

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 Common Case load forecasts. Table 3 compares the underlying energy efficiency projections for the Common 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 Case 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 2021: Annual Electricity Consumption (GWh)

State	A	B	C	D = A - (C - B)	E = D/A - 1
	Common Case Load Forecast	Common Case Efficiency Savings	High DSM Efficiency Savings	High DSM Load Forecast	Percent Change from Common Case Load Forecast
	(GWh)	(GWh)	(GWh)	(GWh)	(%)
ID	30,713	3,040	6,431	27,323	-11%
MT	44,197	4,786	9,641	39,342	-11%
OR	56,589	7,362	13,514	50,437	-11%
WA	70,625	8,860	16,885	62,600	-11%
PNW Region Total	202,124	24,048	46,470	179,702	-11%

Table 2. High DSM Load Forecasts for 2021: Annual Peak Demand (MW)

State	A	B	C	D = A - (C - B)	E = D/A - 1
	Common Case Load Forecast	Common Case Efficiency Savings	High DSM Efficiency Savings	High DSM Load Forecast	Percent Change from Common Case Load Forecast
	(MW)	(MW)	(MW)	(MW)	(%)
ID	6,878	475	1,243	6,109	-11%
MT	8,200	676	1,968	6,908	-16%
OR	10,586	1,181	2,889	8,879	-16%
WA	13,413	1,719	3,412	11,720	-13%
PNW Region Total	39,077	4,051	9,512	33,615	-14%

Table 3. Comparison of Reference Case and High DSM Case (2021 Cumulative Savings)

State	Common Case Savings (% of No-EE Load Forecast)		High DSM Case Savings (% of No-EE Load Forecast)	
	GWh	MW	GWh	MW
ID	9%	6%	19%	17%
MT	10%	8%	20%	22%
OR	12%	10%	21%	25%
WA	11%	11%	21%	23%
PNW Region Total	11%	9%	21%	22%

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 the sum of High DSM savings and High DSM load forecast)

High DSM Savings Projections by State

The SPSC DSM Work Group determined that High DSM Case is to be based on achieving the *full economic potential* in each balancing authority. 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 for last year’s High DSM Case, NPCC staff provided an estimate of the “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 Case, 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. For this year’s High DSM Case, we use the same potential estimate as provided last year, which applied to the period 2010-2020. Thus, in effect, we assume that the potential estimate can be “shifted” one year forward (i.e., that the additional potential gained by going out one year further into the future is more or less offset by the actual conservation achievements in 2010). Throughout the remainder of this document, references to potential estimates for year 2020 should therefore be understood to apply to the year 2021 for the purpose of this year’s High DSM Case.

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 corresponding 6th Plan

conservation target, based on the ratio of the total economic potential and the conservation target for the region (i.e., 5,000 aMW divided by 3,255 aMW = 1.55 scaling factor), as shown in Table 4. Note that the conservation numbers for Montana are statewide, and were calculated by extrapolating the NPCC conservation potential estimates for Western Montana to the entire state; thus the total 6th plan conservation target for the region shown in Table 4 slightly exceeds the value reported in the 6th plan (which is limited to Western Montana).

Table 4. Total 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
Total	3,422	29,973	6,288	5,305	46,470	9,749

¹ The state-level conservation targets were provided to the DSM working group by NPCC staff in the course of developing the High DSM Case for the 2010 TEPPC Study Program.

The state-level High DSM load forecasts were then allocated to individual balancing authorities, in proportion to retail sales, as shown in Table 5. There are two minor items to note related to this extrapolation. First, Table 5 includes an estimate of the economic potential for the California-portion of PACW, which was derived simply by extrapolating the estimated economic potential for the Oregon portion of PACW; thus, the total economic potential energy savings (GWh) shown in Table 5 is slightly greater than the corresponding total shown in Table 4. Second, in the course of modeling last year’s High DSM Case, it was determined that, in the case of the IPC balancing authority, allocating state-level *peak demand* savings based simply on retail sales yielded an overly compressed load shape. Therefore, the peak demand savings for IPC was, instead, calculated from the energy savings, based on an assumed peak-to-energy savings ratio of 0.17 MW/GWh. This is the peak-to-energy savings ratio implied by the Common Case savings assumptions for IPC, and is significantly lower than the peak-to-energy savings ratio implied by the 6th Plan conservation target for Idaho (0.23 MW/GWh). As a result of this adjustment to the NPCC economic potential estimate, the total peak demand savings shown in Table 5 is slightly lower than the corresponding value shown in Table 4.

Based on the economic potential estimates in Table 5, the High DSM load forecasts are shown for each balancing authority in Tables 6 and 7, for energy and peak load, respectively. Note that for balancing authorities spanning multiple states, the DSM Work Group will “roll-up” the numbers across states into a single load forecast for the balancing authority (including portions of the PACE balancing authority that are outside of the PNW and therefore excluded from these tables).

Table 5. Allocation of State-Level Economic Potential Estimates to Balancing Authorities

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 ³	ID	60%	441	3,866	657
	OR	2%	26	231	39
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
PNW Total			5,333	46,716	9,565

¹ The distribution of 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.

³ The peak demand savings (MW) for IPC was calculated from the energy savings, based on an assumed peak-to-energy savings ratio of 0.17 MW/GWh, rather than by allocating state-level peak demand savings estimates in proportion to retail sales.

Table 6. Balancing Authority High DSM Load Forecasts for 2021: Annual Electricity Consumption (GWh)

Balancing Authority (PNW portion)	State	A	B	C	$D = A - (C - B)$	$E = D/A - 1$
		Common Case Load Forecast	Common Case Efficiency Savings	High DSM Efficiency Savings	High DSM Load Forecast	Percent Change from Common Case Load Forecast
		(GWh)	(GWh)	(GWh)	(GWh)	(%)
AVA	ID	5,388	570	1,164	4,794	-11%
	WA	9,077	960	2,289	7,748	-15%
BPA	ID	2,343	285	526	2,103	-10%
	WA	3,016	367	333	3,049	1%
	OR	15,983	1,945	4,108	13,821	-14%
	MT	32,108	3,907	8,403	27,612	-14%
CHPD	WA	4,037	135	987	3,185	-21%
DOPD	WA	1,931	117	520	1,528	-21%
GCPD	WA	5,103	314	1,258	4,160	-18%
IPC	ID	18,570	1,924	3,866	16,629	-10%
	OR	969	100	231	839	-13%
NWMT	MT	11,268	851	1,173	10,946	-3%
PACE	ID	4,411	261	875	3,797	-14%
PACW	OR	16,570	1,501	3,575	14,496	-13%
	WA	5,016	454	1,130	4,340	-13%
	CA	1,163	105	245	1,023	-12%
PGE	OR	23,067	3,816	5,600	21,283	-8%
PSE	WA	26,340	4,667	6,407	24,600	-7%
SCL	WA	10,662	1,258	2,644	9,275	-13%
TPWR	WA	5,443	588	1,316	4,715	-13%
WAUW	MT	821	28	65	784	-4%
Total		203,287	24,154	46,716	180,725	-11%

Table 7. Balancing Authority High DSM Load Forecasts for 2021: Annual Peak Demand (MW)

Balancing Authority (PNW portion)	State	A	B	C	D = A - (C - B)	E = D/A - 1
		Common Case Load Forecast	Common Case Efficiency Savings	High DSM Efficiency Savings	High DSM Load Forecast	Percent Change from Common Case Load Forecast
		(MW)	(MW)	(MW)	(MW)	(%)
AVA	ID	997	66	266	797	-20%
	WA	1,679	112	462	1,329	-21%
BPA	ID	455	39	120	373	-18%
	WA	585	50	74	561	-4%
	OR	3,103	263	881	2,485	-20%
	MT	6,233	529	1,695	5,067	-19%
CHPD	WA	717	26	199	544	-24%
DOPD	WA	415	47	105	357	-14%
GCPD	WA	846	127	254	719	-15%
IPC	ID	4,550	321	657	4,214	-7%
	OR	238	17	39	215	-9%
NWMT	MT	1,820	142	259	1,703	-6%
PACE	ID	876	49	200	725	-17%
PACW	OR	3,087	252	767	2,572	-17%
	WA	935	76	228	783	-16%
	CA	217	18	53	182	-16%
PGE	OR	4,159	650	1,201	3,608	-13%
PSE	WA	5,303	943	1,292	4,954	-7%
SCL	WA	1,898	225	533	1,589	-16%
TPWR	WA	1,035	114	265	884	-15%
WAUW	MT	147	5	14	138	-6%
Total		39,293	4,069	9,565	33,797	-14%