



California Energy Commission's Electricity Supply Planning Process For 2006-2016

Angela Tanghetti

Energy Specialist

Electricity Analysis Office

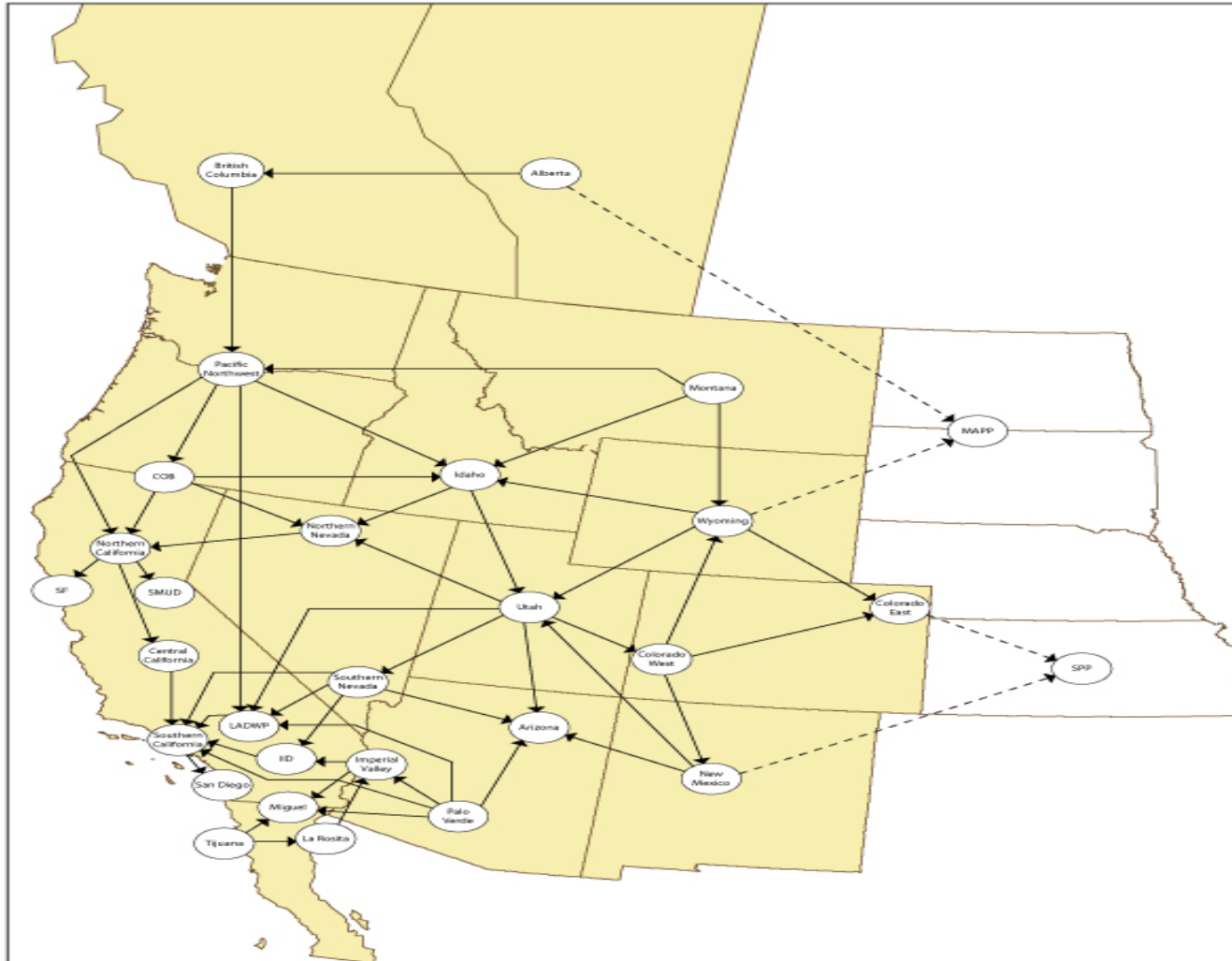


Overview

- Study Region – Topology
- Assumptions & Forecast Methodology
 - Peak and Energy
 - Resource Assumptions
 - Renewable
 - Fossil
 - Transmission Assumptions



Topology Used To Describe CEC's Version of the WECC





Assumptions & Forecast Methodology

Peak and Energy Forecasts

- California

Forecast is developed by the CEC

- Regions Outside California

Purchased from Global Energy Solutions

Source of this purchased forecast is basically publicly available information that has been “scrubbed”



Assumptions & Forecast Methodology

Resource Assumptions

1. Make sure you have the existing set of resources correct
2. Consider RPS and other renewables first
 - California - 20% by 2010 (assume 20% level sustained through 2016)
 - Arizona – 1.1% between 2007-2012, 60% solar set aside
 - Colorado – 3% by 2007, 6% by 2011 and 10% by 2015
 - Montana – recently passed
 - Renewables have shorter construction lead time



CEC Renewable Assumptions For the WECC





Assumptions & Forecast Methodology

Resource Assumptions

3. Fossil Resource Additions Prior to 2009
 - Construction lead times limit what is available to serve load prior to this time period
 - Rely on CEC Siting Office for resources within California
 - Rely on trade press, utility IRPs, other state's energy agencies and regional planning groups



Assumptions & Forecast Methodology

Resource Assumptions

4. Fossil Resource Additions 2009 and beyond
 - Balancing the demand forecast with an “appropriate” amount of supply
 - Post California deregulation the WECC supply scenario appeared most stable during 1999.
 - Fossil resources added to meet supply after 2009 based on 1999 reserve levels by transmission region



Assumptions & Forecast Methodology

Resource Assumptions

2005-2016 Dependable MWs
CEC Staff Estimate Spring 2005

Transmission Area	Note	Coal	Gas	Renewable
Alberta	Central and South	900	1,612	425
Arizona	excluding Palo Verde Hub	1,400	3,075	86
BCHA		-	1,637	133
CCENT	California ISO - Central California	-	795	445
CIV	California ISO - Imperial Valley	-	-	-
CMiguel	California ISO - Miguel	-	660	-
CNP15	California ISO - Northern California	-	2,263	800
CO-East	Colorado East	1,250	1,410	504
CO-West	Colorado West	-	580	33
CSCE	California ISO - Southern California Edison	-	3,778	1,826
CSDGE	California ISO - San Diego Gas & Electric	-	1,040	66
CSF	California ISO - San Francisco	-	348	-
Idaho	Idaho (IPC Plus)	-	1,062	227
IID	Imperial Irrigation District	-	250	915
LaRosita	LaRosita	-	921	257
LADWP	Los Angeles Department of Water & Power	-	1,170	-
Montana	Montana (Northwestern Energy, WAUW)	116	273	541
N Nevada	Northern Nevada (Sierra Pacific Power)	-	-	541
N Baja	Tijuana Western Path 45	-	844	-
New Mexico	New Mexico	1,000	601	100
Northwest	Northwest	-	1,318	1,089
Palo Verde	Palo Verde	-	503	57
SMUD	Sacramento Municipal Utility District	-	1,576	-
So Nevada	Southern Nevada	1,580	1,400	268
Utah	Utah	1,000	1,644	280
Wyoming	Wyoming	500	-	371

WECC	45,468	
Renewable	8,963	20%
Gas	28,759	63%
Coal	7,746	17%



Transmission Assumptions For Prosym Planning Simulations

- Only Major Transmission Paths Between Transmission Areas Are Used
- Prior to 2010
 - Projects “approved” by regional transmission planning organizations or financing is approved
- After 2010
 - Consider planned transmission projects proposed in utility RFPs and by other regional transmission planning studies
 - Run Prosym iteratively to determine which transmission projects assure future supply assumptions are reasonable



Categories of WECC Wide Generation In The CEC Database

- 0 - Operational (May 2001 – September 2005)
- 1 - Under construction
- 2 - Regulatory approval received
- 3 - Application under review
- 4 - Starting application process
- 5 - Press release only
- 6 – Project cancelled, denied permit, delayed, or retired.

http://www.energy.ca.gov/electricity/wscg_proposed_generation.html



Summary Table of Projects by WECC Sub-Region In CEC Database

- **Project Status of 0 are projects on-line between May 2000 and September 2005**

Project Status	Cal - Mex	Northwest	Rocky Mountain	Southwest	Total
0	15,229	9,922	3,944	13,556	42,651
1	3,497	1,912	432	2,483	8,324
2	3,083	5,714	750	2,873	12,420
3	1,030	5,877	44	365	7,316
4	3,605	7,031		2,425	13,061
5	2,165	3,955	2,750	815	9,685
6	19,047	24,384	4,009	22,428	69,868



Developing Electricity Supply Scenarios For Use In Prosym Simulations

Blue Flame - Case I

Incremental Additions Dependable MWs 2005-2016

CEC Staff Estimate Spring 2005

	B	C	D	E
	Transmission Area	Coal	Gas	Renewable
2				
3	Central and South	4 5 0	2 3 8 2	2 4 6
4	excluding Palo Verde Hub	4 0 0	4 0 9 9	5 1
5	B C H A	-	1, 9 3 2	1 0 0
6	California ISO - Central California	-	7 9 5	1 7 0
7	California ISO - Imperial Valley	-	7 7 5	-
8	California ISO - Miguel	-	6 6 0	-
9	California ISO - Northern California	-	2, 5 4 1	4 2 5
10	Colorado East	5 0 0	1, 8 9 0	3 5 6
11	Colorado West	-	2 9 0	2 0
12	California ISO - Southern California Edison	-	4, 4 0 3	9 9 5
13	California ISO - San Diego Gas & Electric	-	1, 2 9 0	3 6
14	California ISO - San Francisco	-	6 0 8	-
15	Idaho (IPC Plus)	-	1, 6 6 2	6 9
16	Imperial Irrigation District	-	1 0 0	5 0 0
17	La Rosita	-	1, 6 9 6	2 5 7
18	Los Angeles Department of Water & Power	-	1, 1 7 0	-
19	Montana (Northwestern Energy, WAUW)	1 1 6	2 7 3	2 5 5
20	Northern Nevada (Sierra Pacific Power)	-	-	2 4 9
21	Tijuana Western Path 45	-	1, 3 0 9	-
22	New Mexico	-	1, 6 4 1	7 5
23	Northwest	-	1, 8 7 8	4 2 6
24	Palo Verde	-	4 9 3	3 4
25	Sacramento Municipal Utility District	-	2, 3 5 1	-
26	Southern Nevada	-	1, 2 5 0	1 4 9
27	Utah	5 8 1	1, 6 4 4	9 7
28	Wyoming	-	6 0 0	1 8 8

	B	C	D
30	WECC	44,476	
31			
32	Renewable	4,698	11%
33	Gas	37,731	85%
34	Coal	2,047	5%



Developing Electricity Supply Scenarios For Use In Prosym Simulations

Coal Nation - Case III

Incremental Additions Dependable MWs 2005-2016

CEC Staff Estimate Spring 2005

Transmission Area	Coal	Gas	Renewable
Central and South excluding Palo Verde Hub	2,250	842	246
	1,900	2,113	51
	500	842	100
California ISO - Central California	-	495	170
California ISO - Imperial Valley	-	-	-
California ISO - Miguel	-	660	-
California ISO - Northern California	-	1,835	425
Colorado East	2,250	480	356
Colorado West	500	-	20
California ISO - Southern California Edison	-	3,111	995
California ISO - San Diego Gas & Electric	-	790	36
California ISO - San Francisco	-	348	-
Idaho (IPC Plus)	1,040	162	69
Imperial Irrigation District	-	50	500
La Rosita	-	921	257
Los Angeles Department of Water & Power	-	1,170	-
Montana (Northwestern Energy, WAUW)	2,616	273	255
Northern Nevada (Sierra Pacific Power)	1,500	-	249
Tijuana Western Path 45	-	844	-
New Mexico	2,000	592	75
Northwest	-	955	426
Palo Verde	-	-	34
Sacramento Municipal Utility District	-	1,017	-
Southern Nevada	1,580	1,250	149
Utah	1,900	1,069	97
Wyoming	3,000	-	188

WECC	45,551	
Renewable	4,698	10%
Gas	19,817	44%
Coal	21,036	46%