Developing Demand- and Supply-Side Resource Assumptions for the 2010 TEPPC Study: Utility Input Needed

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Western Resource Planners Forum

San Diego, California

June 21, 2010

Topics Covered

- **DSM in the TEPPC Reference Case**
  - WECC LSE DSM Survey
  - Projected savings from ratepayer-funded energy efficiency programs
  - Projected savings from new federal appliance/lighting efficiency standards
  - Demand response resources in the Reference Case
- **Using Utility IRP Data to Develop TEPPC Reference Case Assumptions about Generation Capacity Additions**
  - Accounting procedure
  - Example: Arizona Public Service
  - Proposed approach for soliciting utility review/input

DSM in the 2010 TEPPC Study
Overview

- **The TEPPC Study will include multiple DSM Scenarios**
  - **Reference Case**: energy efficiency savings consistent with current policies and utility resource plans ("state-adjusted load forecast")
  - **High DSM Cases**: energy efficiency and demand response impacts based on potential studies
- **Reference Case will explicitly account for DSM impacts associated with:**
  - **Energy efficiency programs/policies**
    - Utility ratepayer-funded energy efficiency programs
    - Federal appliance and lighting efficiency standards
    - State building codes and appliance standards (if applicable and data is readily available)
  - **Demand response programs**

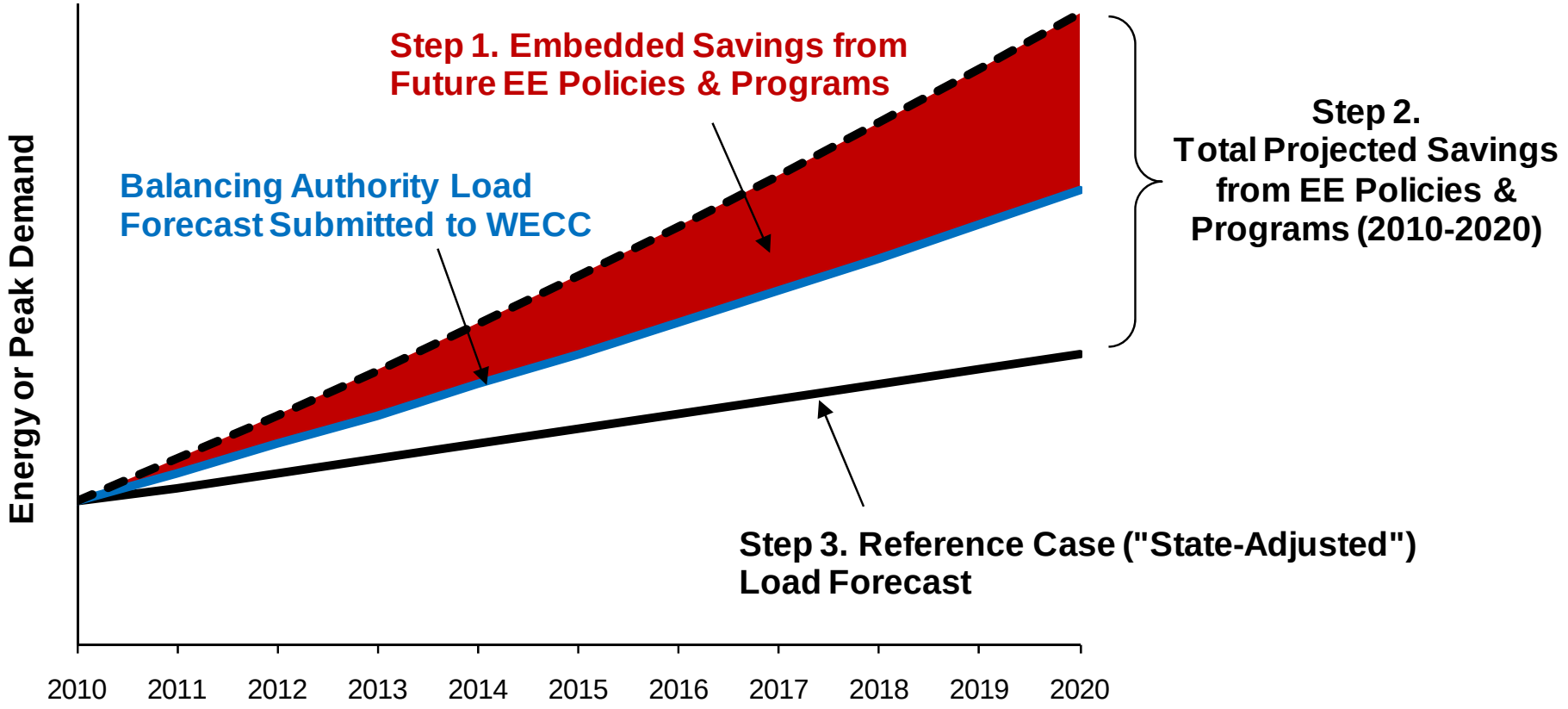
Reference Case Energy Efficiency Impacts
Basic Analytical Approach

The starting point for the Reference Case is the set of load forecasts submitted to WECC by each balancing authority
(10-year forecasts of monthly peak and energy)

For each balancing authority:

1. Estimate the energy efficiency program/policy impacts already embedded within the balancing authority (BA) load forecast
2. Estimate the expected savings from current/ongoing energy efficiency programs and policies, with a focus on:
   - Ratepayer-funded EE programs
   - New federal appliance and lighting efficiency standards
3. If the results of Step 1 and Step 2 differ substantially, develop a modified load forecast ("state-adjusted load forecast") that reflects the expected load impacts estimated in Step 2.

Reference Case Energy Efficiency Impacts
Basic Analytical Approach (in schematic form)



Estimating Embedded EE Savings
WECC LSE DSM Survey

Working with the TEPPC DSM task force, LBNL developed a short questionnaire for LSEs, in order to collect information on embedded energy efficiency savings

- **The survey targets LSEs, rather than Balancing Authorities, as the BA load forecasts are often comprised of multiple underlying LSE forecasts**
- **On June 8th, WECC distributed the questionnaire to 40 LSEs, requesting that completed forms be returned by June 30th**
  - Q&A webinar held on June 16th

LSE participation in the DSM survey is absolutely critical to successful implementation of the TEPPC study!

- ***Please contact Galen Barbose (glbarbose@lbl.gov) or Ismael Aguayo (iaguayo@wecc.biz) if you have any questions.***

Ratepayer-Funded EE Programs
Overview of Approach

- **Working within the SPSC DSM Work Group, LBNL developed state-by-state projections of expected energy savings from ratepayer-funded EE through 2020, based on:**
  - Existing state laws (e.g., energy efficiency resource standards), regulatory decisions, and other relevant policies
  - Most-recent utility IRPs and DSM program plans
- **Savings estimates have been vetted and approved by SPSC, with input from designated state/provincial DSM technical contacts**
  - Details for several states/utilities still outstanding

Ratepayer-Funded EE Programs:
Current Savings Estimates

2020 Energy Savings from Ratepayer-Funded EE Programs Implemented from 2010-2020

	GWh	% of 2020 Retail Sales
AB	Will likely assume that all savings are captured in BA forecast	
AZ	10,670	14.5%
BC	4,218	5.9%
CA	Alternative approach under discussion with SPSC	
CO	4,024	7.7%
ID	2,900	12.0%
MT	1,510	10.0%
NM	1,875	8.2%
NV	3,116	7.8%
OR	8,324	17.4%
UT	1,801	7.1%
WA	14,174	17.0%
WY	526	3.0%

Federal Appliance and Lighting Standards: Background and Overview

- **A large number of new U.S. federal appliance and lighting standards have recently or will soon take effect:**
  - **EISA**: Standards established directly by Congress through the Energy Independence and Security Act of 2007 (EISA)
  - **DOE**: Standards established through DOE rulemakings scheduled to be competed over the next decade (several of which recently completed)
- **LBNL has developed state-level estimates of the annual energy and peak demand savings in 2020 from these new federal standards**
  - These estimates rely largely on prior analyses conducted by the Appliance Standards Awareness Project
  - Savings estimates from recent DOE standards are based on technical documentation prepared by DOE

Federal Appliance and Lighting Standards: Savings Estimates

Estimated Savings from New U.S. Federal Standards

States	2020 Energy Savings (GWh)			2020 Peak Demand Savings (MW)		
	EISA	DOE	**Total**	EISA	DOE	**Total**
Arizona	1,638	2,266	**3,904**	294	707	**1,002**
California	8,171	10,490	**18,661**	1,469	2,603	**4,072**
Colorado	1,306	1,658	**2,964**	235	370	**605**
Idaho	388	494	**882**	70	113	**183**
Montana	267	341	**609**	48	76	**124**
Nevada	676	903	**1,579**	122	254	**376**
New Mexico	529	684	**1,213**	95	169	**263**
Oregon	7,242	1,247	**8,489**	178	278	**455**
Utah	568	734	**1,301**	102	174	**276**
Washington	1,685	2,130	**3,815**	303	471	**774**
Wyoming	149	193	**342**	27	44	**71**
TOTAL	22,619	21,140	**43,759**	2,943	5,258	**8,201**

Demand Response in the Reference Case
Overview

- **Balancing authority load forecasts submitted to WECC identify non-firm load, broken out into four DR program categories**
  - Interruptible demand
  - Direct control load management
  - Critical peak pricing with control
  - Load as a capacity resource
- **For reference case, these data will be cross-checked for consistency with utility resource plans and FERC DR Survey**
- **Details about the operational characteristics of the DR programs is needed to accurately model DR resources in the TEPPC analysis**
  - E.g., DR-event trigger and limits on frequency or duration of DR events
  - Information about DR program operational characteristics is requested within the WECC LSE DSM Survey

Using IRPs to Define Supply-Side Capacity Additions in the Reference Case

Reference Case requires assumptions about generation capacity additions and retirements, and transmission upgrades, through 2020

- **These assumptions will be developed, in part, through LBNL's review of recent utility IRPs**
  - This process will also be informed by analysis of RPS requirements
- **Challenges/limitations of relying on utility IRP data:**
  - Utilities without IRPs
  - Dated IRPs
  - Key details not included in IRPs (e.g., resource location)
  - Transmission upgrades often not included in IRP

➢ **We are therefore seeking input from LSEs to validate IRP data and fill in critical information gaps!**

Scope of LBNL IRP Data Collection

- **Review most-recent IRPs issued by IOUs and large POUs**
  (time/resource constraints require that we focus on larger utilities)
- **Data collection for reference case supply-side assumptions**
  - Preferred resource portfolio (type, timing, and location of each new resource)
  - Already-planned new generation capacity additions that are not part of the preferred resource portfolio
  - Planned generation retirements
  - Planned transmission upgrades/projects
- **Additional data collection**
  - Load forecasts
  - Energy efficiency and DR resource additions
  - Carbon price assumptions

Utility IRPs Incorporated into 2010 TEPPC Reference Case

Utility	IRP Year
Arizona Public Service (APS)	2009
Avista	2009
BC Hydro	2008
El Paso Electric	2009
Idaho Power	2009
Los Angeles Dept. of Water & Power (LADWP)	2007
Nevada Energy	2009
Northwestern Energy	2007
PacifiCorp	2008 Update
Portland General Electric (PGE)	2009
Public Service Company of Colorado (PSCo/Xcel)	2007
Public Service Company of New Mexico (PNM)	2008
Puget Sound Energy (PSE)	2009
Seattle City Light	2008
Southwestern Public Service (SPS)	2009
Tri-State Generation and Transmission	2007

Developing Assumptions about Generation Capacity Additions from IRP Data

The ultimate objective is to estimate the actual <u>physical capacity additions</u> implied by utility IRPs

- **The preferred resource portfolio is the starting point**
- **Adjustments required to account for:**
  1. Generation capacity additions that have already occurred since the IRP was completed (e.g., if the IRP was issued in 2008, and the preferred resource portfolio included capacity additions in 2009)
  2. Already-planned generation capacity additions that were included in the utility's base of "existing" resources rather than as part of the preferred portfolio
  3. Elements of the preferred resource portfolio that will not necessarily require generation capacity additions (e.g., CT and CCGT resources)
     - Key issue: Will physical resources underlying expiring contracts continue to operate?

Arizona Public Service 2009 IRP
Implied New Generation Capacity (2010-2020)

Tabulation of 2010-2020 Generation Capacity Additions (Nameplate MW)

Individual Resource	A **Preferred Resource Portfolio (2010-2020 Additions)**	B Potential Contribution from Contract Renewals	C Other Planned Generation Capacity Additions (2010-2020)	D=A-B+C **Implied New Generation Capacity (2010-2020)**	Most Likely Location
Generic Peaking	**1,974**	500*	-	**1,474**	Unknown
CCGT	**528**	528**	-	**-**	Unknown
Solar	**466**	-	-	**466**	Unknown
Wind	**100**	-	-	**100**	Unknown
Baseload Renewable	**2**	-	-	**2**	Unknown
Solana CSP	**-**	-	283	**283**	Gila Bend, AZ
Glendale Landfill	**-**	-	3	**3**	Glendale, AZ

* Expiring Market Call Option

** Expiring CCGT Tolling Agreements (1,060 MW total)

Other key IRP data:

- No generation capacity retirements planned by 2020
- No planned transmission upgrades/additions identified in IRP (though specific *needs* are identified)

Utility Input on Generation Capacity Addition Assumptions for TEPPC Reference Case

- **IRP review largely complete**
  - With assistance from some utilities in completing IRP data template
- **IRP data will be translated into a form similar to previous slide**
- **LBNL will be seeking utility input to:**
  - Validate our interpretation of the IRP data
  - Update any information that has changed since last IRP
  - Fill in critical data gaps (e.g., likely location of capacity additions)
- **Proposed approach for soliciting utility input:**
  - LBNL emails designated utility contacts a simple data table, with documentation
  - Utility reviews data and returns a validated table back to LBNL

Summary: Two Areas Where Utility Input Would Be of Great Value

1. **WECC LSE DSM Survey**
   - Emailed to LSEs by WECC on June 8th, with requested completion by June 30th
   - For questions about the how to access or complete the survey, please contact me (glbarbose@lbl.gov) or Ismael Aguayo at WECC (*iaguayo@wecc.biz*)
2. **Review of LBNL IRP data on generation capacity additions**
   - Requests will be forthcoming within the next few weeks
   - We will send emails to the individuals in attendance at this Forum; please let me (glbarbose@lbl.gov), Pete Larsen (PHLarsen@lbl.gov), or Tom Carr (tcarr@westgov.org) know if there is a more appropriate person to contact