

## State-Adjusted Load Forecast: Nevada

Review Table

Reviewed by	Date
Howard Geller	7/16/2010

This document presents the 2020 State-Adjusted Load Forecast recommended by the SPSPC DSM Working Group, and describes the underlying analysis. The State-Adjusted Load Forecast will be used in the SPSC Reference Case, and will be the starting point in developing alternate load forecasts for the other scenarios in the SPSC study request. The State-Adjusted Load Forecast recommended by the DSM Working Group is intended to reflect the expected energy savings and peak demand savings from current energy efficiency policies and utility resource plans, based on the methodology and assumptions described in the Reference Case proposal from the DSM Working Group to the SPSC, and incorporating any subsequent guidance from each state/province’s designated DSM technical contact.<sup>1</sup>

**We seek approval from SPSC members of the State-Adjusted Load Forecasts shown in Column D of Tables 1 and 2. Please respond to Michael Wheeler ([michael.wheeler@cpuc.ca.gov](mailto:michael.wheeler@cpuc.ca.gov)) by August 4<sup>th</sup> indicating whether the proposed forecast is acceptable, and if not, what specific changes are needed.**

Given the limited time available for making revisions to this analysis, we request that revisions to the analysis be made only if they are likely to have a material impact on the load forecasts at the balancing authority level. Any questions about how the State-Adjusted Load Forecasts were developed that are not addressed within this document should be directed to Galen Barbose ([gbarbose@lbl.gov](mailto:gbarbose@lbl.gov), 510-495-2593).

### A. Recommended State-Adjusted Load Forecast

Tables 1 and 2 present the SPSC DSM Working Group’s recommended State-Adjusted Load Forecast for each balancing authority in the state/province (Column D), compared to the forecasts that were submitted by the balancing authorities to WECC. The difference between these two sets of load forecasts reflects the difference between the estimated reference case energy efficiency savings (Column B) and the amount of savings already embedded in the WECC load forecast (Column C). The remainder of this document provides details on the analysis underlying the values shown in Columns B and C.

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<sup>1</sup> See: “Proposed TEPPC Reference Case DSM Assumptions: Request for Review and Input from SPSC Members,” dated April 3, 2010.

Table 1. State-Adjusted Load Forecasts for 2020: Annual Electricity Consumption (GWh)

Balancing Authority (In-State Portion)	A	B	C	D = A - (B - C)	E = (D/A - 1)
	Load Forecast Submitted to WECC	Reference Case Efficiency Savings	Savings Embedded in WECC Load Forecast	State-Adjusted Load Forecast	Percent Change from BA Forecast
	(GWh)	(GWh)	(GWh)	(GWh)	(%)
NEVP	28,302	3,203	2,072	27,171	-4%
SPP	12,765	1,489	979	12,255	-4%
<b>State Total</b>	<b>41,067</b>	<b>4,692</b>	<b>3,051</b>	<b>39,426</b>	<b>-4%</b>

Table 2. State-Adjusted Load Forecasts for 2020: Peak Demand (MW)

Balancing Authority (In-State Portion)	A	B	C	D=A-(B-C)	E = (D/A - 1)
	Load Forecast Submitted to WECC	Reference Case Efficiency Savings	Savings Embedded in WECC Load Forecast	State-Adjusted Load Forecast	Percent Change from BA Forecast
	(MW)	(MW)	(MW)	(MW)	(%)
NEVP	6,583	725	474	6,331	-4%
SPP	2,137	337	224	2,024	-5%
<b>State Total</b>	<b>8,720</b>	<b>1,062</b>	<b>697</b>	<b>8,355</b>	<b>-4%</b>

## B. Reference Case Energy Efficiency Savings

The reference case energy efficiency savings are associated with: (1) ratepayer-funded energy efficiency programs and (2) new federal appliance and lighting standards. Table 3 summarizes the DSM Working Group’s Reference Case projection of the expected energy and peak savings from each of these policy mechanisms. These projections represent the cumulative impact in 2020 from programs and policies implemented over the 2010-2020 time period; that is, they are incremental to impacts from programs or policies implemented prior to 2010. In the remainder of this section, we describe how the values in Table 3 were derived.

Table 3. Reference Case Energy Efficiency Savings in 2020

Balancing Authority (In-State Portion)	Ratepayer-Funded Energy Efficiency		New Federal Lighting/ Appliance Standards		Total	
	GWh	MW	GWh	MW	GWh	MW
NEVP	2,072	474	1,131	252	3,203	725
SPP	979	224	510	113	1,489	337
<b>State Total</b>	<b>3,051</b>	<b>697</b>	<b>1,641</b>	<b>365</b>	<b>4,692</b>	<b>1,062</b>

### Ratepayer-Funded Energy Efficiency Program Savings

The DSM Working Group’s estimate of savings from ratepayer-funded energy efficiency programs is summarized in Table 4. The energy savings estimates are based directly on the recommendations provided by Mark Harris at the Nevada PUC (the designated DSM technical contact for Nevada). Mr.

Harris provided annual energy savings estimates; the cumulative energy savings values shown in Table 4 are a running sum of those annual values. The corresponding peak demand savings were estimated based on an assumed peak-to-energy savings ratio of 0.23 MW/GWh, which was estimated from the energy and peak demand savings estimates in Nevada Power’s 2010-2012 DSM Plan.<sup>2</sup>

Table 4. Cumulative Savings from Ratepayer-Funded Energy Efficiency Programs

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Energy Savings (GWh)</b>											
NV Energy South (NEVP)	201	416	565	753	942	1,130	1,318	1,507	1,695	1,883	2,072
NV Energy North (SPP)	89	178	267	356	445	534	623	712	801	890	979
<b>Peak Demand (MW)</b>											
NV Energy South (NEVP)	46	95	129	172	215	258	301	344	387	430	474
NV Energy North (SPP)	20	41	61	81	102	122	142	163	183	203	224

### New Federal Lighting and Appliance Standards

In developing its projection of savings from federal lighting and appliance standards, the DSM Working Group focused exclusively on the impact of *new* (or relatively recent) standards<sup>3</sup>, including:

- Standards established directly by Congress through the Energy Independence and Security Act of 2007 (EISA), the most significant of which being the lighting standard;
- Standards established by DOE since 2009 through its normal rulemaking process, or scheduled to be established by January 2013.

The projected state-level energy and peak demand savings from those new standards are summarized in Table 5. These projections derive largely from secondary data sources, as described in the notes section of the table. For some standards, the data sources directly provided state-level savings estimates, based on state-specific demographic and end-use data. For other standards, the data sources provided only national estimates, and the DSM Working Group estimated the state-level impacts, based on the projected savings from standards for similar standards for which both state and national savings estimates were available. Within each state, savings were allocated to individual balancing authorities in proportion to their projected 2020 load.

Table 5. Projected Savings from New Federal Appliance and Lighting Standards in 2020

Balancing Authority (In-State Portion)	EISA <sup>1</sup>		DOE <sup>2</sup>		Total	
	GWh	MW	GWh	MW	GWh	MW

<sup>2</sup> The peak-to-energy savings ratio was derived from data in Nevada Power’s 2009 IRP, Volume 5, Figures 16 and 17. Excluding the demand response impacts itemized in the table, the set of proposed energy efficiency programs are expected to yield cumulative peak demand savings of 195 MW and cumulative energy savings of 794 GWh and over the 2010-2012 timeframe ( $195/794 = 0.23$ ).

<sup>3</sup> The DSM Working Group’s decision to focus exclusively on the impact of *new* standards was predicated on the assumption that, in general, the load forecasts submitted by balancing authorities to WECC will already adequately account for the future impact of *existing* standards, by virtue of the econometric load forecasting methods commonly used.

NEVP	509	76	622	175	1,131	252
SPP	229	34	281	79	510	113
<b>State Total</b>	<b>738</b>	<b>111</b>	<b>903</b>	<b>254</b>	<b>1,641</b>	<b>365</b>

<sup>1</sup> Data Source: Andrew deLaski, executive director of the Appliance Standards Awareness Project (ASAP), provided a spreadsheet with his analysis of the expected savings from each EISA standard. This is an updated version of an analysis previously published jointly by ASAP and ACEEE, and includes only the savings from those standards directly established by EISA. This data source provided only national impacts.

<sup>2</sup> Data Sources: For new standards that DOE has *scheduled* but not yet established, we rely on the savings projections estimated in Neubauer et al. (2009).<sup>4</sup> That report provides estimates of the expected national savings from each individual standard for which DOE expects to complete its rulemaking by January 2013. State-level estimates are not contained within the report, but are published on ASAP’s website, at the following URL: [http://www.standardsasap.org/state/2009%20federal%20analysis/ka-BOOM\\_overview.html](http://www.standardsasap.org/state/2009%20federal%20analysis/ka-BOOM_overview.html). For new standards that DOE has *already* established, since July 2009, we rely on the DOE technical support documentation associated with the final rule, rather than on the projections in Neubauer et al. (2009).

### C. Energy Efficiency Savings Embedded in the WECC Load Forecasts

The State-Adjusted Load Forecasts were developed by deducting from the load forecast that each balancing authority submitted to WECC the *incremental* reference case savings not already embedded within that forecast. The incremental reference case savings is equal to the difference between the total reference case savings (as described in the previous section) and the energy savings from the same programs/policies that are already embedded within the load forecast. Table 6 presents the DSM Working Group’s estimates of the energy efficiency program/policy savings already embedded in the balancing authority load forecasts. Further details on the underlying analysis are presented in the remainder of this section.

Table 6. Energy Efficiency Savings Embedded in the WECC Load Forecasts (2020)

Balancing Authority (In-State Portion)	Ratepayer-Funded Energy Efficiency		New Federal Lighting/ Appliance Standards		Total	
	GWh	MW	GWh	MW	GWh	MW
NEVP	2,072	474	0	0	2,072	474
SPP	979	224	0	0	979	224
<b>State Total</b>	<b>3,051</b>	<b>697</b>	<b>0</b>	<b>0</b>	<b>3,051</b>	<b>697</b>

#### WECC LSE DSM Survey

Members of the SPSC DSM Working Group and the TEPPC DSM Task Force developed a survey instrument to collect information from load serving entities (LSEs) regarding the energy efficiency and DSM assumptions incorporated into the load forecasts provided to WECC. WECC distributed this survey to LSEs on June 8<sup>th</sup>, requesting that they complete the survey by June 30<sup>th</sup>. To date, the DSM Working Group has not received any survey responses from the Nevada LSEs.

<sup>4</sup> Max Neubauer, Andrew deLaski, Marianne DiMascio & Steven Nadel . 2009. *Ka-BOOM! The Power of Appliance Standards Opportunities for New Federal Appliance and Equipment Standards*. Washington, DC: American Council for an Energy-Efficient Economy (ACEEE) and the Appliance Standards Awareness Project (ASAP). Report Number ASAP-7/ACEEE-A091.

## Supplemental Data and Analysis

In lieu of survey responses, the DSM Working Group sought to develop estimates of the embedded energy efficiency savings by comparing the load forecast submitted to WECC and the load forecast contained in Nevada Power’s 2009 IRP. Documentation provided in the IRP clearly indicates that the load forecast accounts for the impact of energy efficiency programs implemented over the forecast period. As shown in Table 7, the load forecast submitted WECC has a lower growth rate than the IRP forecast over the same period (1.6% vs. 2.4%). The DSM Working Group therefore assumes that the expected impacts of future ratepayer-funded energy efficiency programs are fully captured in the forecast submitted to WECC. Based on the description of Nevada Power’s load forecasting methodology contained within its IRP, it does not appear that the utility’s load forecast accounts for recent or future changes to federal lighting and appliance standards. The DSM Working Group established as a default rule that, in the absence of any specific evidence that a load forecast accounts for the energy savings from new federal lighting and appliance standards, the load forecast is assumed to not account for those impacts.<sup>5</sup>

Table 7. Comparison of Balancing Authority Forecast and PacifiCorp IRP Forecast (2013-2019)

	Annual Energy (GWh)			Peak Demand (MW)		
	2013	2019	<b>CAGR</b>	2013	2019	<b>CAGR</b>
NEVP Load Forecast for WECC	25,302	28,302	1.6%	6,259	6,583	0.7%
NV Power 2009 IRP Forecast <sup>1</sup>	25,333	29,984	2.4%	6,175	7,216	2.3%

<sup>1</sup> Source: 2009 IRP, Volume 4, Figure 6. Includes retail sales and losses/Company use, and is net of incremental DSM, ACLM/DLC and small solar project reductions. The forecast was prepared in January 2009.

For SPP, the DSM Working Group adopts the same assumptions as for NEVP, given that the two balancing authorities are part of a single company, which presumably employs consistent load forecasting methodologies for both areas. Thus, the load forecast that SPP submitted to WECC is assumed to fully capture the expected impact of future ratepayer-funded energy efficiency programs, but it is assumed to not capture any of the impacts of new federal lighting and appliance standards.

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<sup>5</sup> Load forecasts that are developed through econometric methods and calibrated to historical data may implicitly assume that savings from federal lighting appliance standards will continue to accrue at the same rate as in the past. The analysis in Neubauer et al. (2009) suggests that existing federal standards generated savings at a rate of 0.5% of U.S. retail sales per year over the 2000-2010 period, and will continue to generate additional savings at the same rate over the 2010-2020 period. Thus, the savings from new federal standards represent an increase in the rate at which federal standards will accrue energy savings, and this effect is unlikely to be captured by load forecasts that do not explicitly model the savings from these new standards.