

## State-Adjusted Load Forecast: **New Mexico**

Reviewed by	Date
Galen Barbose (revised)	08/06/10

This document presents the 2020 State-Adjusted Load Forecast recommended by the SPSC 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**

There are three balancing authorities in the Western Interconnection that reside within or overlap with New Mexico: Public Service Company of New Mexico (PNM), El Paso Electric (EPE), and Western Area Power Administration – Lower Colorado Region (WALC). Eastern New Mexico, including Southwestern Public Service, is not within the Western Interconnection, and is therefore excluded from this analysis.

Tables 1 and 2 present the SPSC DSM Working Group’s recommended State-Adjusted Load Forecast for each balancing authority in the New Mexico (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)	(%)
PNM	16,219	1,685	960	15,494	-4%
EPE	10,665	639	162	10,188	-4%
WALC	1,348	72	12	1,288	-4%
<b>State Total</b>	<b>28,232</b>	<b>2,396</b>	<b>1,135</b>	<b>26,971</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)	(%)
PNM	2,852	322	176	2,706	-5%
EPE	2,135	129	33	2,039	-5%
WALC	200	14	2	188	-6%
<b>State Total</b>	<b>5,187</b>	<b>466</b>	<b>211</b>	<b>4,932</b>	<b>-5%</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.

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
PNM	960	176	725	146	1,685	322
EPE	162	33	477	96	639	129
WALC	12	2	60	12	72	14
<b>State Total</b>	<b>1,135</b>	<b>211</b>	<b>1,261</b>	<b>255</b>	<b>2,396</b>	<b>466</b>

### Ratepayer-Funded Energy Efficiency Program Savings

The DSM Work Group developed estimates of savings from ratepayer-funded energy efficiency programs in New Mexico. The approach taken to develop these estimates differed depending on the type of utility. For the state’s two investor-owned utilities that fall within WECC – Public Service Company of New Mexico and El Paso Electric – the savings projections are based on data from the two utilities’ most recent IRPs (see Table 4). In both cases, the projected savings exceed the minimum level required to meet New Mexico’s energy efficiency standard (EES), which requires that, by 2020, utilities achieve cumulative savings equal to 10% of their 2005 retail sales.<sup>2</sup> The notes section below Table 4 provides additional detail on the specific data sources and assumptions.

Table 4. Cumulative Savings from Ratepayer-Funded Efficiency Programs: **Investor-Owned Utilities**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Energy Savings (GWh)</b>											
Public Service New Mexico <sup>1</sup>	45	107	184	277	371	464	557	650	744	837	930
El Paso Electric <sup>2</sup>	13	28	43	58	73	88	103	118	132	147	162
<b>Peak Demand (MW)</b>											
Public Service New Mexico <sup>1</sup>	7	17	31	49	66	83	101	118	136	153	170
El Paso Electric <sup>2</sup>	3	6	9	12	15	18	21	24	27	30	33

<sup>1</sup> Data Source: PNM 2008 IRP, Appendix B (Max. Achievable Case EE). This is the planned level of savings proposed in the IRP, although other levels of program savings were considered.

<sup>2</sup> Data Source: EPE 2009 IRP, Table 4. This table identifies the expected savings through 2012. We assume that, from 2013-2020, savings continue to accrue at the level achieved in 2012 (15 GWh/yr).

An alternative approach was taken for estimating the savings from programs offered by the state’s municipal utilities and cooperatives, which are not subject the state’s EES. For these utilities, the DSM Working Group assumed that annual savings are equal to 0.1% of retail sales. This is the generic, conservative assumption that was used for other Western states, in the case of small publicly owned utilities where no specific data was available regarding planned energy efficiency program activity.<sup>3</sup> Table 5 presents the savings projections for municipal utilities and cooperatives in each of the three balancing authorities. Additional methodological details are provided in the notes section below the table.

<sup>2</sup> EIA form 861 data indicates that, in 2005, PNM had retail sales of 8,712 GWh and EPE had retail sales in New Mexico of 1503 GWh. Based on this data, New Mexico’s energy efficiency standard therefore requires that PNM and EPE achieve cumulative savings of 871 GWh and 150 GWh, respectively, by 2020.

<sup>3</sup> Specifically, we assume that savings accumulate at a rate of 0.1% of retail sales per year. This is intended to represent a conservative estimate that is appropriate for small utilities with little or no history of administering significant energy efficiency program portfolios.

Table 5. Cumulative Savings from Ratepayer-Funded Efficiency Programs: **Publicly Owned Utilities**

BA	Utility Type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Energy Savings (GWh)</b> <sup>1</sup>												
PNM	Municipal	1	1	2	3	3	4	5	5	6	7	7
	Cooperatives	2	4	6	8	10	12	14	16	19	21	23
EPE	Municipal	0	0	0	0	0	0	0	0	0	0	0
	Cooperatives	0	0	0	0	0	0	0	0	0	0	0
WALC	Municipal	1	2	3	4	5	6	7	8	9	10	11
	Cooperatives	0	0	0	1	1	1	1	1	1	1	2
<b>Peak Demand Savings (MW)</b> <sup>2</sup>												
PNM	Municipal	0	0	0	0	1	1	1	1	1	1	1
	Cooperatives	0	1	1	1	2	2	3	3	3	4	4
EPE	Municipal	0	0	0	0	0	0	0	0	0	0	0
	Cooperatives	0	0	0	0	0	0	0	0	0	0	0
WALC	Municipal	0	0	0	1	1	1	1	1	2	2	2
	Cooperatives	0	0	0	0	0	0	0	0	0	0	0

<sup>1</sup> Energy savings were estimated by relying on EIA retail sales data (Form-861) for the year 2005.

<sup>2</sup> Peak demand savings were estimated from energy savings, by applying the peak-to-energy savings ratio implied by the savings targets in PNM's IRP, as presented in Table 4.

### 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>4</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 6. 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.

<sup>4</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.

Table 6. 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
PNM	332	50	393	97	725	146
EPE	218	33	258	64	477	96
WALC	28	4	33	8	60	12
<b>State Total</b>	<b>577</b>	<b>86</b>	<b>684</b>	<b>169</b>	<b>1,261</b>	<b>255</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>5</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 7 presents the DSM Working Group's estimates of the energy efficiency program/policy savings already embedded in the balancing authority load forecasts.

Table 7. 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
PNM	960	176	0	0	960	176
EPE	162	33	0	0	162	33
WALC	12	2	0	0	12	2
<b>State Total</b>	<b>1,135</b>	<b>211</b>	<b>0</b>	<b>0</b>	<b>1,135</b>	<b>211</b>

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

<sup>5</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.

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 New Mexico LSEs. In lieu of survey responses, the DSM Working Group sought to develop estimates of the embedded energy efficiency savings through other means. The approach taken for each balancing authority is described below.

PNM

For utilities that prepare IRPs, the DSM Working Group compared the IRP load forecast to the corresponding balancing authority load forecast submitted to WECC. Table 8 compares the load forecast from PNM’s 2008 IRP (both with and without the impact of planned energy efficiency programs) to the PNM balancing authority forecast submitted to WECC. Specifically, the table compares the average annual growth rate over the period 2013-2020 (the non-confidential portion of the WECC data). As shown, the balancing authority load forecast has a significantly lower average annual growth rate (1.3%/yr) than the IRP load forecast prior to accounting for planned efficiency programs (2.6%/yr). The balancing authority forecast also has a lower growth rate than the IRP forecast after accounting for planned efficiency programs (2.0%/yr). This provides some loose indication that the forecast provided to WECC does account for the impact of planned energy efficiency programs, although the vintage of the IRP forecast (dated September 2008) significantly limits the value of this comparison.

The DSM Working Group adopted as a default assumption that, in the absence of any compelling evidence to the contrary, the balancing authority load forecasts submitted to WECC are assumed to fully account for the impact of planned ratepayer-funded energy efficiency programs. At the same time, the DSM Working Group also adopted as its default assumption that, unless there is clear evidence otherwise, the balancing authority load forecasts are assumed to not account for any impacts from new federal appliance and lighting standards.<sup>6</sup> Thus, without better data available to assess the embedded energy efficiency within the load forecast that PNM supplied to WECC, both of these default assumptions were applied.

Table 8. Comparison of PNM Balancing Authority Load Forecast to PNM IRP Forecast

	Annual Energy (GWh)		
	2013	2020	CAGR
PNM Balancing Authority Load Forecast Submitted to WECC	14,848	16,219	1.3%
PNM IRP Forecast (pre-DSM) <sup>1</sup>	11,644	13,943	2.6%
<i>Planned ratepayer-funded energy efficiency program (DSM)</i> <sup>2</sup>	277	930	n/a
PNM IRP Forecast (post-DSM) <sup>3</sup>	11,367	13,013	2.0%

<sup>6</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.

<sup>1</sup> Data Source: PNM 2008 Electric IRP, Appendix B, table titled “PNM Electric Services System Energy Sales (GWh) 2008-2027 (Mid).” Although not explicit, it appears that this load forecast does not account for the energy efficiency program savings proposed in the IRP.

<sup>2</sup> Equal to the values cited in Table 3, above.

<sup>3</sup> Calculated by subtracting planned conservation savings from the reported pre-DSM load forecast.

EPE

Table 9 compares the load forecast from El Paso Electric’s most recent IRP to the EPE load forecast submitted to WECC. As shown, the two forecasts have nearly identical average annual growth rates (2.6%/yr). El Paso’s IRP indicates that the load forecast *does* account for the impact of planned energy efficiency program activity. Thus, given the similar growth rates, we assume that the forecast provided to WECC also accounts for the savings from ratepayer-funded programs. However, El Paso’s IRP does not provide any indication of whether or not the IRP forecast accounts for the expected savings from future federal lighting and appliance standards. We therefore apply the default rule described previously, and assume that the savings from new federal standards are not embedded in the load forecast.

Table 9. Comparison of EPE Balancing Authority Load Forecast to EPE IRP Forecast

	Annual Energy (GWh)		
	2013	2020	CAGR
EPE Balancing Authority Load Forecast Submitted to WECC	8,911	10,125	2.6%
EPE IRP Forecast (post-DSM) <sup>1</sup>	8,904	10,118	2.6%

<sup>1</sup> Data Source: El Paso Electric 2009 IRP, Attachment B (“2009 Long-Term and Budget Year Forecast”), Table 1.

WALC

No LSEs within WALC submitted a DSM survey to WECC, and none of these LSEs have issued IRPs that that could be used to benchmark the WALC load forecast submitted to WECC. Given the lack of any available information for assessing the embedded energy efficiency savings, the DSM Working Group employed its two default assumptions, as mentioned above, and assumed that the WALC load forecast *fully accounts* for the impacts of planned ratepayer-funded energy efficiency programs, but *does not account* for any impacts from new federal appliance and lighting standards.