

SPSC High DSM Load Forecast: Pacific Northwest States

Overview by State

Tables 1 and 2 present the High DSM load forecasts (Column D) for the four states in the Pacific Northwest, compared to the State-Adjusted (SPSC Reference Case) load forecasts. Table 3 compares the underlying energy efficiency projections for the reference case and High DSM case, in terms of their percentage of the hypothetical load forecast with no future energy efficiency savings. The remainder of this document explains how the High DSM scenario efficiency savings projections were developed for each state, and allocates the state-level savings to the balancing authorities in the PNW.

Table 1. High DSM Load Forecasts for 2020: Annual Electricity Consumption (GWh)

State	A	B	C	D = A - (C - B)	E = D/A - 1
	State-Adjusted (Reference Case) Load Forecast	Reference Case Efficiency Savings	High DSM Efficiency Savings	High DSM Load Forecast	Percent Change from State-Adjusted Load Forecast
	(GWh)	(GWh)	(GWh)	(GWh)	(%)
ID	29,594	3,722	6,431	26,885	-9%
MT	14,123	1,427	1,571	13,979	-1%
OR	54,587	8,226	13,514	49,299	-10%
WA	98,685	13,423	24,954	87,153	-12%
PNW Region Total	196,988	26,799	46,470	177,317	-10%

Table 2. High DSM Load Forecasts for 2020: Annual Peak Demand (MW)

State	A	B	C	D = A - (C - B)	E = D/A - 1
	State-Adjusted (Reference Case) Load Forecast	Reference Case Efficiency Savings	High DSM Efficiency Savings	High DSM Load Forecast	Percent Change from State-Adjusted Load Forecast
	(MW)	(MW)	(MW)	(MW)	(%)
ID	6,147	574	1,470	5,251	-15%
MT	2,375	217	347	2,245	-5%
OR	9,974	1,344	2,899	8,419	-16%
WA	18,567	2,409	5,033	15,943	-14%
PNW Region Total	37,062	4,545	9,749	31,858	-14%

Table 3. Comparison of Reference Case and High DSM Case (2020 Cumulative Savings)

State	Reference Case Savings (% of Load Forecast w/o EE)		High DSM Case Savings (% of Load Forecast w/o EE)	
	GWh	MW	GWh	MW
ID	11%	9%	19%	22%
MT	9%	8%	10%	13%
OR	13%	12%	22%	26%
WA	12%	11%	22%	24%
PNW Region Total	12%	11%	21%	23%

Note: The percentages in this table were calculated by dividing the savings projection by the sum of the savings projection and the post-savings load forecast (e.g., High DSM savings divided by High DSM savings plus High DSM load forecast)

High DSM Savings Projections by State

The SPSC study request specifies that the High DSM scenario will be based on achieving the *full economic potential* in 2020. In order to implement this assumption for the Pacific Northwest states, the DSM working group relied on the conservation potential assessment conducted by the Northwest Power and Conservation Council (NPCC) for its 6th Power Plan. At the request of the DSM working group, NPCC staff (Charlie Grist) provided an estimate of the total “total economic potential” in 2020, for the NPCC planning area as a whole. This estimate is greater than the 2020 conservation target presented in the 6th Plan, for two primary reasons:

- The conservation targets in the 6th Plan assume that only 85% of the technical potential is “achievable,” whereas the total economic potential does not include this constraint.
- The conservation targets in the 6th Plan are based on assumptions about how fast conservation savings can be acquired, given certain practical limitations of energy efficiency programs. The total economic potential does not impose these constraints.

For the High DSM scenario, we rely on the total economic potential rather than the conservation targets in the 6th Plan, in order to maintain consistency between the PNW and other states, where the High DSM savings estimates are based on acquiring the full economic potential without any non-economic “achievability” constraints.

The analysis provided by NPCC staff indicates that, in 2020, the total economic potential for the NPCC planning area (Idaho, Oregon, Washington, and Western Montana) is equal to 5,000 aMW. In comparison, the 2020 conservation potential target in the 6th Plan is 3,225 aMW. We estimate the total economic potential for each state in the Pacific Northwest by scaling up the 6th Plan conservation target for that state based on the ratio of the total economic potential and the conservation target for the regional (i.e., 5,000 aMW divided by 3,255 aMW = 1.55). Table 4 presents the state-level economic potential estimates; these are the values that are carried through to Tables 1 and 2 at this beginning of this document. Note that the conservation numbers for Montana are statewide, and were calculated by extrapolating the NPCC conservation potential estimates for Western Montana to entire state.

Table 4. Full Economic Potential for PNW States

State	6 th Plan Conservation Target (2020) ¹			Total Economic Potential (2020)		
	aMW	GWh	Peak MW	aMW	GWh	Peak MW
ID	473	4,148	948	734	6,431	1,470
MT	116	1,013	224	179	1,571	347
OR	995	8,716	1,870	1,543	13,514	2,899
WA	1,837	16,096	3,246	2,849	24,954	5,033

¹ The state-level conservation targets were provided to the DSM working group by NPCC staff (Massoud Jourabchi).

High DSM Savings Projections and Load Forecasts by Balancing Authority

Ultimately, the DSM Working Group is responsible for developing High DSM load forecasts for each individual balancing authority. To do so, we first allocate the state-level economic potential estimates in Table 4 to each balancing authority within the state, in proportion to load. Table 5 presents the results of this calculation for each balancing authority. Note that Table 5 also includes an economic potential estimate for the California portion of PacifiCorp-West (PACW), which we derived by extrapolating the estimated economic potential for the Oregon portion of PACW (see note 2 below Table 5).

Table 6 compares the economic potential to the reference case energy efficiency savings for each balancing authority, expressed as a percentage of a hypothetical “no EE” forecast with no future energy efficiency policies or programs. For the balancing authorities in Idaho, Oregon, and Washington, the economic potential in 2020 equates to approximately 20% of the “no EE” load, compared to 10-14% in the reference case. The economic potential estimates for Montana are about half the size, as a percentage of the “no EE” load, compared to the other states. This fact ultimately derives from the fact that NPCC’s conservation targets for Montana are lower, in percentage terms, than for the other three states. This result is, in fact, consistent with other energy efficiency potential studies conducted in the region. For example, the DSM working group’s analysis of energy efficiency potential studies covering portions of Wyoming yielded an overall estimate of economic potential in that state equal to 11% of the “no EE” load.

Finally, based on the economic potential estimates in Table 5, we derived High DSM load forecasts for each balancing authority, as shown in Tables 7 and 8, which present the 2020 High DSM energy and peak load forecasts, respectively. Note that for balancing authorities spanning multiple states, the DSM working group will “roll-up” the numbers for each state into a single load forecast for the balancing authority (including portions of the PacifiCorp-East balancing authority that are outside of the PNW and therefore excluded from in these tables).

Table 5. Balancing Authority Economic Potential Estimates

Balancing Authority (PNW portion)	State	Balancing Authority Percent of StateLoad ¹	Full Economic Potential (2020)		
			aMW	GWh	MW
AVA	ID	18%	133	1,164	266
	WA	9%	261	2,289	462
BPA	ID	8%	60	526	120
	MT	21%	38	333	74
	OR	30%	469	4,108	881
	WA	34%	959	8,403	1,695
CHPD	WA	4%	113	987	199
DOPD	WA	2%	59	520	105
GCPD	WA	5%	144	1,258	254
IPC	ID	60%	441	3,866	883
	OR	2%	26	231	50
NWMT	MT	75%	134	1,173	259
PACE	ID	14%	100	875	200
PACW	OR	26%	408	3,575	767
	WA	5%	129	1,130	228
	CA ²	n/a	28	245	53
PGE	OR	41%	639	5,600	1,201
PSE	WA	26%	731	6,407	1,292
SCL	WA	11%	302	2,644	533
TPWR	WA	5%	150	1,316	265
WAUW	MT	4%	7	65	14

¹ The distribution in each state's load across balancing authorities is based on the load forecast data provided to WECC by individual balancing authorities.

² To estimate the economic potential in the California portion of PACW, we multiplied the potential results for the Oregon portion of PACW by the ratio of the PACW load in California and Oregon (0.07). That ratio was derived from the load forecast data provided in PacifiCorp's March 2010 IRP.

Table 6. Comparison of Balancing Authority Reference Case and High DSM Case Savings (Cumulative)

Balancing Authority (PNW portion)	State	Reference Case Savings (% of Load Forecast w/o EE)		High DSM Case Savings (% of Load Forecast w/o EE)	
		GWh	MW	GWh	MW
AVA	ID	8%	8%	19%	23%
	WA	11%	10%	22%	23%
BPA	ID	10%	8%	20%	25%
	WA	10%	8%	23%	26%
	OR	10%	8%	23%	27%
	MT	10%	8%	10%	12%
CHPD	WA	8%	9%	23%	26%
DOPD	WA	10%	9%	23%	22%
GCPD	WA	11%	13%	23%	27%
IPC	ID	13%	9%	19%	21%
	OR	14%	10%	21%	22%
NWMT	MT	9%	9%	10%	14%
PACE	ID	7%	8%	20%	23%
PACW	WA	14%	13%	22%	22%
	OR	14%	13%	21%	25%
	CA	14%	13%	20%	23%
PGE	OR	14%	14%	21%	25%
PSE	WA	14%	14%	21%	21%
SCL	WA	13%	15%	22%	25%
TPWR	WA	15%	16%	22%	24%
WAUW	MT	4%	4%	10%	12%

Table 7. Balancing Authority High DSM Load Forecasts for 2020: Annual Electricity Consumption (GWh)

Balancing Authority (PNW portion)	State	A	B	C	D = A - (C - B)	E = D/A - 1
		State Adjusted Load Forecast	Reference Case Efficiency Savings	High DSM Efficiency Savings	High DSM Load Forecast	Percent Change from State-Adjusted Load Forecast
		(GWh)	(GWh)	(GWh)	(GWh)	(%)
AVA	ID	5,531	488	1,164	4,854	-12%
	WA	9,290	1,162	2,289	8,163	-12%
BPA	ID	2,391	276	526	2,141	-10%
	WA	32,767	3,779	8,403	28,142	-14%
	OR	16,311	1,881	4,108	14,085	-14%
	MT	3,077	355	333	3,099	1%
CHPD	WA	3,901	345	987	3,259	-16%
DOPD	WA	2,033	222	520	1,735	-15%
GCPD	WA	4,888	598	1,258	4,227	-14%
IPC	ID	17,539	2,634	3,866	16,308	-7%
	OR	952	157	231	877	-8%
NWMT	MT	10,438	1,046	1,173	10,311	-1%
PACE	ID	4,133	324	875	3,582	-13%
PACW	WA	4,456	715	1,130	4,040	-9%
	OR	14,718	2,411	3,575	13,554	-8%
	CA	1,033	166	245	953	-8%
PGE	OR	22,605	3,777	5,600	20,783	-8%
PSE	WA	25,895	4,120	6,407	23,608	-9%
SCL	WA	10,486	1,582	2,644	9,423	-10%
TPWR	WA	4,970	900	1,316	4,555	-8%
WAUW	MT	608	26	65	569	-6%

Table 8. Balancing Authority High DSM Load Forecasts for 2020: Annual Peak Demand (MW)

Balancing Authority (PNW portion)	State	A	B	C	$D = A - (C - B)$	$E = D/A - 1$
		State Adjusted Load Forecast	Reference Case Efficiency Savings	High DSM Efficiency Savings	High DSM Load Forecast	Percent Change from State-Adjusted Load Forecast
		(MW)	(MW)	(MW)	(MW)	(%)
AVA	ID	1,054	87	266	875	-17%
	WA	1,771	204	462	1,513	-15%
BPA	ID	436	37	120	352	-19%
	WA	5,973	501	1,695	4,779	-20%
	OR	2,973	250	881	2,342	-21%
	MT	561	47	74	534	-5%
CHPD	WA	683	70	199	553	-19%
DOPD	WA	435	45	105	375	-14%
GCPD	WA	802	121	254	669	-17%
IPC	ID	3,843	376	883	3,335	-13%
	OR	205	23	50	178	-13%
NWMT	MT	1,701	165	259	1,607	-6%
PACE	ID	814	74	200	689	-15%
PACW	WA	901	139	228	812	-10%
	OR	2,684	418	767	2,334	-13%
	CA	198	29	53	174	-12%
PGE	OR	4,112	654	1,201	3,565	-13%
PSE	WA	5,225	830	1,292	4,763	-9%
SCL	WA	1,841	318	533	1,625	-12%
TPWR	WA	937	182	265	853	-9%
WAUW	MT	113	5	14	104	-8%