



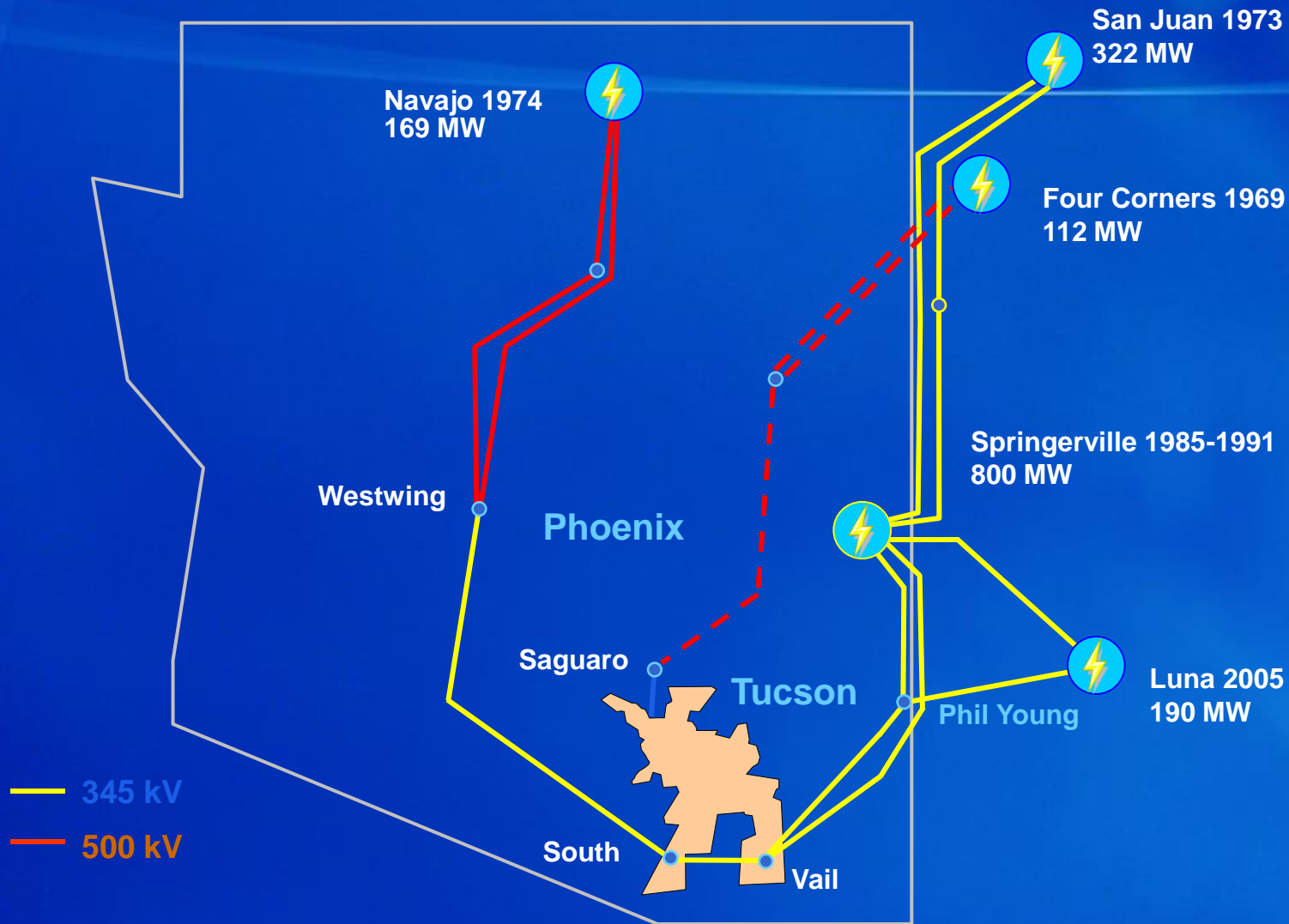
Resource Overview

Victor Aguirre

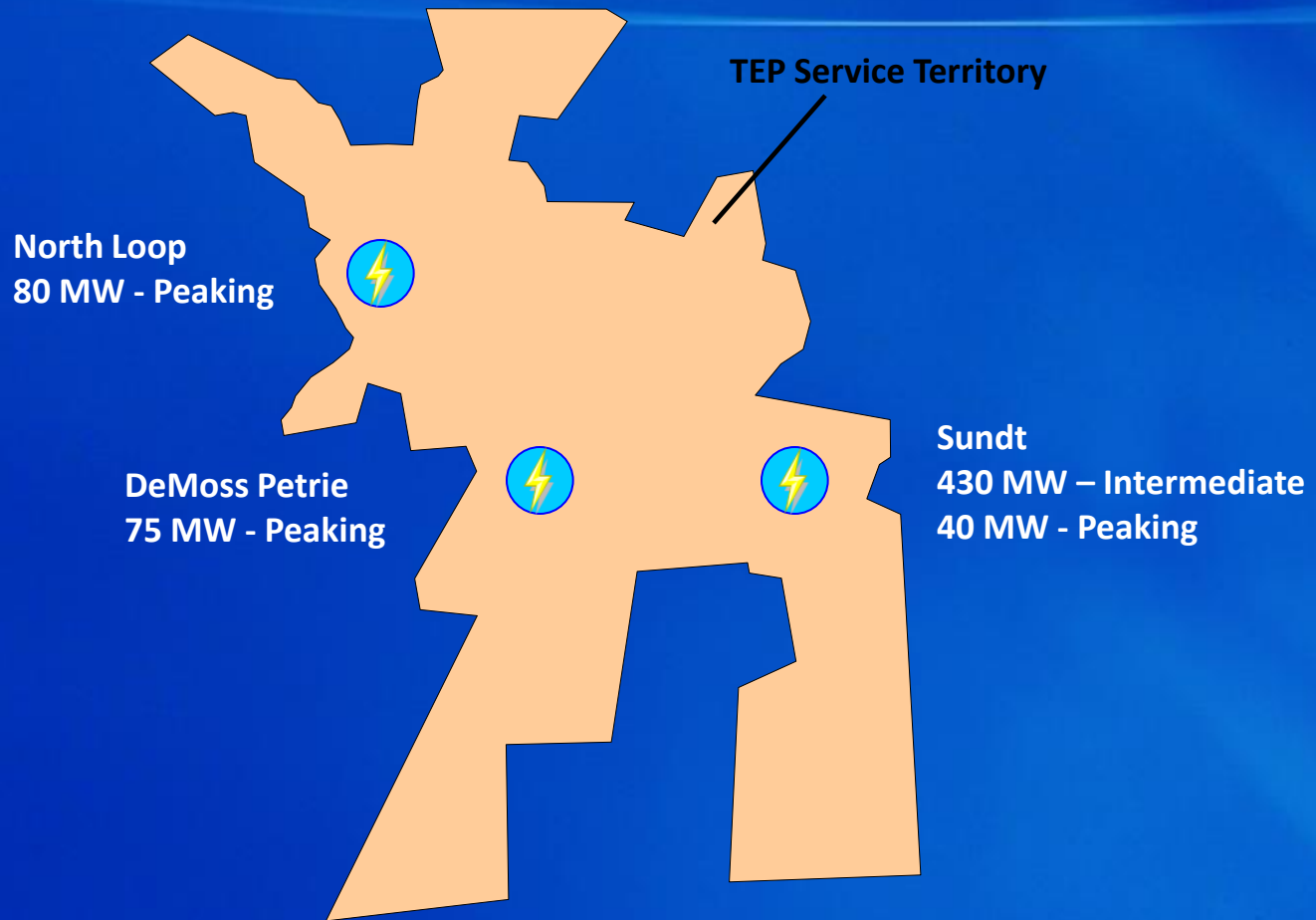
Lead Supply-Side Planner



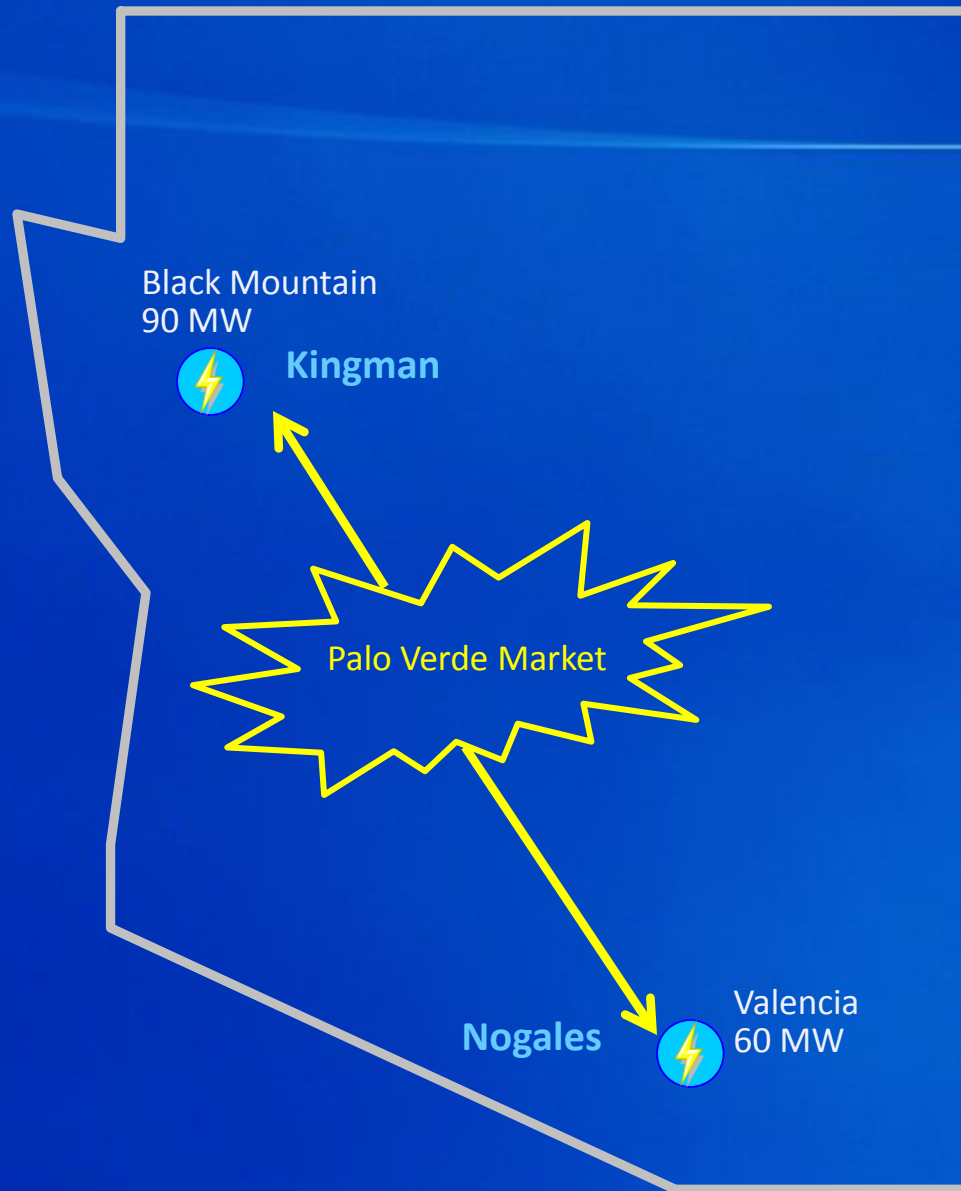
Existing Resources - Remote



Local Area Resources



Unisource Energy Services

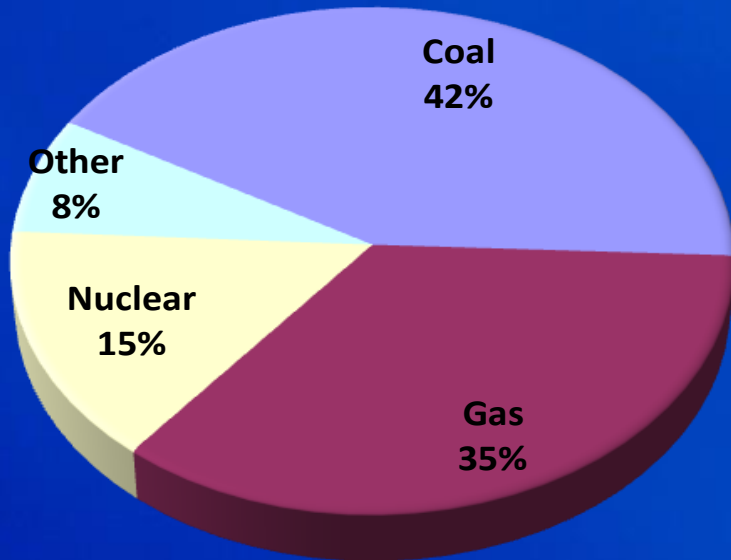


Existing Resources

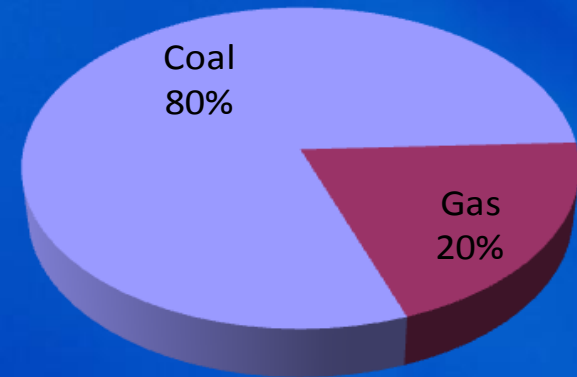
- ▶ Base Capacity – Coal
 - » Remote
 - » 1400 MW
- ▶ Intermediate - Combined Cycle & Gas/Steam
 - » Local
 - » 620 MW
- ▶ Peaking – Combustion Turbines
 - » Local
 - » 200 MW (TEP)
 - » 150 MW (UES)

Resource Mix - Energy

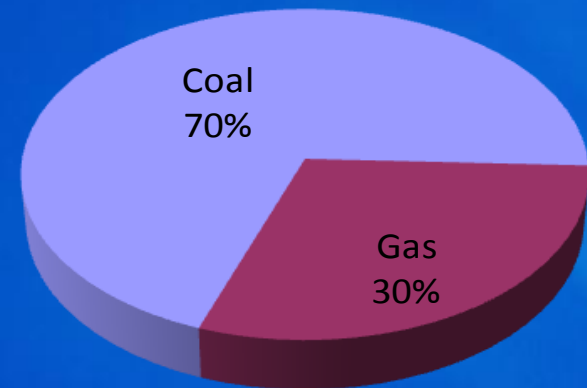
WECC Subregion - Arizona, New Mexico & So. Nevada



Tucson Electric Power



UES and TEP Aggregated



Renewable Resources

- Springerville PV – 5,000 kW
- Landfill Gas – 5,000 kW
- Customer Sited Solar
 - » Residential – 2,500 kW
 - » Commercial – 1,500 kW

Springerville PV– 5,000 kW

- ▶ Launched in 2003
- ▶ Designed for staged construction
- ▶ Offsets coal burn
- ▶ Reduced emissions



<http://www.tep.com/Green/GreenWatts/SolarStats/SolarDescr.asp>

Los Reales Landfill – 5,000 kW

- ▶ Launched in Aug 1999
- ▶ Methane byproduct of decay
- ▶ 20 year plus supply
- ▶ Offsets coal burn
- ▶ Reduced emissions



<http://www.tep.com/Green/Business/Solar/losreales.asp>



Energy Efficiency Program Overview

Denise Richerson-Smith

Director - Energy Efficiency and Renewable Programs



Distributed Generation Projects – 4,000 kW

- ▶ 750 kW Global Solar
- ▶ 1 MW City of Tucson
- ▶ 2.5 MW residential systems

- ▶ **Community Projects:**

- » Reid Park Zoo
- » Pima Air Museum
- » Tucson Airport Auth.
- » Local School Districts
- » University of Arizona



<http://www.tep.com/Green/Business/Solar/community.asp>

Renewable Energy Programs Commercial & Residential

	Residential	Non-Residential
▶ Biomass/Biogas	✓	✓
▶ Daylighting		✓
▶ Geothermal	✓	✓
▶ Small hydro	✓	✓
▶ Solar electric-PV	✓	✓
▶ Solar water heating	✓	✓
▶ Solar pool heating		✓
▶ Wind	✓	✓

Residential DSM Programs

Programs	TEP	UNSE	UNSG
▶ Low-Income Weatherization	✓	✓	✓
▶ New Home Construction	✓	✓	✓
▶ Residential HVAC Retrofit	✓	✓	✓
▶ Shade Tree	✓	✓	
▶ CFL Bulb Program	✓	✓	

Commercial DSM Programs

Programs	TEP	UNSE	UNSG
▶ Large Business	✓		
▶ Small Business	✓	✓	✓
▶ Building Design	✓		



Workshop 2

Thursday, October 22nd 2009

Energy Efficiency and Renewables



BRIGHT SOLUTIONSSM

TEP and UES Resource Planning Workshop 1



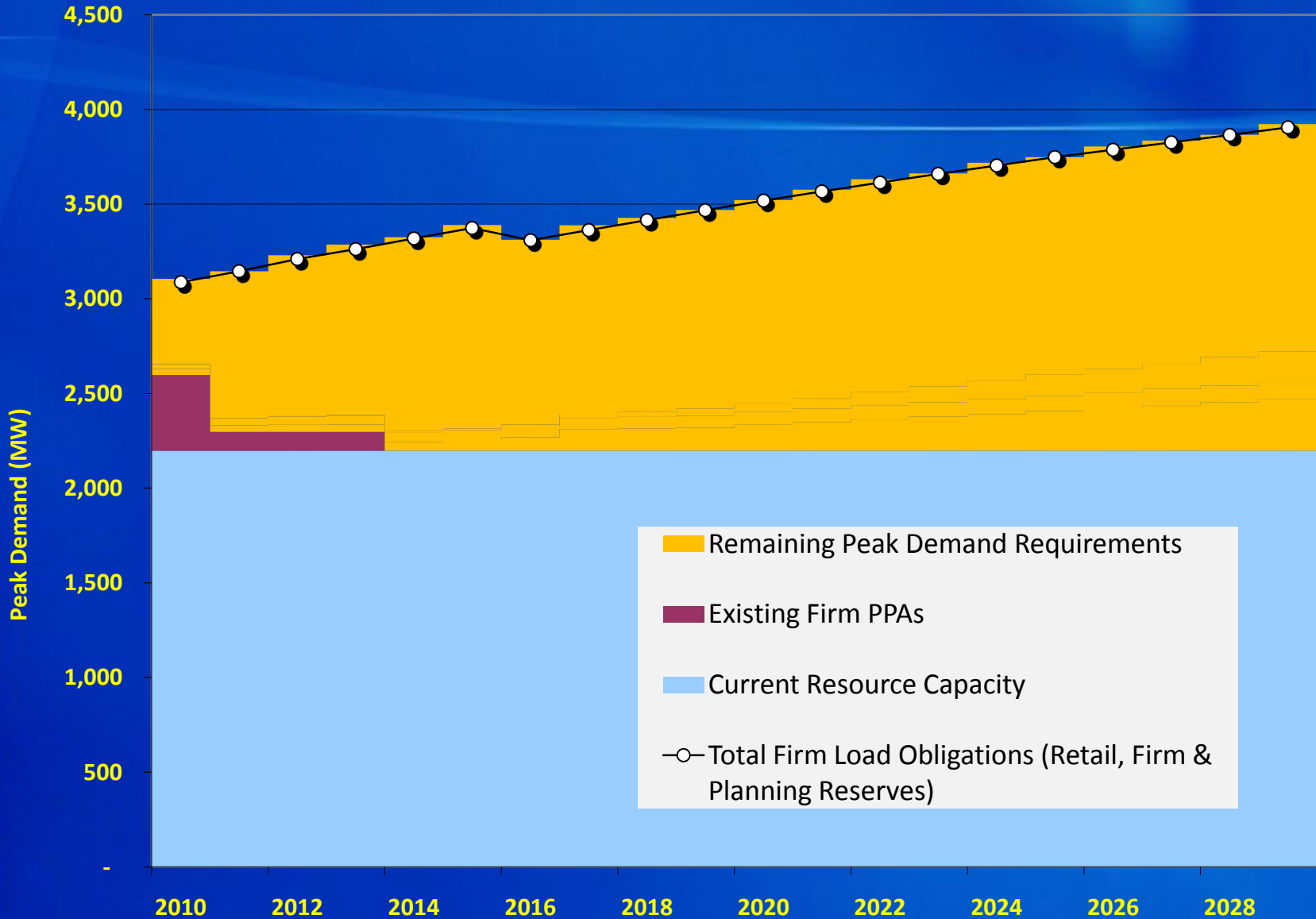
Resource Overview

Victor Aguirre

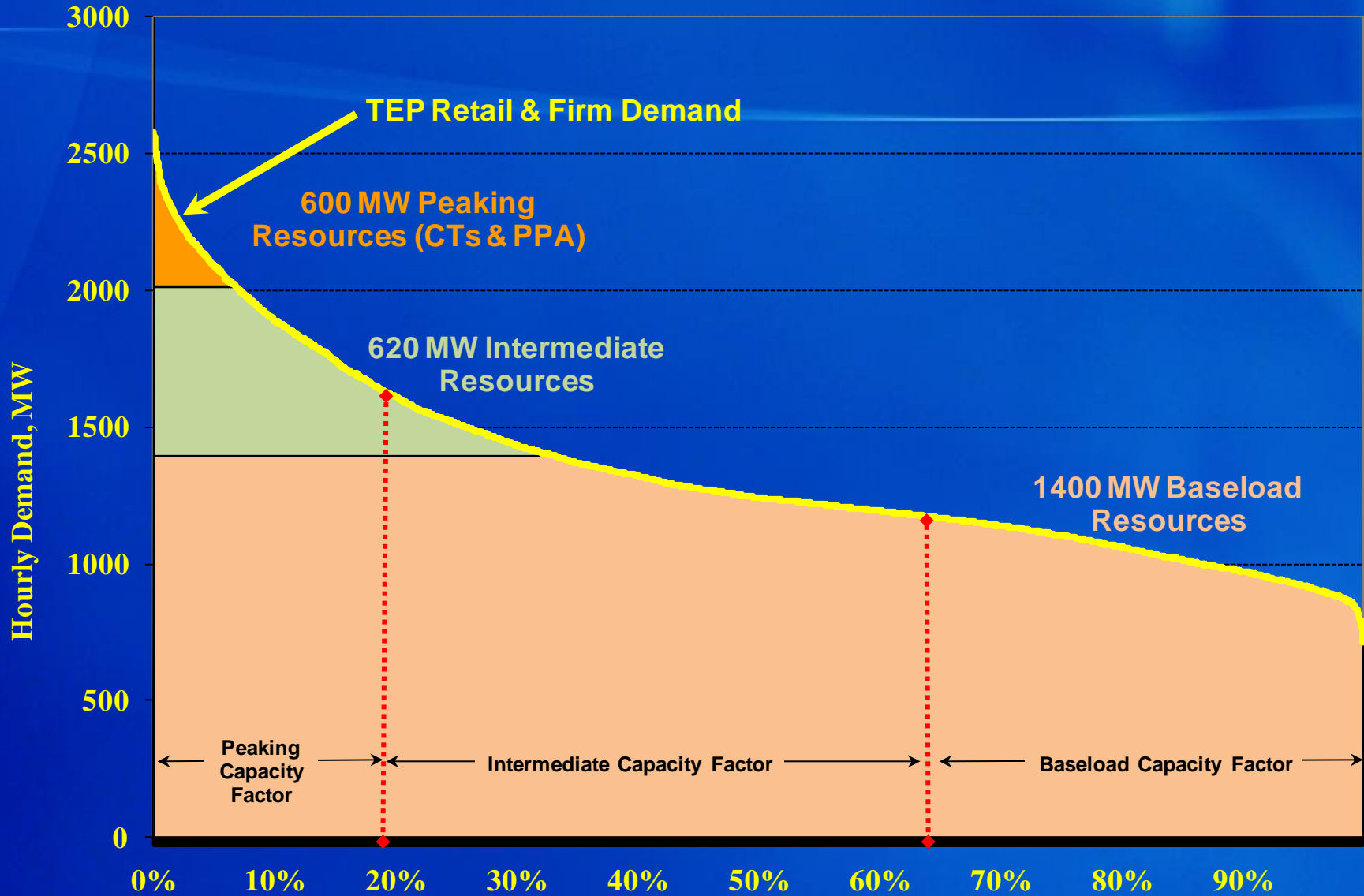
Lead Supply-Side Planner



Total Firm Load Obligations vs. Firm Capacity Resources



2010 - TEP Load Duration & Resource Type



2010 - TEP Peak Requirement

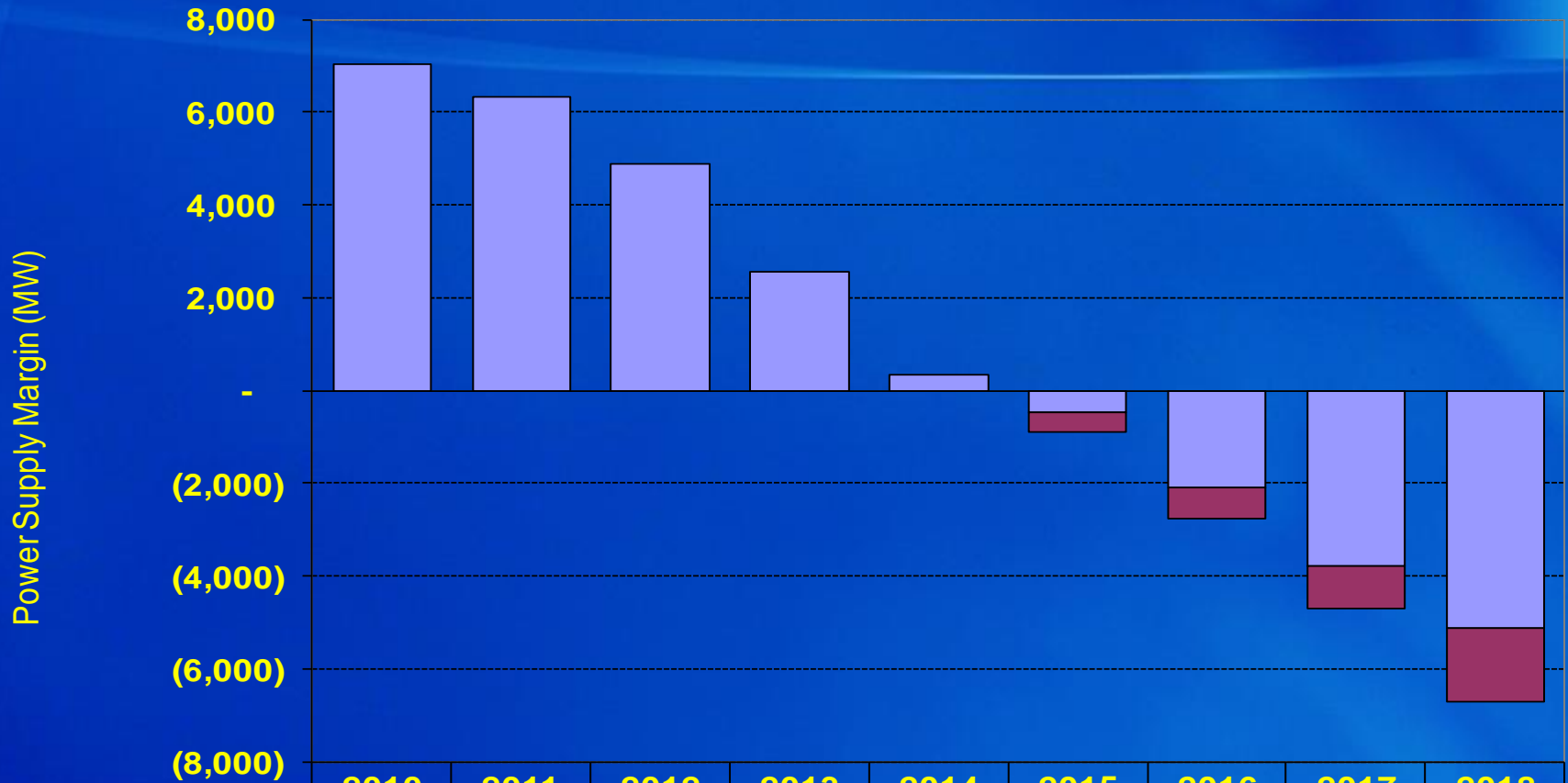


Future Resources

- Need for Peaking Resources
 - Short Lead-Time
 - Responsive
 - Support Renewables
 - Reliable Technology
- Market
 - Short-term
 - Flexible
 - Availability?
 - Merchant Plant Surplus?

WECC 2008 Power Supply Assessment

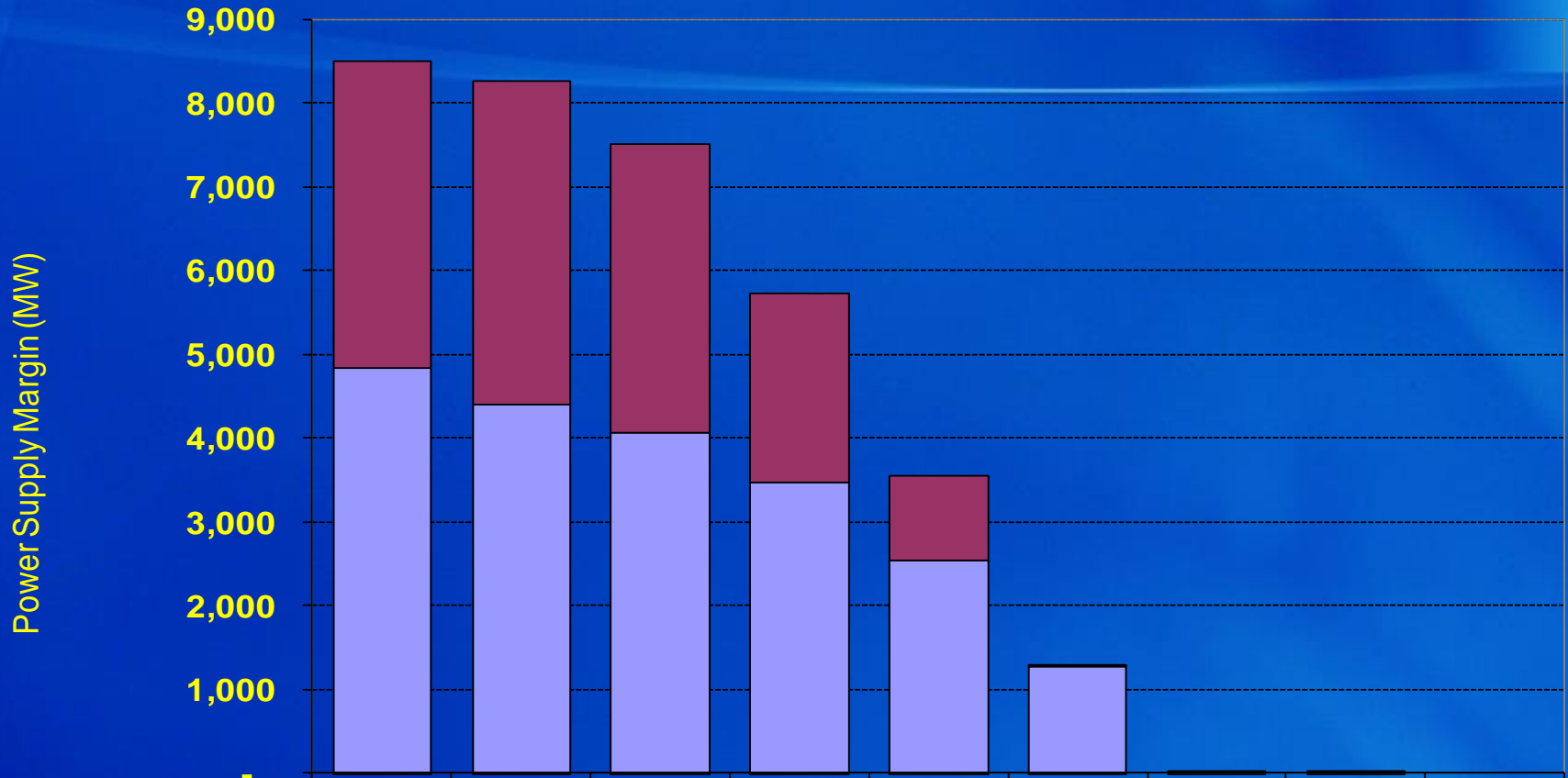
Power Supply Margin - 6% Operating Reserves



Southern California	-	-	-	-	-	(411)	(660)	(917)	(1,574)
Desert Southwest	7,023	6,328	4,897	2,564	330	(477)	(2,089)	(3,795)	(5,142)
Total	7,023	6,328	4,897	2,564	330	(888)	(2,749)	(4,712)	(6,716)

WECC 2009 Power Supply Assessment (Preliminary)

Power Supply Margin - 6% Operating Reserves



	2010	2011	2012	2013	2014	2015	2016	2017	2018
■ Southern California	3,657	3,866	3,460	2,251	1,019	30	-	-	-
■ Desert Southwest	4,829	4,388	4,053	3,467	2,528	1,255	7	3	-
Total	8,486	8,254	7,513	5,718	3,547	1,285	7	3	-



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