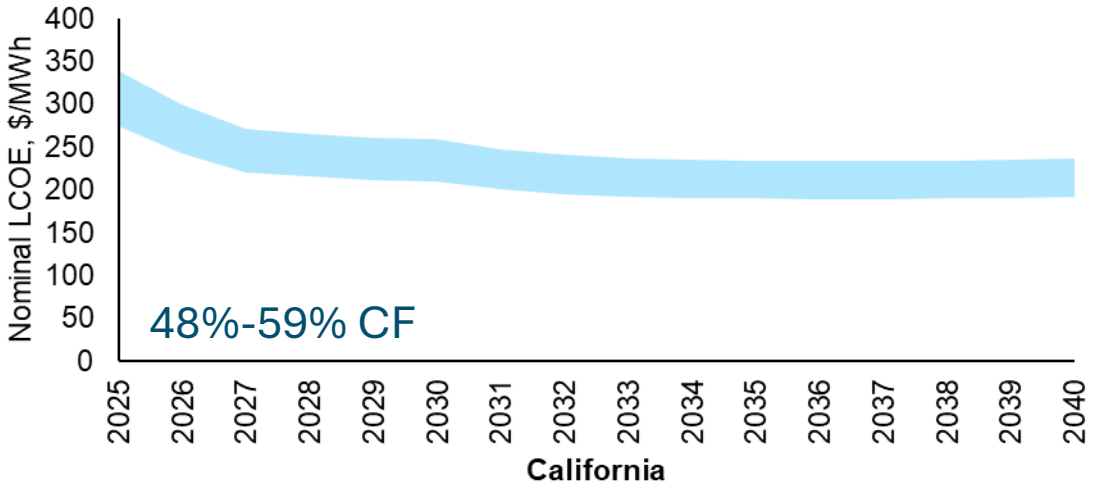




Floating Offshore Wind Nominal LCOE

Years correspond to Project COD (Vintage)

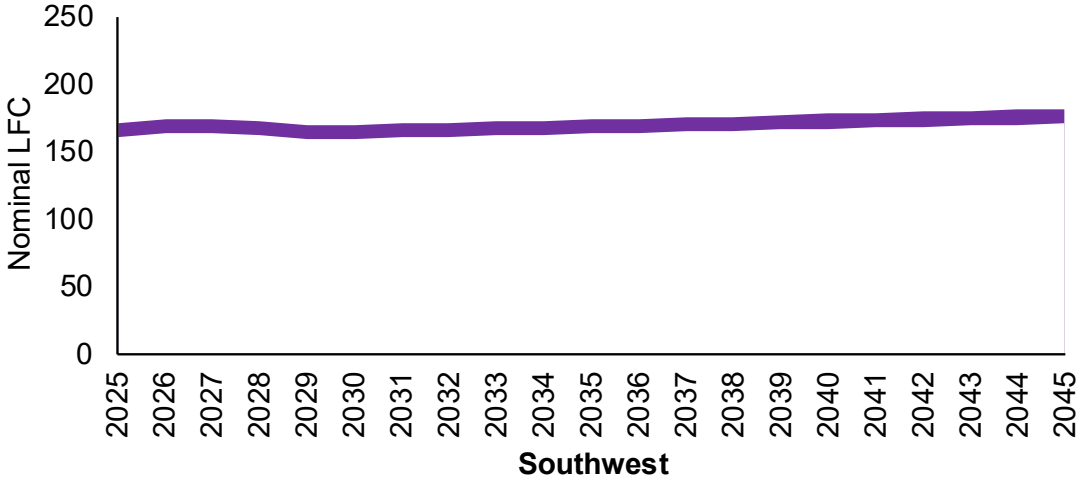


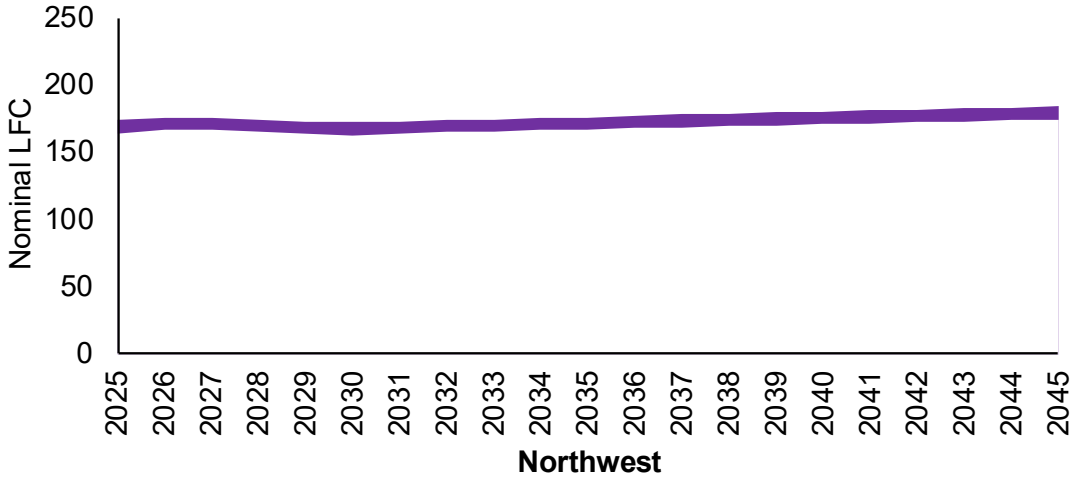


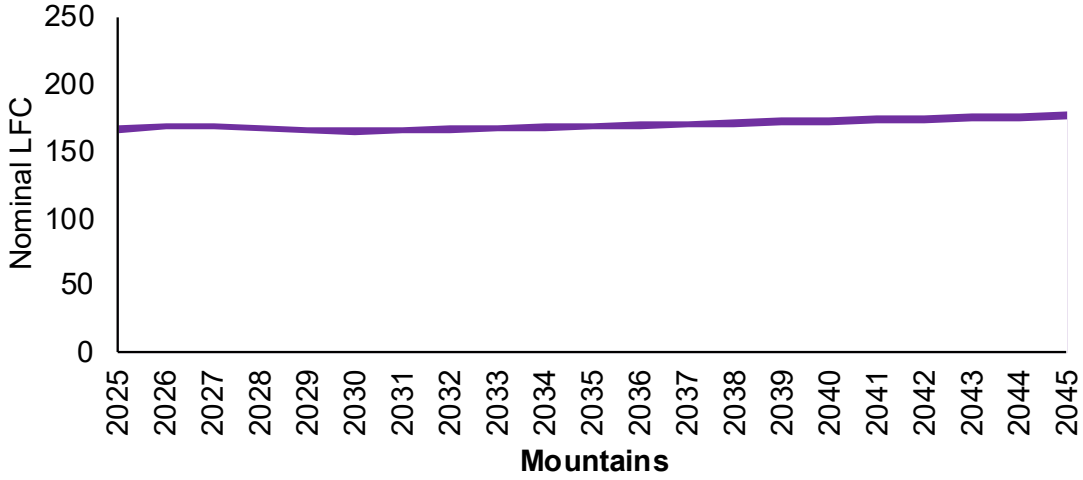
No Floating offshore wind planned in Southwest and Mountains region

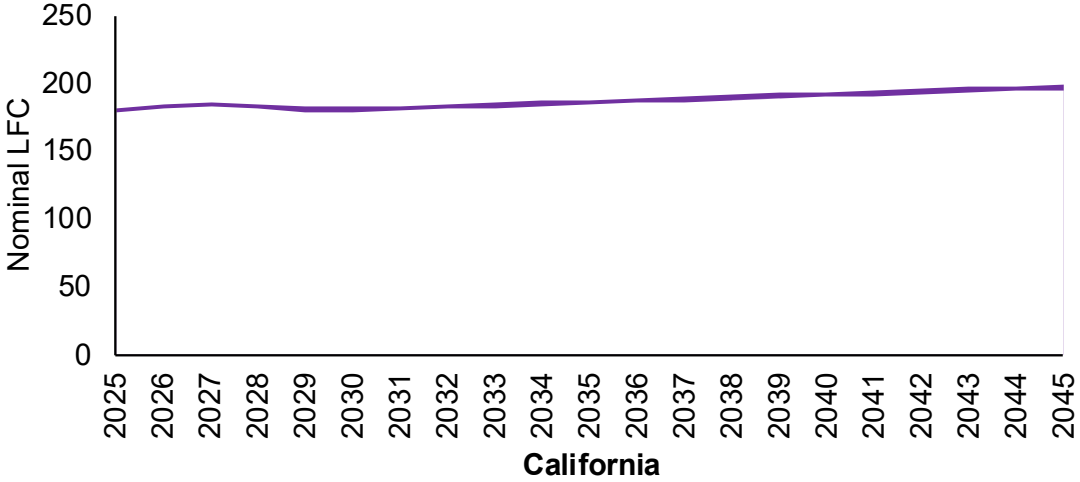
Li-ion Battery (4-hour) Nominal LFC ($/kW-yr)

Years correspond to Project COD (Vintage)



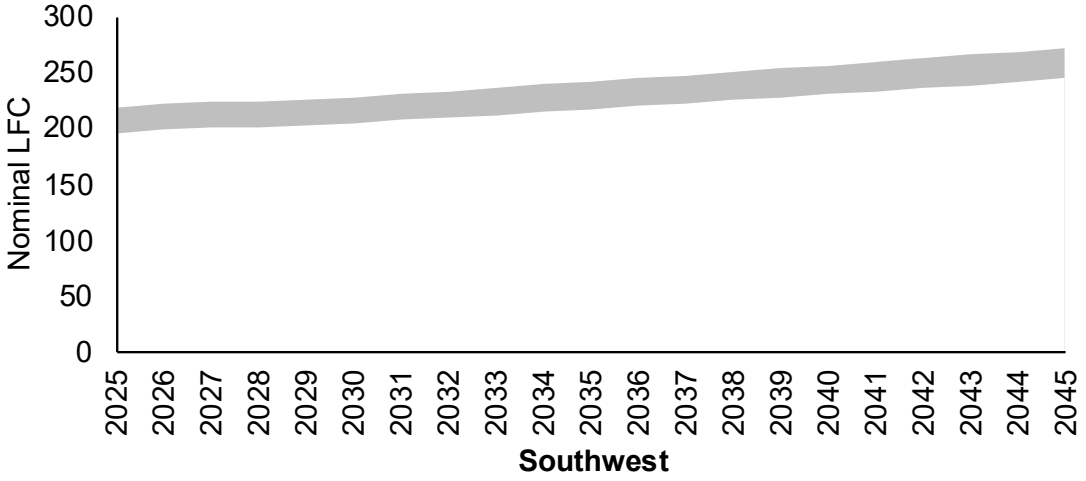


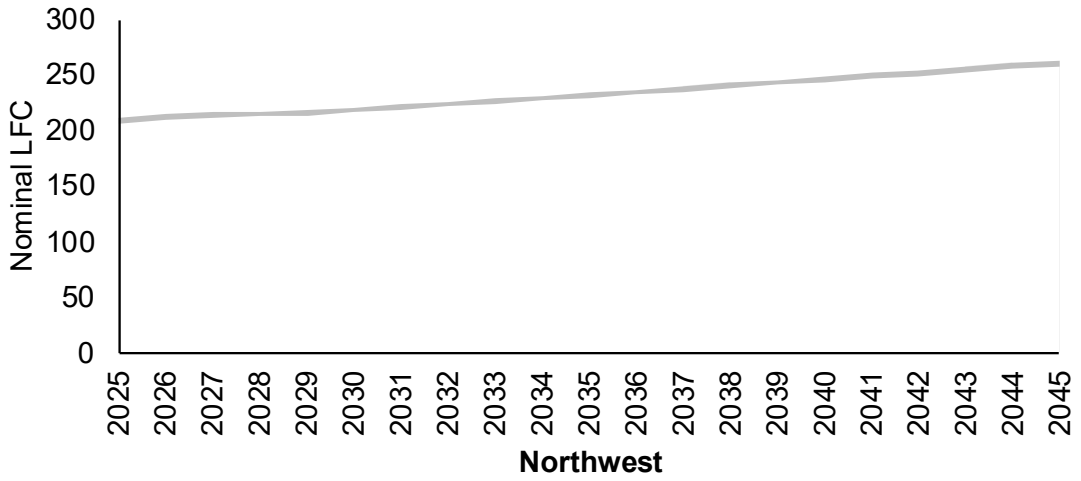


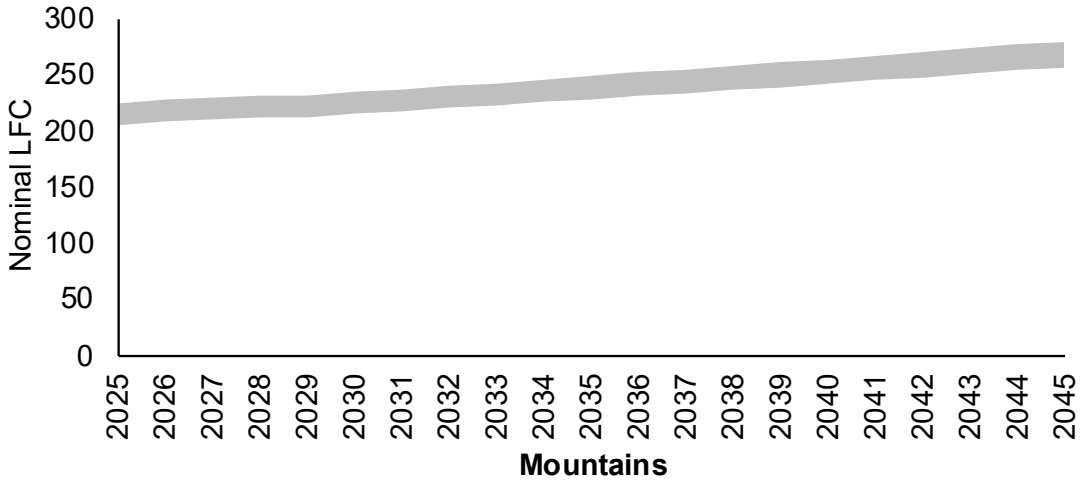


Gas CT Frame Nominal LFC ($/kW-yr)

Years correspond to Project COD (Vintage)



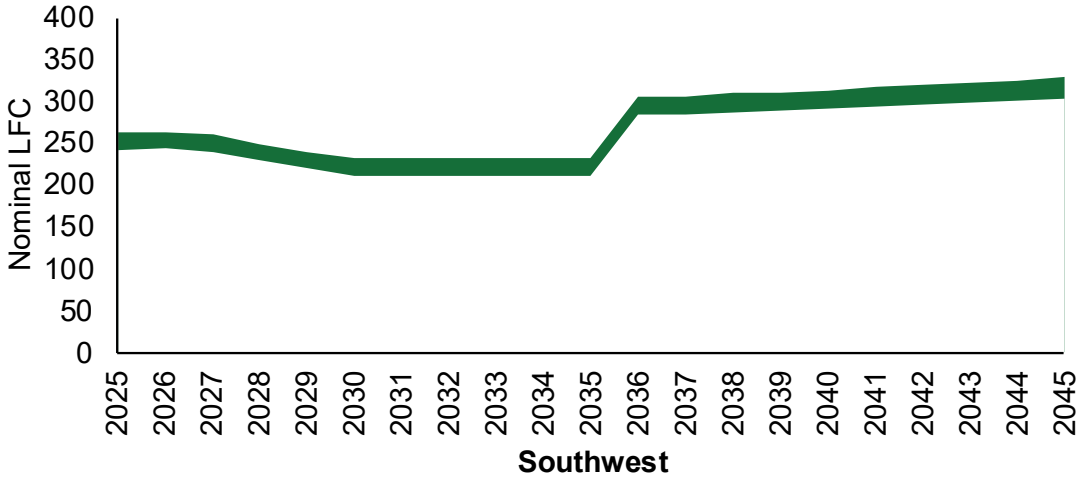


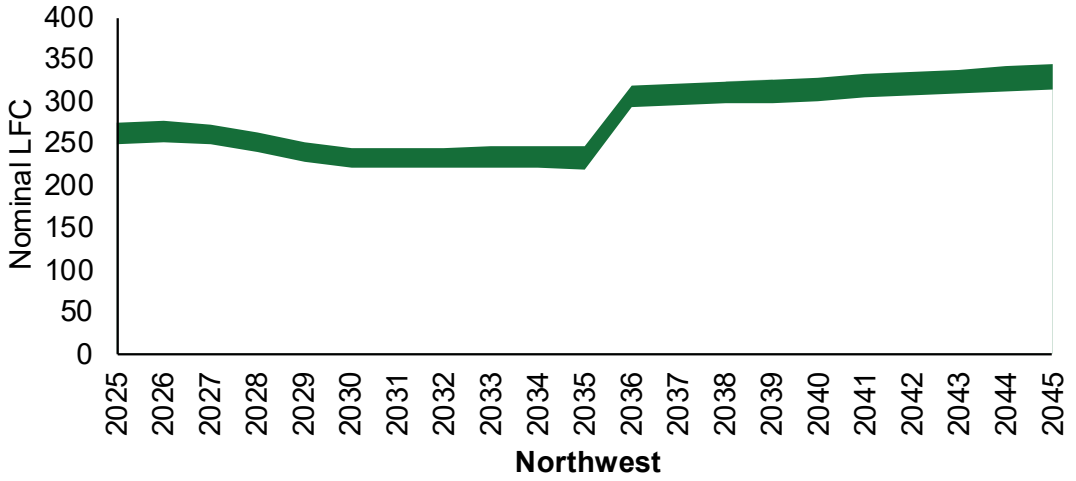


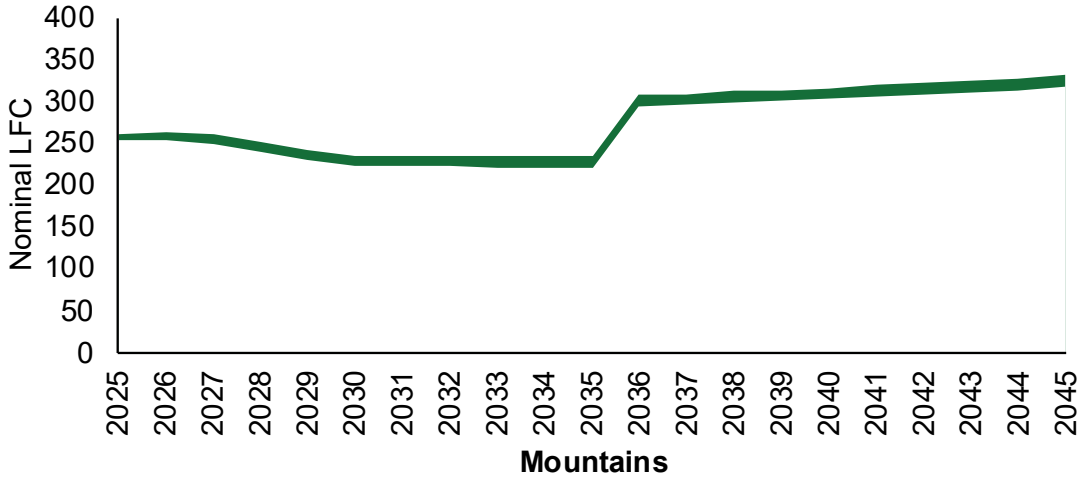
No Gas CT Frame planned in California

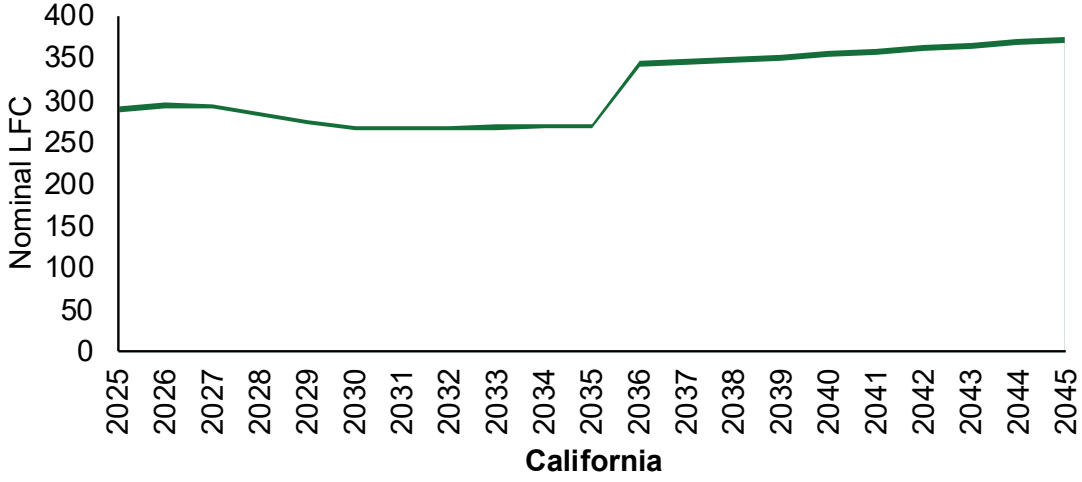
Hydrogen CT Frame Nominal LFC w/ PTC ($/kW-yr)

Years correspond to Project COD (Vintage)



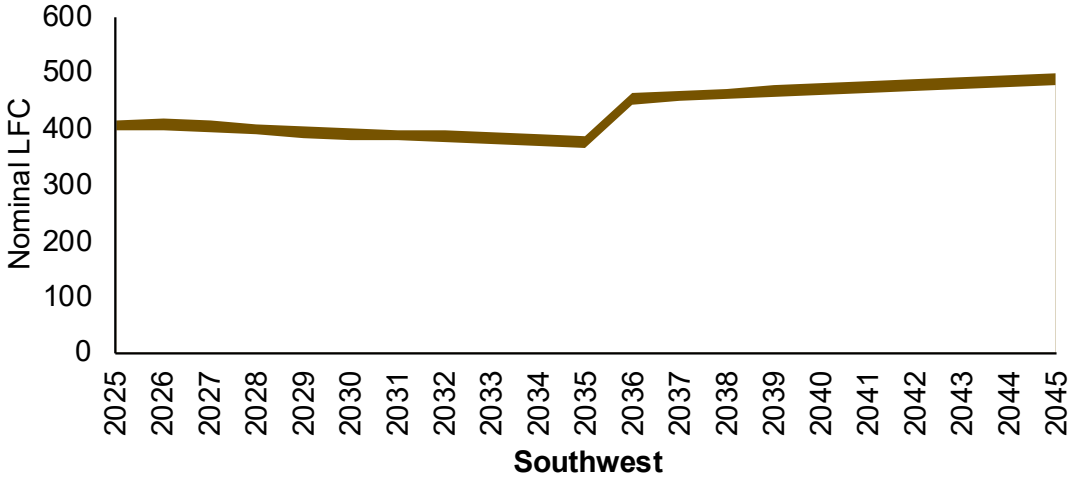


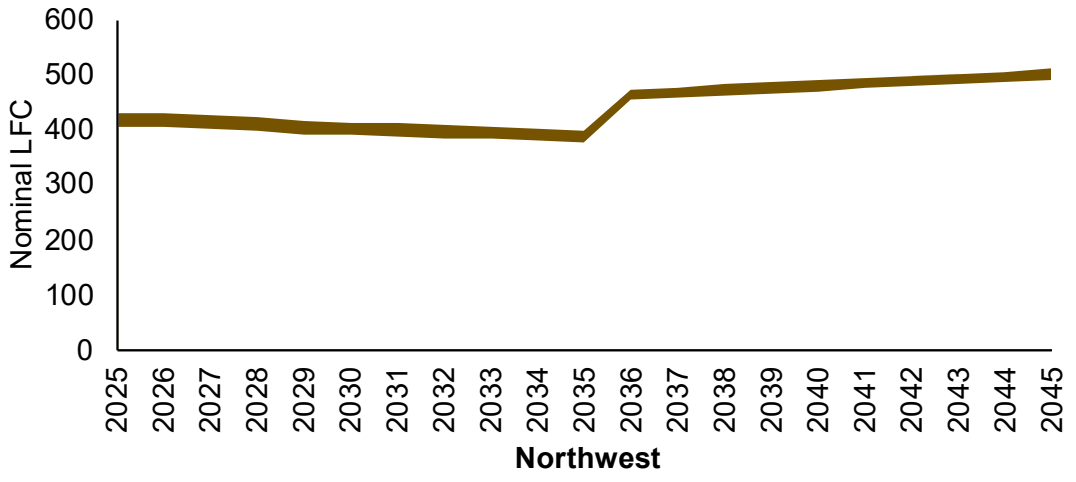


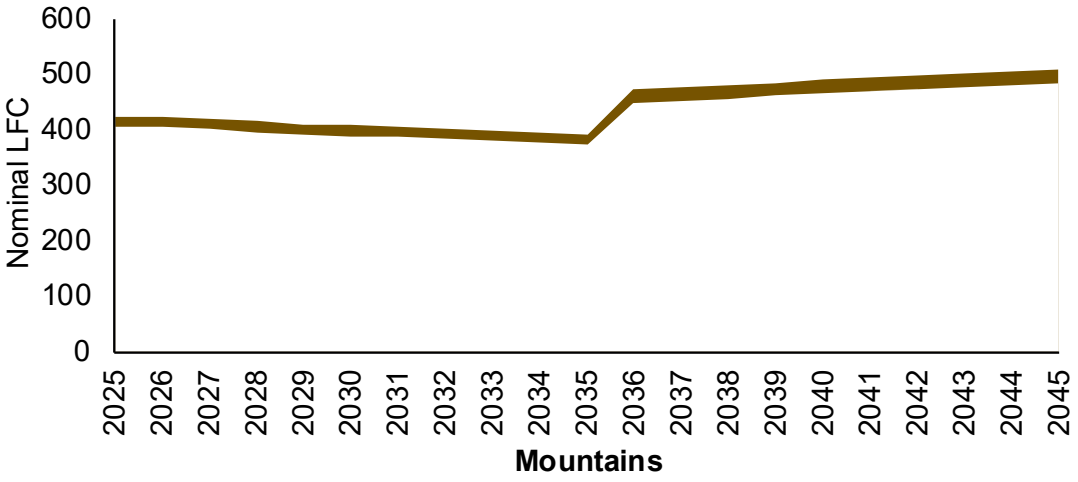


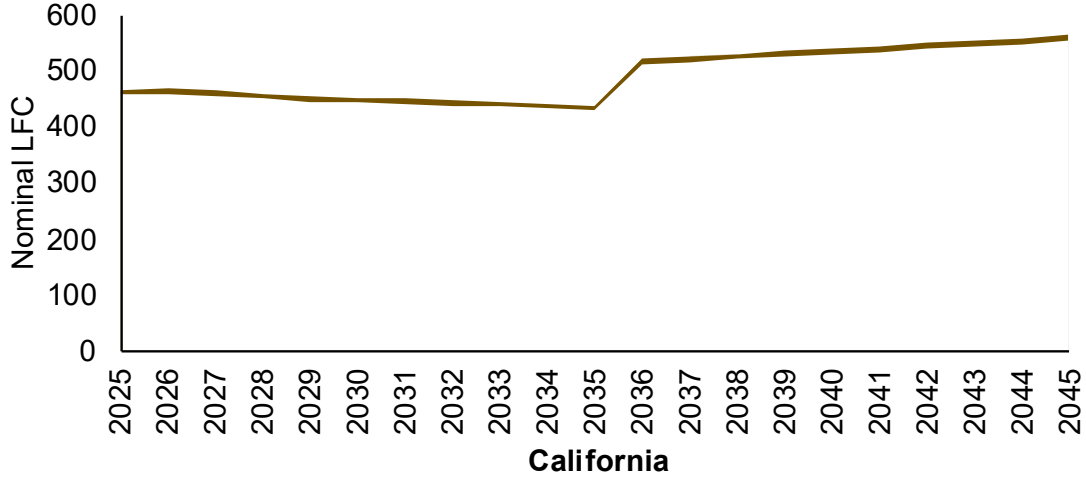
CT Frame with 95% CCS Nominal LFC w/ PTC ($/kW-yr)

Years correspond to Project COD (Vintage)



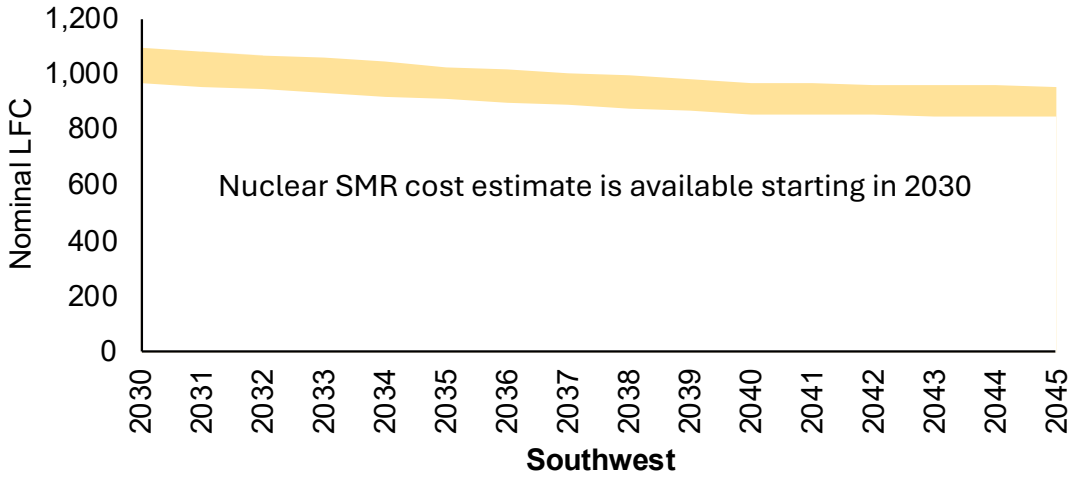


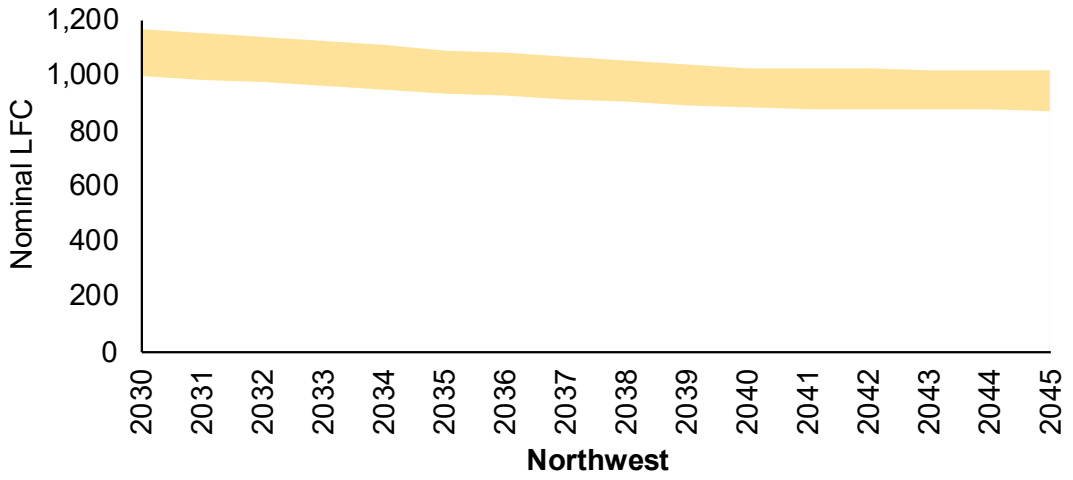


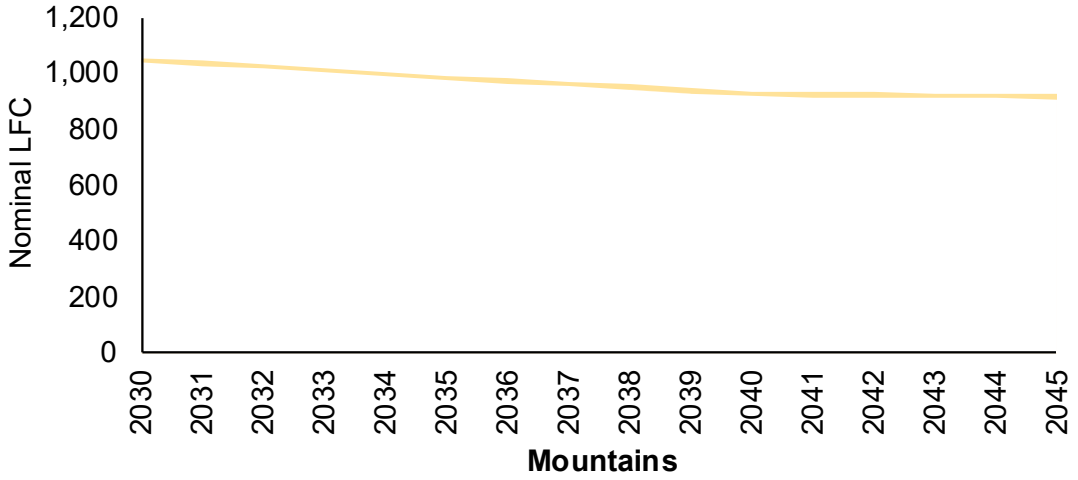


Nuclear SMR Nominal LFC w/ PTC ($/kW-yr)

Years correspond to Project COD (Vintage)







No Nuclear SMR planned in California