

State-Adjusted Load Forecast: **Utah**

Review Table

Reviewed by	Date
Howard Geller	7/16/2010
Carol Hunter	7/16/2010

This document presents the 2020 State-Adjusted Load Forecast recommended by the SPSC DSM Work 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 Work 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 Work Group to the SPSC, and incorporating any subsequent guidance from each state/province’s designated DSM technical contact.¹

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) by August 4th 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, 510-495-2593).

A. Recommended State-Adjusted Load Forecast

Tables 1 and 2 present the SPSC DSM Work 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.

¹ 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	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)	(%)
PACE (Utah)	38,045	3,104	2,370	37,311	-2%
State Total	38,045	3,104	2,370	37,311	-2%

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

Balancing Authority	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)	(%)
PACE (Utah)	7,380	755	581	7,206	-2%
State Total	7,380	755	581	7,206	-2%

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 Work 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 Stds.		Total	
	GWh	MW	GWh	MW	GWh	MW
PACE	1,750	488	1,353	267	3,104	755
State Total	1,750	488	1,353	267	3,104	755

Ratepayer-Funded Energy Efficiency Program Savings

The DSM Work Group’s estimate of savings from ratepayer-funded energy efficiency programs is summarized in Table 4. The values shown for PacifiCorp are based on the savings levels proposed in PacifiCorp’s 2008 IRP Update (dated March 31, 2010), with several slight modifications, as described in the notes section of Table 4. Prior discussions with the designated DSM contacts confirmed that this was a reasonable reference case projection of savings from PacifiCorp’s energy efficiency programs.

Table 4 also presents the estimated savings from programs offered by the other Utah utilities. Those savings are based on generic assumptions that the DSM Work Group employed for small utilities when no utility-specific information on planned energy efficiency program activity was readily available.

Table 4. Cumulative Savings from Ratepayer-Funded EE Programs

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Energy Savings (GWh)											
PacifiCorp ¹	141	326	513	706	901	1034	1170	1310	1448	1592	1736
Other Utilities ²	2	3	5	6	8	9	10	11	12	13	14
Total Statewide	143	330	518	712	908	1043	1180	1321	1460	1605	1750
Peak Demand (MW)											
PacifiCorp ³	52	102	153	205	256	293	331	369	406	445	484
Other Utilities ⁴	0.6	1.0	1.4	1.8	2.1	2.5	2.8	3.2	3.4	3.7	4.0
Total Statewide	52	103	154	206	258	296	333	372	409	449	488

¹ These values are modified slightly from the savings identified in Table A.3 of PacifiCorp's IRP. The savings numbers in the IRP are cumulative savings that include savings achieved in 2009. For the TEPPC reference case analysis, we must identify the cumulative savings starting in 2010. Thus, we have deducted the estimated savings achieved in 2009 (228 GWh, per Rocky Mountain Power's 2009 DSM Report) from the savings values identified in the IRP. In addition, the EE savings forecast in the IRP extends only to 2019. For 2020, we assume that cumulative savings increase by the same amount as in 2019 (144 GWh).

² For small utilities, if information on planned ratepayer-funded energy efficiency program activity is not readily available, we generically assume that annual incremental savings equal 0.1% of retail sales. For comparison, the national average for all utilities was 0.26% of retail sales in 2007.

³ These values are based on the peak demand savings identified in Table ES-1 of PacifiCorp's IRP. That table identifies the peak savings for all of PacifiCorp-East. We estimate the peak demand savings in Utah by prorating the total peak demand savings in PacifiCorp-East, based on the proportion of energy savings occurring in Utah. In addition, as with the energy savings projection, we assume that incremental savings in 2020 are the same as in 2019.

⁴ We assume that the energy efficiency programs implemented by the non-PacifiCorp utilities achieve the same peak demand savings per unit of energy saved as do PacifiCorp's programs.

New Federal Lighting and Appliance Standards

In developing its projection of savings from federal lighting and appliance standards, the DSM Work Group focused exclusively on the impact of *new* (or relatively recent) standards², 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.

² The DSM Work 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.

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 Work 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 ¹		DOE ²		Total	
	GWh	MW	GWh	MW	GWh	MW
PACE	620	93	734	174	1,353	267
Statewide	620	93	734	174	1,353	267

¹ 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.

² 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).³ 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. 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

³ 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.

PACE	1,750	488	620	93	2,370	581
Total	1,750	488	620	93	2,370	581

WECC LSE DSM Survey

Members of the SPSC DSM Work 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 8th, requesting that they complete the survey by June 30th. To date, the DSM Work Group has not received any survey responses from Utah LSEs.

Supplemental Data and Analysis

In lieu of survey responses, the DSM Work Group compared the load forecast submitted to WECC for the Utah-portion of the PACE control area with the load forecast for PacifiCorp’s Utah service territory from its 2008 IRP Update (see Table 7).⁴ We compare the load forecasts for the years 2013 and 2019, as that is the period of overlap between the two forecasts.⁵ Note that the load forecast submitted to WECC is statewide and thus includes the smaller Utah utilities in addition to PacifiCorp’s retail load. Thus, the load forecasts should be compared in terms of the *compound annual growth rate (CAGR)*, rather than in terms of the absolute load. As shown, the two load forecasts have similar growth rates over this period (a CAGR of 2.4% and 2.2% for growth in annual energy consumption, and a CAGR of 2.2% and 2.1% for peak demand growth).

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

	Annual Energy (GWh)			Peak Demand (MW)		
	2013	2019	CAGR	2013	2019	CAGR
BA Load Forecast (Utah portion)	32,324	37,326	2.4%	6,338	7,213	2.2%
PacifiCorp IRP (Utah portion) ¹	26,344	30,045	2.2%	4,885	5,523	2.1%

¹ Source: PacifiCorp 2008 IRP Update, Tables A.1 and A.2

Comment [mmw1]: Carol Hunter recommended this change, but said the CAGR calculated percentage was correct.
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Given the similar growth rates between the two forecasts, the DSM Work Group asserts that the load forecast submitted to WECC for PACE (Utah) likely incorporates energy efficiency assumptions that are consistent with those used in the PacifiCorp IRP load forecast. As described in the PacifiCorp’s IRP, the IRP load forecast presented in Table 7 does explicitly account for the savings from ratepayer-funded energy efficiency programs, as proposed in the IRP. In addition, PacifiCorp’s original 2008 IRP (dated May 29, 2009), indicates that their load forecasts also account for impact of the federal lighting standard already established by EISA. As such, the load forecast submitted to WECC for PACE (Utah) is deemed to

⁴ As noted in the IRP, the load forecast was prepared in October 2009.
⁵ The WECC load forecast spans the period 2010-2020, but the data for 2010-2012 is confidential. The PacifiCorp IRP load forecast spans the period 2010-2019.

fully account for the savings from: (1) ratepayer-funded energy efficiency programs⁶ and (2) the EISA appliance and lighting standards. The incremental savings proposed as an adjustment to the load forecast submitted to WECC to devise the State-Adjusted Load Forecast are therefore associated only with the new DOE appliance and lighting standards identified in Table 5.

⁶ For consistency and simplicity, we assume that the savings from programs implemented by the other Utah utilities are also fully captured within the BA load forecast.