



2025 NorthWestern Energy Long-Term Load Forecast (DRAFT)
Energy Supply Stakeholder Working Group **June 9, 2025**



What drives the long-term load forecast?

Peak and Energy Forecast Drivers (modeled)

1. Customer forecast
2. Normal weather forecast – degree days
3. Demand Side Management (DSM) forecast
4. Net Energy Metering (NEM) forecast
5. Data Centers (new this year/for discussion purposes)



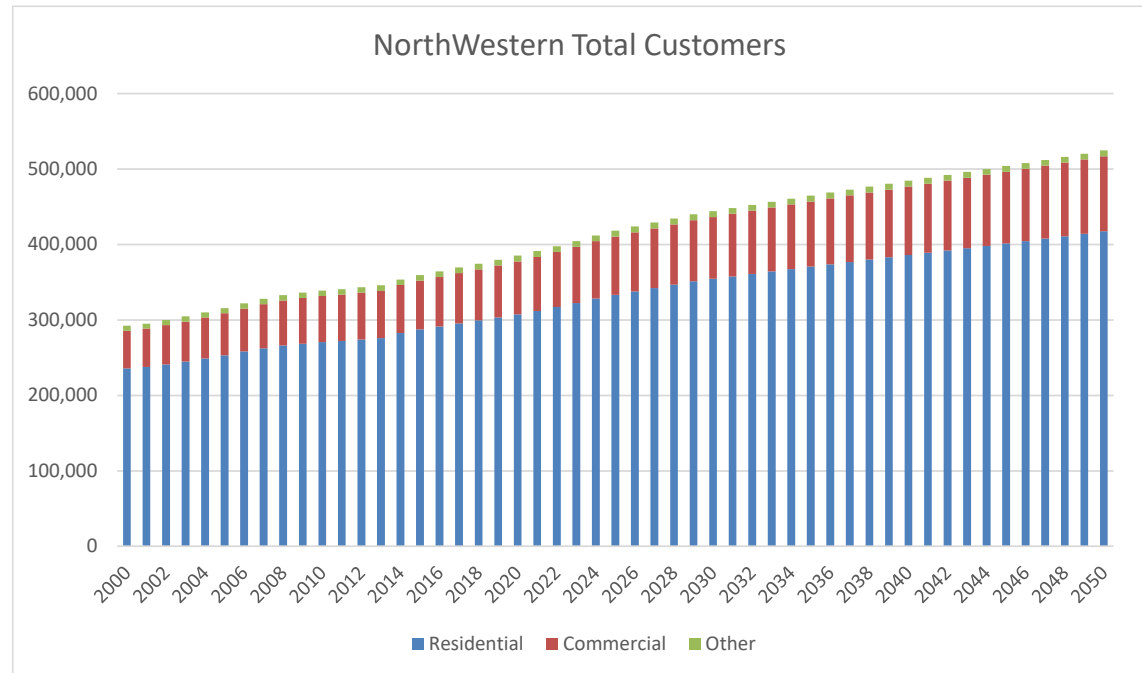
Customer forecast methodology

- Residential & GS1 Secondary customer forecasts are based on regression models using NWE service territory population as the explanatory variable
- All other customer classes held at recent actuals or adjusted for known changes



Customer forecast results

Year	NWE Total Accounts	Annual Growth Rate	NWE Residential Accounts	Annual Growth Rate	NWE Commercial Accounts	Annual Growth Rate	NWE Other Accounts	Annual Growth Rate
2000	292,437		235,784		49,911		6,742	
2005	315,755	1.5%	253,124	1.4%	55,653	2.2%	6,978	0.7%
2010	338,804	1.4%	270,571	1.3%	61,037	1.9%	7,196	0.6%
2015	359,565	1.2%	287,387	1.2%	64,727	1.2%	7,451	0.7%
2020	385,230	1.4%	307,390	1.4%	70,191	1.6%	7,649	0.5%
2025	418,187	1.7%	333,102	1.6%	77,338	2.0%	7,747	0.3%
2030	444,133	1.2%	354,426	1.2%	81,960	1.2%	7,747	0.0%
2035	464,794	0.9%	370,613	0.9%	86,434	1.1%	7,747	0.0%
2040	484,441	0.8%	386,005	0.8%	90,689	1.0%	7,747	0.0%
2045	504,043	0.8%	401,362	0.8%	94,934	0.9%	7,747	0.0%
2050	524,606	0.8%	417,472	0.8%	99,387	0.9%	7,747	0.0%

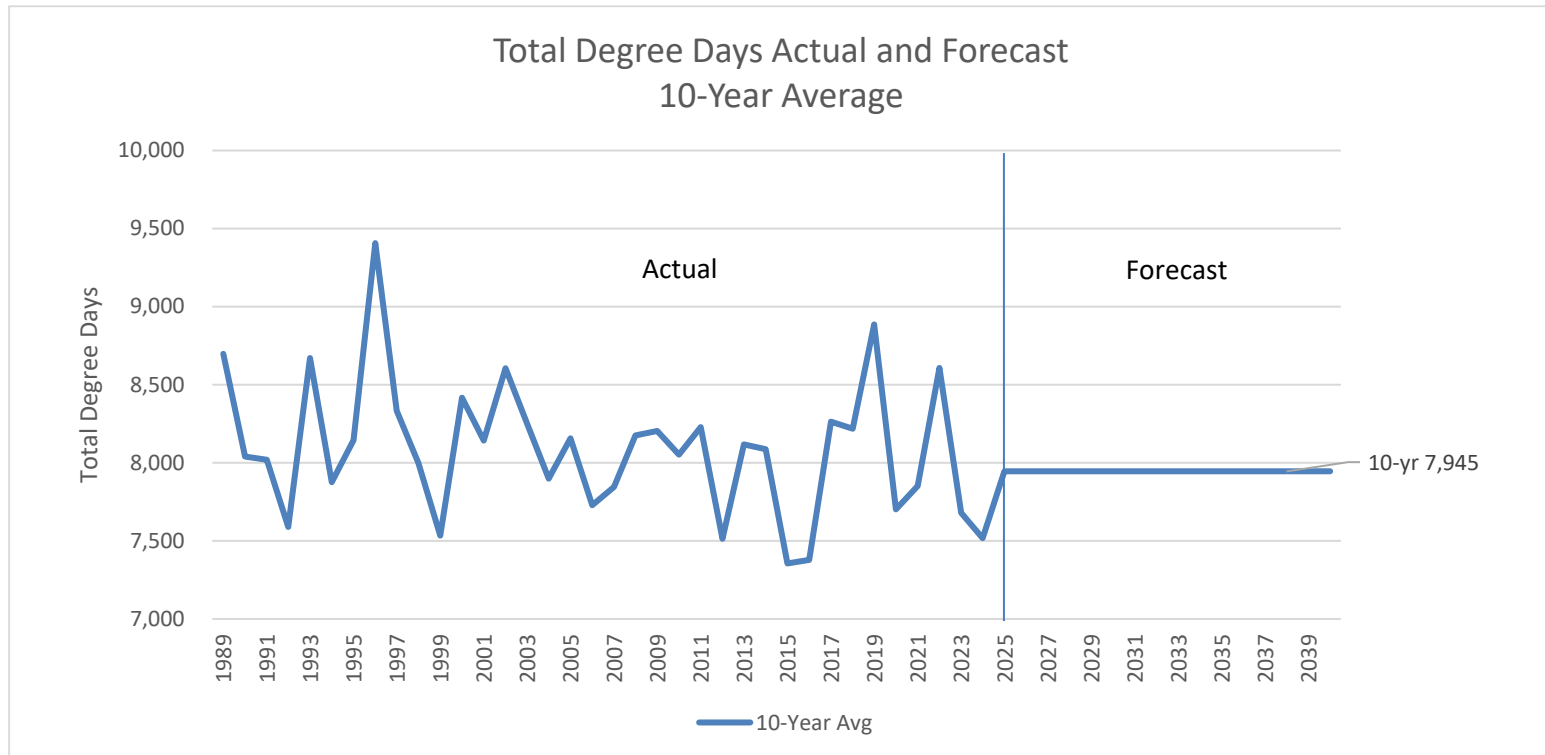


Total Degree Days (HDD + CDD)

- Heating degree day (HDD) = 65° - daily average temp
- Cooling degree day (CDD) = daily average temp - 65°
- 10-year average



Normal weather forecast results





- NWE's Demand-Side Management group provides the details of their DSM acquisition plan to use in the long-term load forecast
- The 2025 IRP will incorporate the 2025 DSM plan of 3.225 aMW/year (65 aMW 2025-2044) in energy and peak forecasts



DSM forecast results

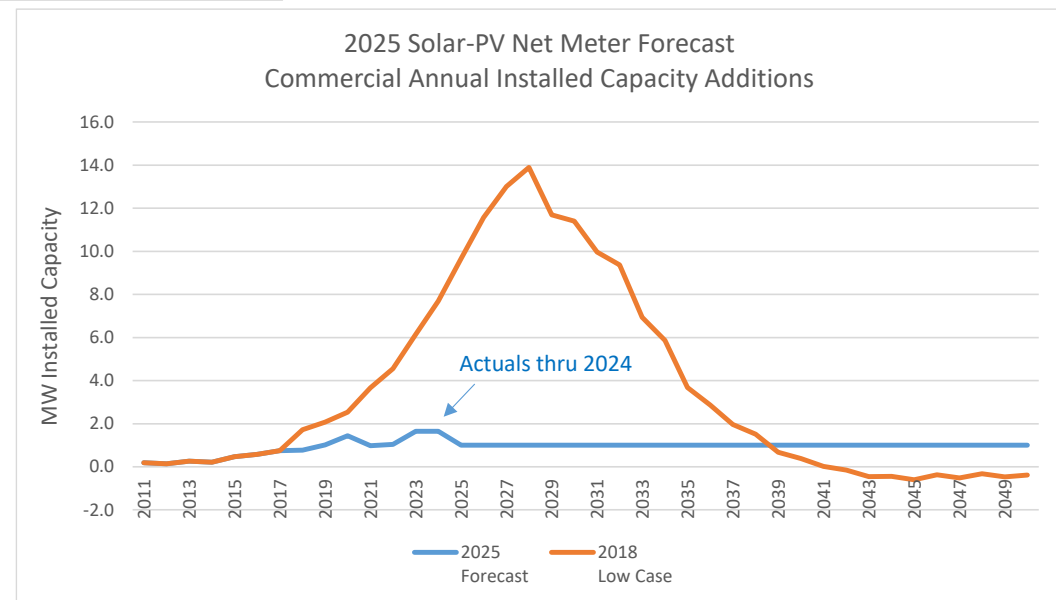
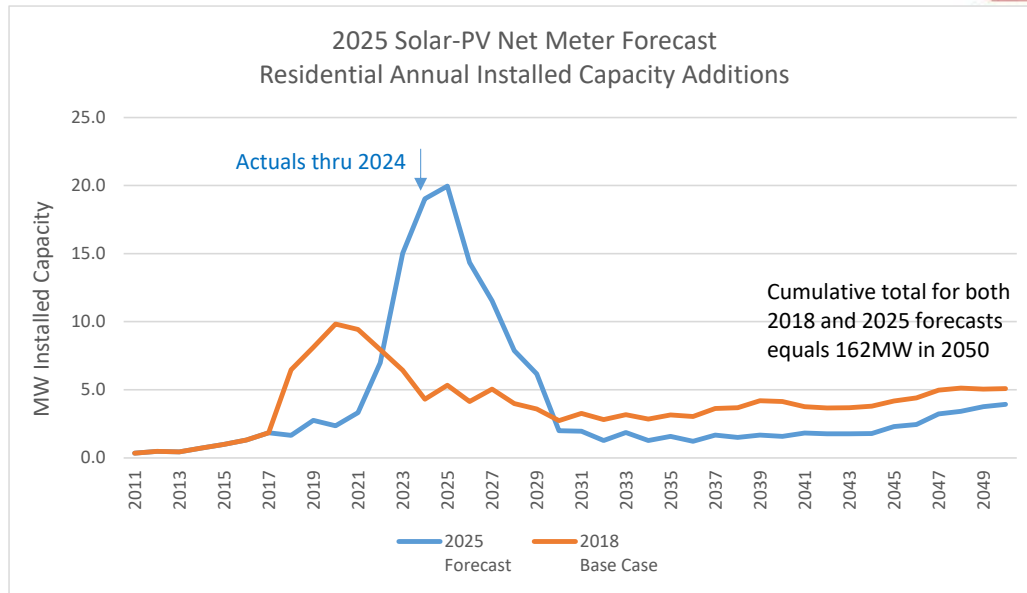
2025 DSM Plan						2025 DSM Plan		
20 Years / 65 aMW						20 Years / 65 aMW		
Energy						Peak Shaving		
	Annual	Annual	Cumulative				Winter	Summer
	aMW	MWh	MWh				MW	MW
2025	3.225	28,251	28,251			2025	5	5
2026	3.225	28,251	56,502			2026	11	10
2027	3.225	28,251	84,753			2027	16	15
2028	3.225	28,251	113,004			2028	22	20
2029	3.225	28,251	141,255			2029	27	25
2030	3.225	28,251	169,506			2030	32	30
2031	3.225	28,251	197,757			2031	38	35
2032	3.225	28,251	226,008			2032	43	40
2033	3.225	28,251	254,259			2033	48	45
2034	3.225	28,251	282,510			2034	54	50
2035	3.225	28,251	310,761			2035	59	55
2036	3.225	28,251	339,012			2036	65	60
2037	3.225	28,251	367,263			2037	70	65
2038	3.225	28,251	395,514			2038	75	70
2039	3.225	28,251	423,765			2039	81	75
2040	3.225	28,251	452,016			2040	86	80
2041	3.225	28,251	480,267			2041	91	85
2042	3.225	28,251	508,518			2042	97	90
2043	3.225	28,251	536,769			2043	102	95
2044	3.225	28,251	565,020			2044	108	100
Total	64.5	565,020						



- NWE's Residential NEM forecast is developed by combining the current rate of solar-pv installations with the growth assumptions of the 2018 Navigant NEM study and forecast
- NWE's Commercial NEM forecast is developed by assuming the current rate of solar-pv installations until there is a change in the trend



NEM forecast results





Solar PV contribution to summer peak forecast

Solar PV Net Meter Forecast					
Contribution to NWE Summer Peak (MW) - Includes Losses					
Peak Capacity Factor for MT (SPP Model)				52%	
	2025		12		
	2026		20		
	2027		27		
	2028		32		
	2029		36		
	2030		37		
	2031		39		
	2032		40		
	2033		42		
	2034		43		
	2035		45		
	2036		46		
	2037		47		
	2038		49		
	2039		50		
	2040		51		
	2041		53		
	2042		55		
	2043		56		
	2044		58		
	2045		59		
	2046		61		
	2047		64		
	2048		66		
	2049		69		
	2050		71		

Data center load (for discussion purposes)

- ✓ **Montana**
 - Served by overall utility portfolio, which is expected to be long capacity beginning in 2026
 - Served from generating portfolio over 60% carbon free
 - If data center demand interest develops beyond existing capacity, we will work with the Montana Public Service Commission to structure appropriate tariffs

- ✓ **Confidentially Announced: December 17, 2024**
 - Company: Sabey Data Centers
 - Load: 50 MW expected to grow to 250 MW
 - Start Date: Mid-2027
 - Agreement Status: Letter of Intent
- ✓ **Announced: December 19, 2024**
 - Company: Atlas Power
 - Load: 75 MW expected to grow to 150 MW
 - Start Date: January 2026
 - Agreement Status: Letter of Intent (Existing transmission customer)
- ✓ **Expect to serve under existing Montana tariffs**



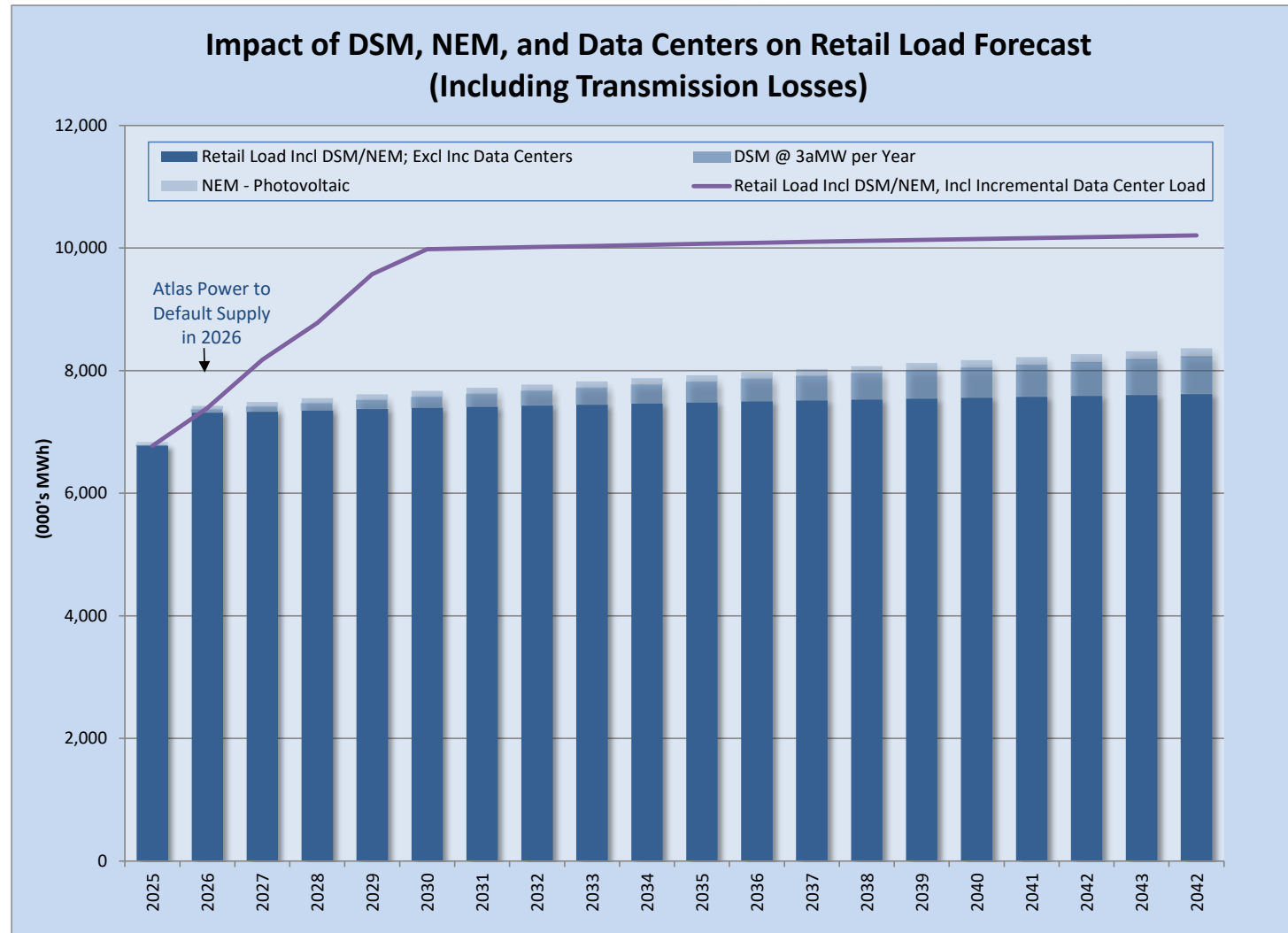


Regression models are used to develop forecasts

- Residential & Commercial load forecasts using customer counts and 10-year average degree days (normal weather) as explanatory variables
- DSM and NEM incremental forecasts are subtracted from regression results
- All other customer classes based on recent actuals or averages, with known changes applied
- Data center load forecasts are added



Retail energy forecast results (draft)





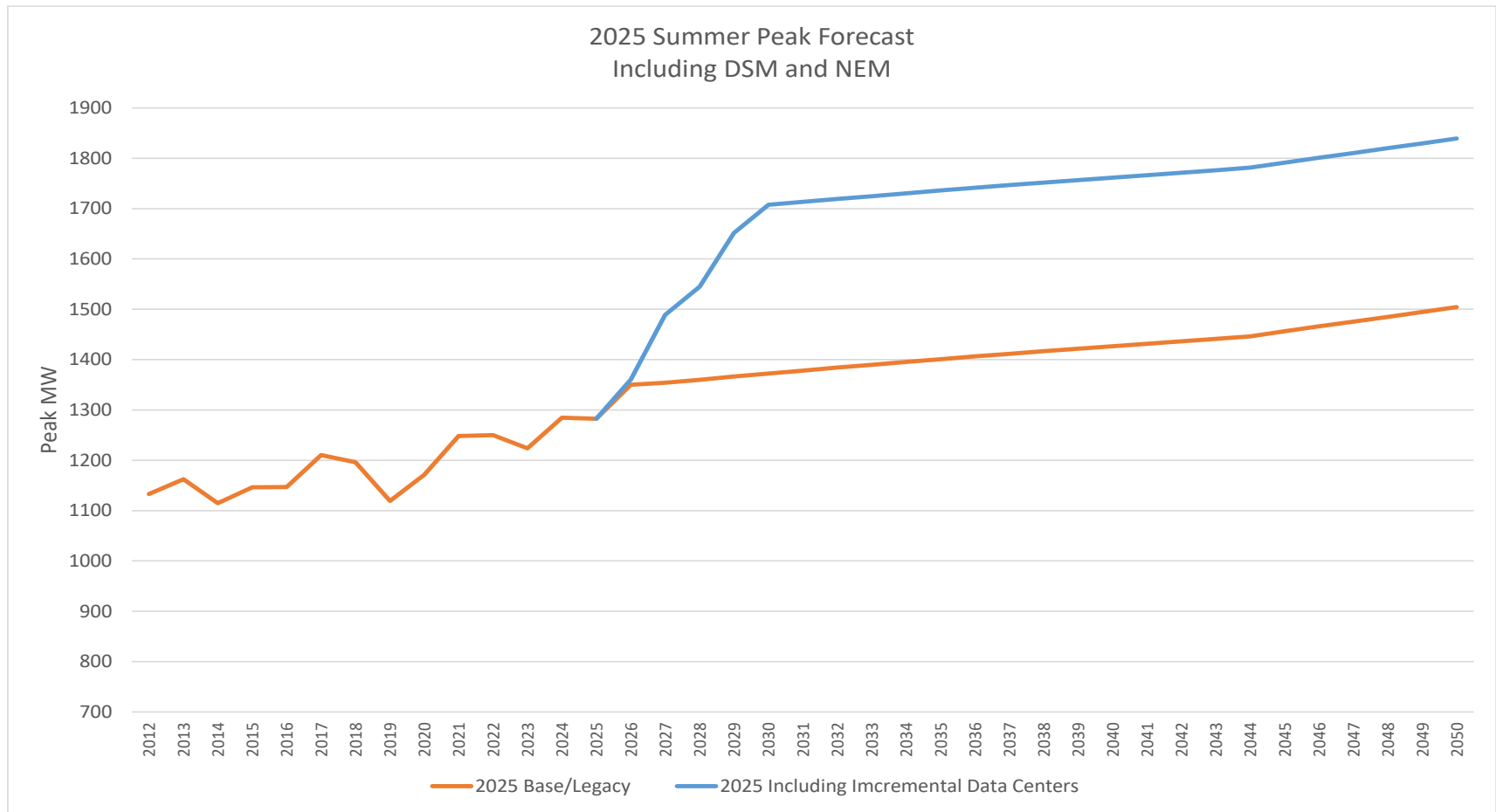
Peak demand forecast methodology

Regression models are used to develop forecasts

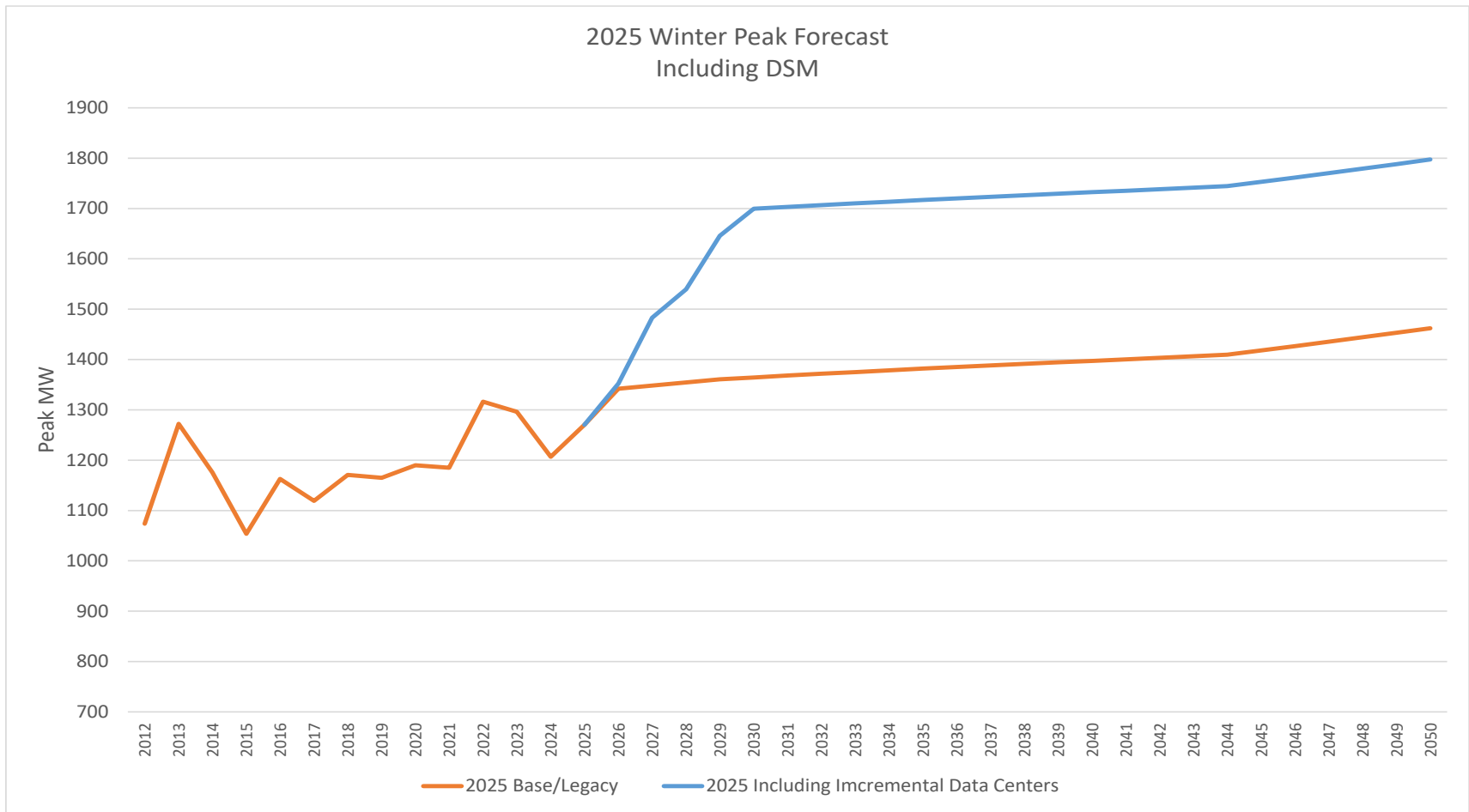
- For the summer peak forecast, peak-day max temperature, monthly energy, and customers used as explanatory variables
 - 10-year average peak-day max temperatures assumed in forecast
- For the winter peak forecast, peak-day heating degree days, monthly energy, and customers used as explanatory variables
 - 10-year average peak-day heating degree days assumed in forecast
- DSM and NEM incremental forecasts are subtracted from the regression results
- Data Center forecasts are added to the regression results



Summer peak demand forecast results (draft)



Winter peak demand forecast results (draft)





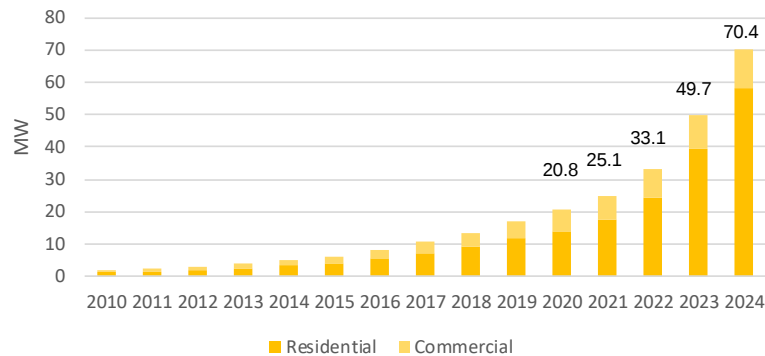
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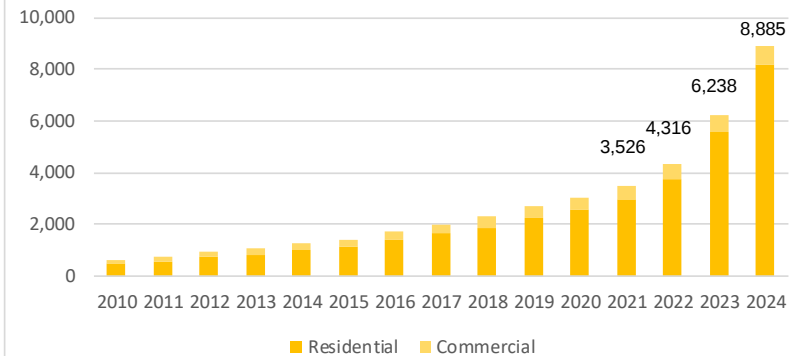


Solar-PV net metering

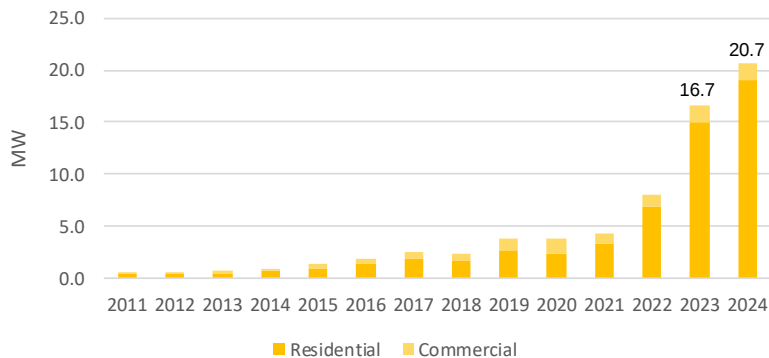
Solar PV
Installed Capacity



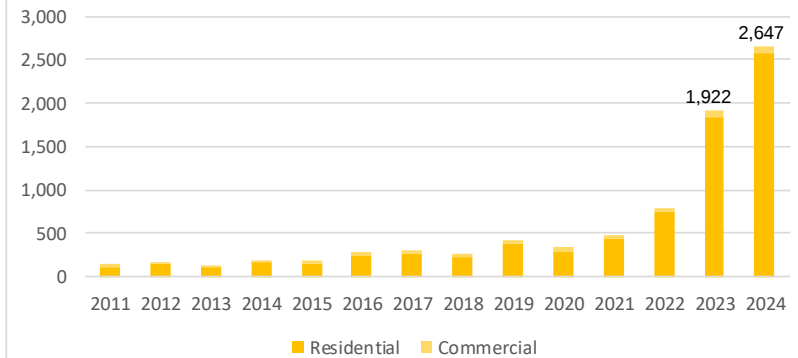
Solar PV
Customers



Solar PV
Annual Installed Capacity Additions



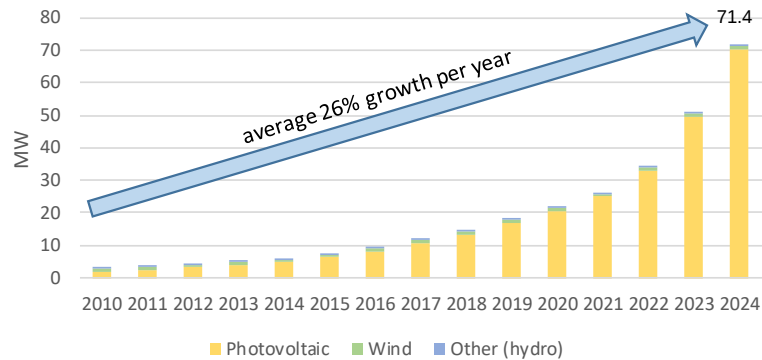
Solar PV
Annual New Customer Additions



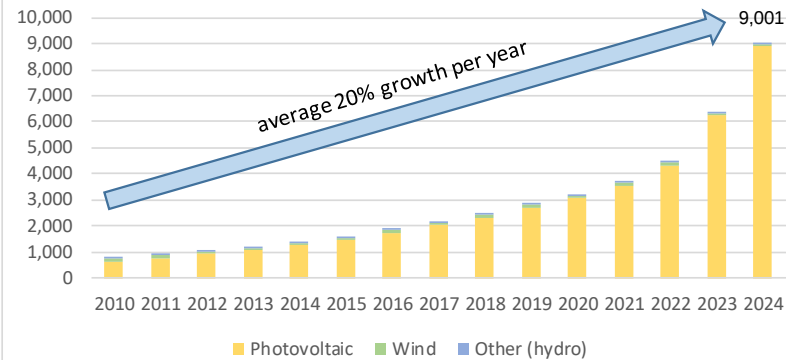


Total net metering

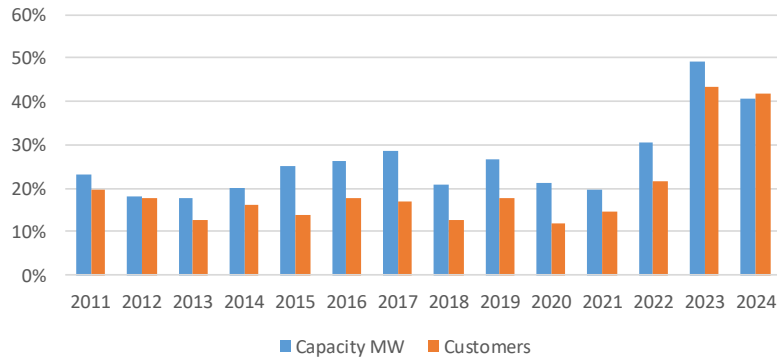
Total Net-Meter Installed Capacity



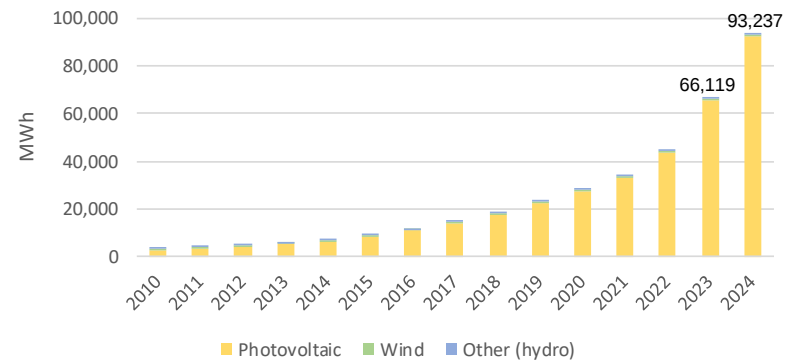
Total Net-Meter Customers



Total Net-Meter Annual Growth Rates



Total Net-Meter Annual Energy Generation



Retail energy forecast results excl incremental DC

NorthWestern Energy Retail Energy

Long-term Load Forecast

Includes Losses, DSM, and Solar PV-NEM; Excludes Incremental Data Centers

Year	Retail Load (MWh)	Annual Growth Rate	Commercial (MWh)	Annual Growth Rate	Residential (MWh)	Annual Growth Rate	Legacy Data Center (MWh)	Annual Growth Rate	Other (MWh)	Annual Growth Rate
2005	5,853,233		3,056,875		2,192,095				604,263	
2010	6,083,553	0.8%	3,176,584	0.8%	2,459,158	2.3%			447,811	-5.8%
2015	6,296,193	0.7%	3,258,127	0.5%	2,495,313	0.3%			542,753	3.9%
2020	6,325,688	0.1%	3,089,126	-1.1%	2,786,461	2.2%			450,101	-3.7%
2025	6,773,089	1.4%	3,299,239	1.3%	2,989,985	1.4%			483,864	1.5%
2030	7,391,029	1.8%	3,347,260	0.3%	3,059,411	0.5%	483,990		500,368	0.7%
2035	7,480,619	0.2%	3,364,263	0.1%	3,131,999	0.5%	483,990	0.0%	500,368	0.0%
2040	7,557,995	0.2%	3,375,670	0.1%	3,197,967	0.4%	483,990	0.0%	500,368	0.0%
2045	7,662,143	0.3%	3,404,790	0.2%	3,272,995	0.5%	483,990	0.0%	500,368	0.0%
20-YR CAGR		0.6%		0.2%		0.5%		0.0%		0.2%

Retail energy forecast results incl incremental DC

NorthWestern Energy Retail Energy

Long-term Load Forecast

Includes Losses, DSM, and Solar PV-NEM; Includes Incremental Data Centers

Year	Retail Load (MWh)	Annual Growth Rate	Commercial (MWh)	Annual Growth Rate	Residential (MWh)	Annual Growth Rate	Total Data Center (MWh)	Annual Growth Rate	Other (MWh)	Annual Growth Rate
2005	5,853,233		3,056,875		2,192,095				604,263	
2010	6,083,553	0.8%	3,176,584	0.8%	2,459,158	2.3%			447,811	-5.8%
2015	6,296,193	0.7%	3,258,127	0.5%	2,495,313	0.3%			542,753	3.9%
2020	6,325,688	0.1%	3,089,126	-1.1%	2,786,461	2.2%			450,101	-3.7%
2025	6,773,089	1.4%	3,299,239	1.3%	2,989,985	1.4%			483,864	1.5%
2030	9,979,062	8.1%	3,347,260	0.3%	3,059,411	0.5%	3,072,022		500,368	0.7%
2035	10,068,652	0.2%	3,364,263	0.1%	3,131,999	0.5%	3,072,022	0.0%	500,368	0.0%
2040	10,146,028	0.2%	3,375,670	0.1%	3,197,967	0.4%	3,072,022	0.0%	500,368	0.0%
2045	10,250,176	0.2%	3,404,790	0.2%	3,272,995	0.5%	3,072,022	0.0%	500,368	0.0%
20-YR CAGR		2.1%		0.2%		0.5%		0.0%		0.2%



Peak Demand forecast results

Summer Peak Demand Forecast (MW)					
Historic and Forecast Values Include Losses					
Year	2025 Actual/ Regression ³	Less DSM ²	Less NEM ^{1,2}	Add Data Centers ²	2025 Forecast
2015	1146				1146
2016	1147				1147
2017	1210				1210
2018	1196				1196
2019	1119				1119
2020	1171				1171
2021	1248				1248
2022	1250				1250
2023	1224				1224
2024	1285				1285
2025	1299	(5)	(12)		1282
2026	1380	(10)	(20)	10	1360
2027	1396	(15)	(27)	135	1489
2028	1411	(20)	(32)	185	1545
2029	1427	(25)	(36)	285	1652
2030	1440	(30)	(37)	335	1707
2031	1452	(35)	(39)	335	1713
2032	1464	(40)	(40)	335	1719
2033	1476	(45)	(42)	335	1725
2034	1488	(50)	(43)	335	1730
2035	1500	(55)	(45)	335	1736
2036	1512	(60)	(46)	335	1741
2037	1524	(65)	(47)	335	1747
2038	1535	(70)	(49)	335	1752
2039	1547	(75)	(50)	335	1757
2040	1558	(80)	(51)	335	1762
2041	1569	(85)	(53)	335	1766
2042	1581	(90)	(55)	335	1771
2043	1592	(95)	(56)	335	1776
2044	1604	(100)	(58)	335	1781
2045	1615	(100)	(59)	335	1791
20 Year CAGR	1.1%				1.7%
20 Yr Avg Increase (MW)	16				25

- 1 Navigant LOW case solar pv - net meter forecast
 2 Incremental DSM, NEM, and Data Center Load
 3 Atlas Power legacy 65MW added beginning 2026

Winter Peak Demand Forecast (MW)					
Historic and Forecast Values Include Losses					
Year	2025 Actual/ Regression ³	Less DSM ²	Less NEM ¹	Add Data Centers ²	2025 Forecast
2015	1054				1054
2016	1163				1163
2017	1119				1119
2018	1171				1171
2019	1165				1165
2020	1190				1190
2021	1185				1185
2022	1316				1316
2023	1296				1296
2024	1207				1207
2025	1276	(5)			1270
2026	1353	(11)		10	1352
2027	1364	(16)		135	1483
2028	1376	(22)		185	1539
2029	1388	(27)		285	1646
2030	1397	(32)		335	1699
2031	1406	(38)		335	1703
2032	1415	(43)		335	1707
2033	1424	(48)		335	1710
2034	1432	(54)		335	1714
2035	1441	(59)		335	1717
2036	1450	(65)		335	1720
2037	1458	(70)		335	1723
2038	1467	(75)		335	1726
2039	1475	(81)		335	1729
2040	1483	(86)		335	1732
2041	1492	(91)		335	1735
2042	1500	(97)		335	1738
2043	1509	(102)		335	1741
2044	1517	(108)		335	1744
2045	1526	(108)		335	1753
20 Year CAGR	0.9%				1.6%
20 Yr Avg Increase (MW)	12				24

- 1 No NEM impact on Winter peak assumed
 2 Incremental DSM and Data Center Load
 3 Atlas Power legacy 65MW added beginning 2026