

# **Conference on Energy Infrastructure and Investment in California**

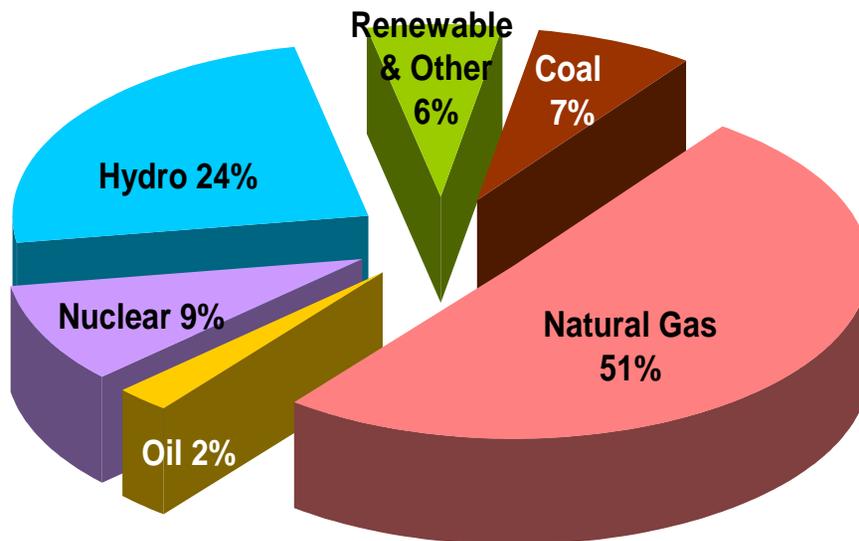


**Jeff Wright**  
**Office of Energy Projects**  
**Federal Energy Regulatory Commission**  
**June 2, 2005**

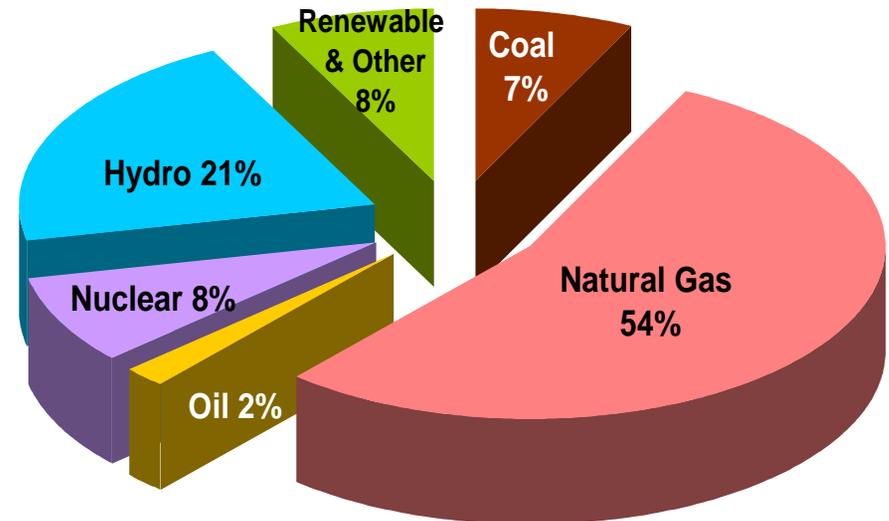
# Natural Gas Dominates Generation Capacity



*Total Capacity in 2001*  
*57,100 MW*

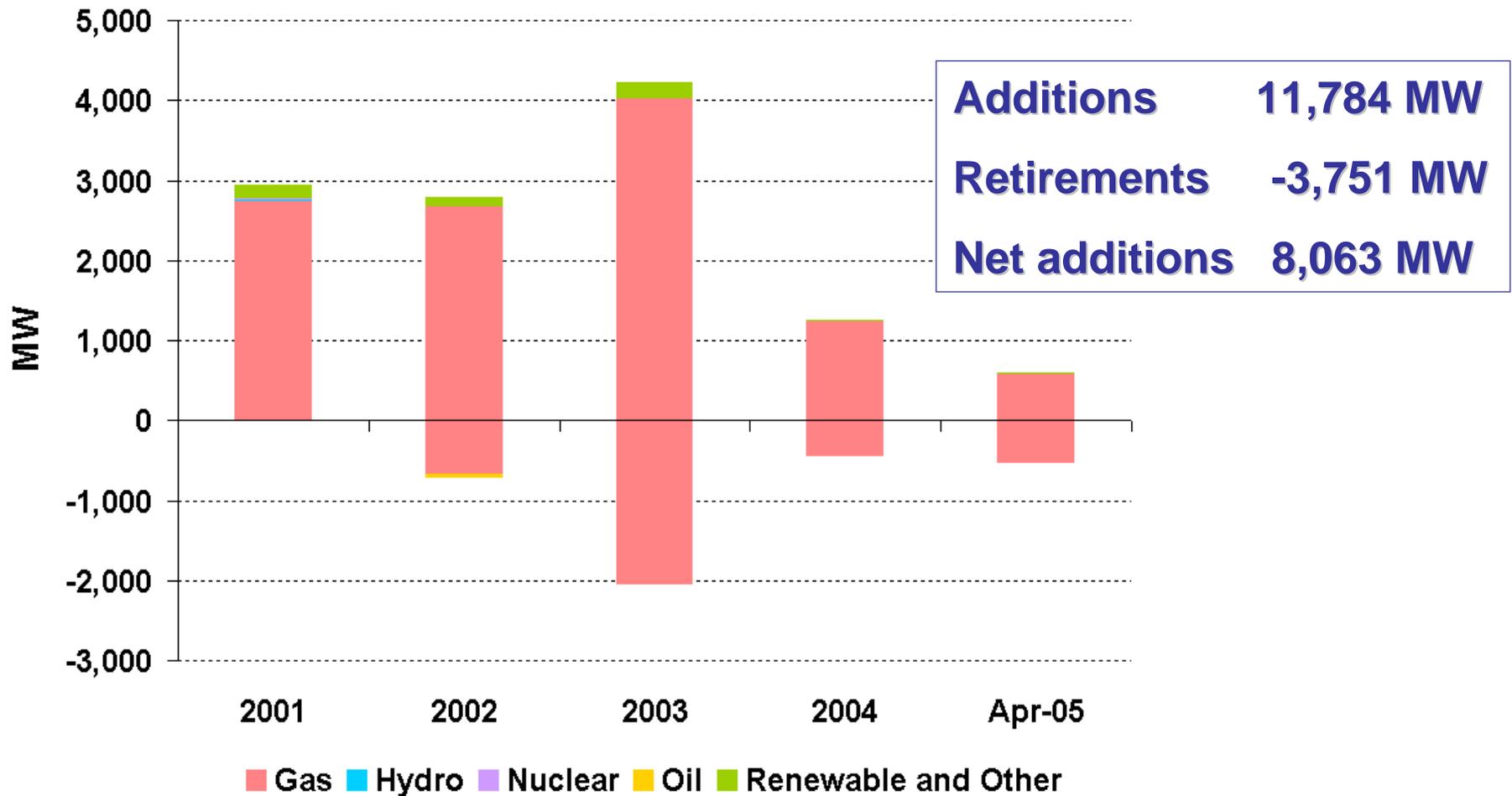


*Total Capacity in 2005*  
*66,312 MW*



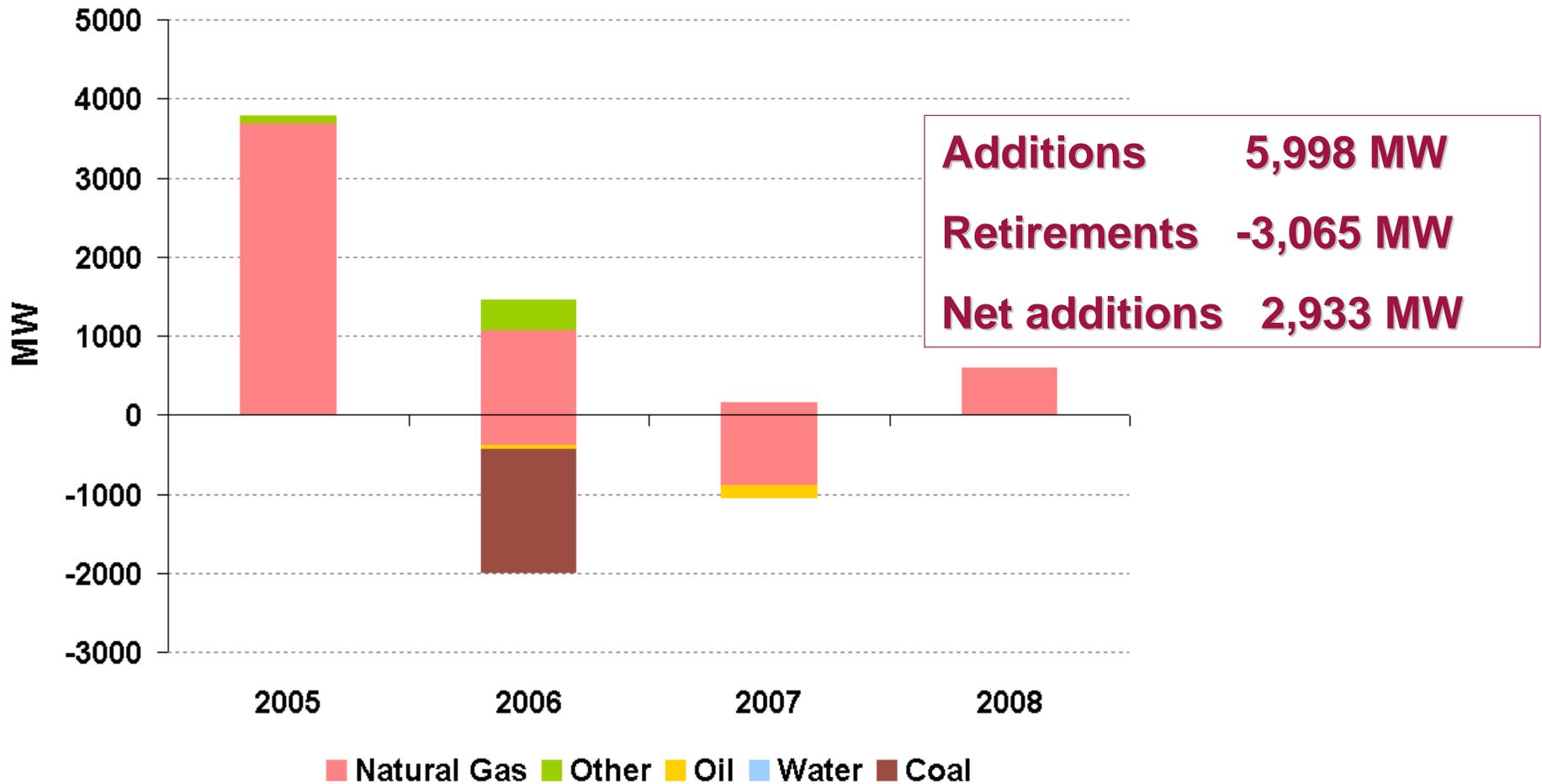
Source: Platts PowerDat, 2001 and 2005 data.

# Recent Additions to Generation Capacity



Source: Platts PowerDat, April 2005.

# Future Retirements Offset Generation Additions

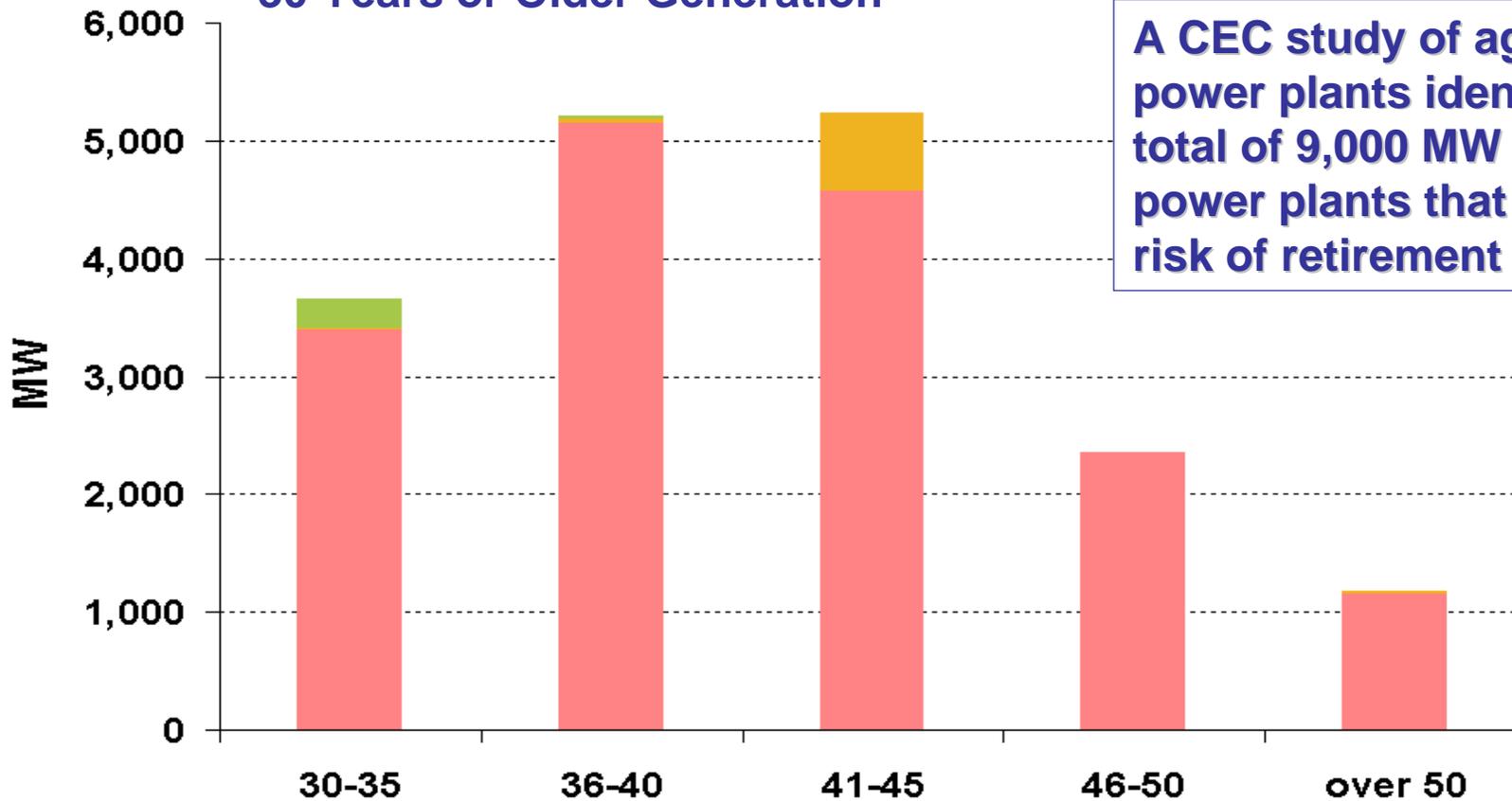


Source: Based onPlatts PowerDat, April 2005.

# California's Aging Generation Fleet



## 30 Years or Older Generation

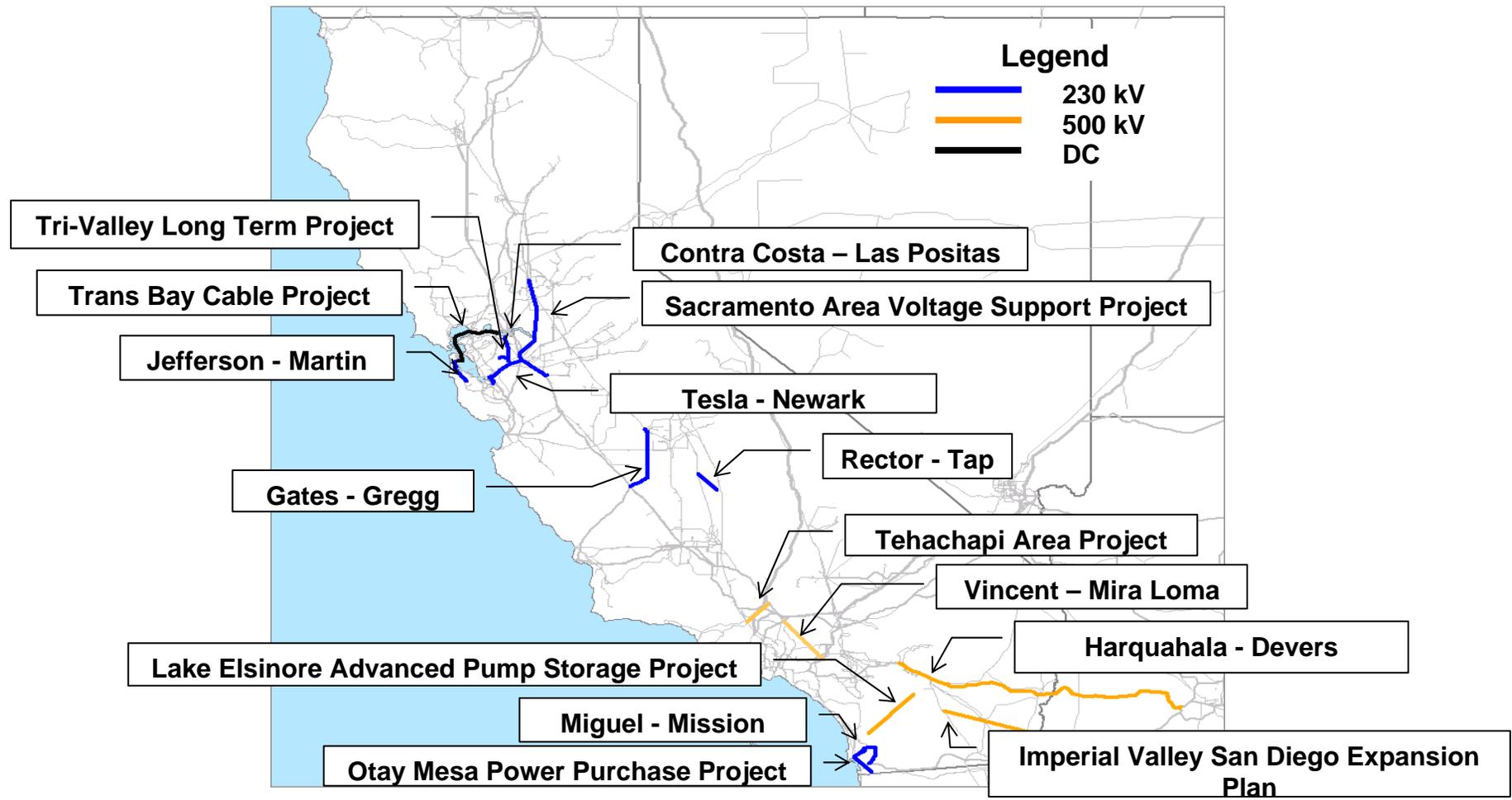


A CEC study of aging power plants identifies a total of 9,000 MW of aging power plants that are at risk of retirement by 2008.

Source: Based on Platts PowerDat, April 2005.

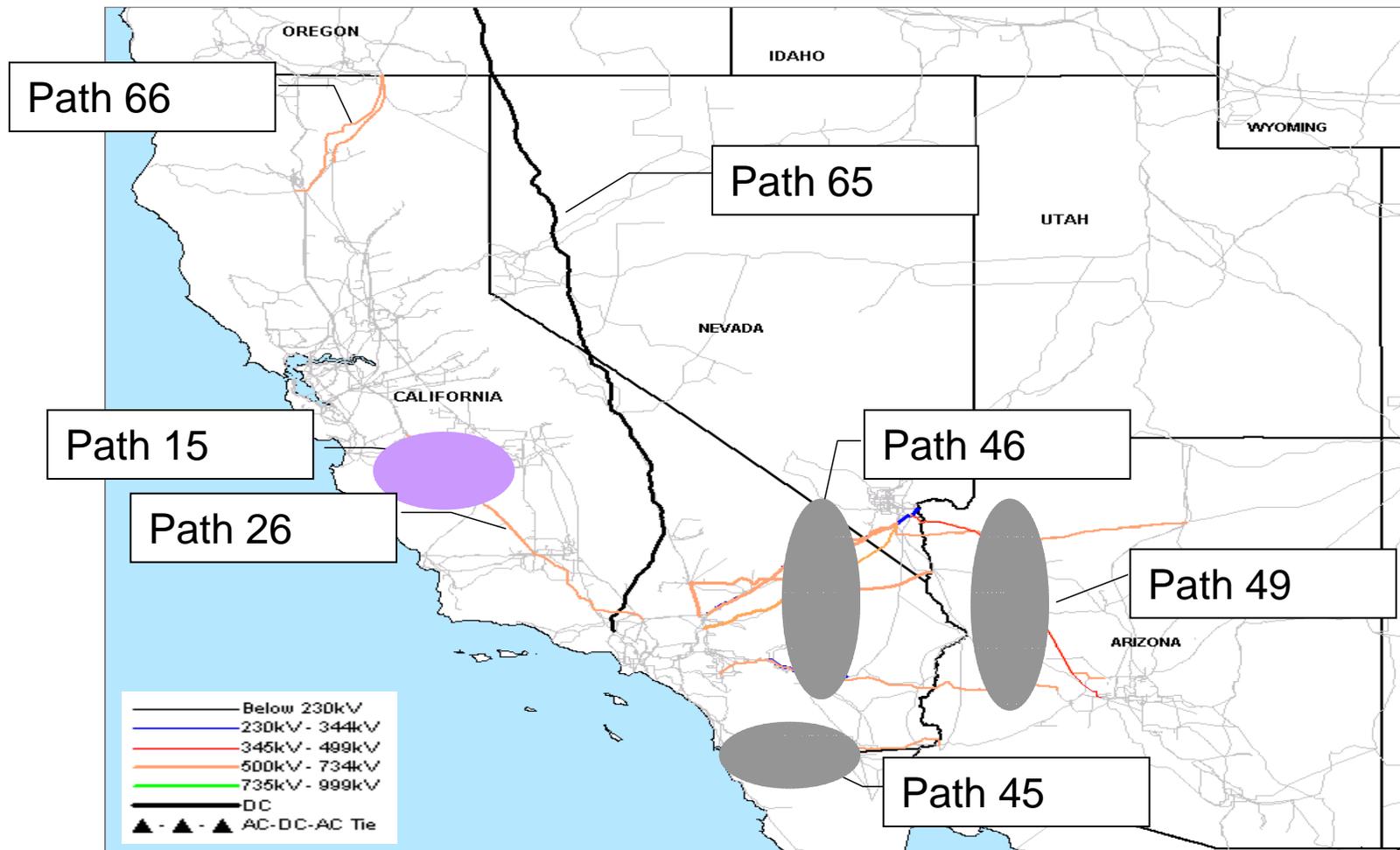
■ Natural Gas/Gas-Oil ■ Oil ■ Other

# Electric Transmission in California



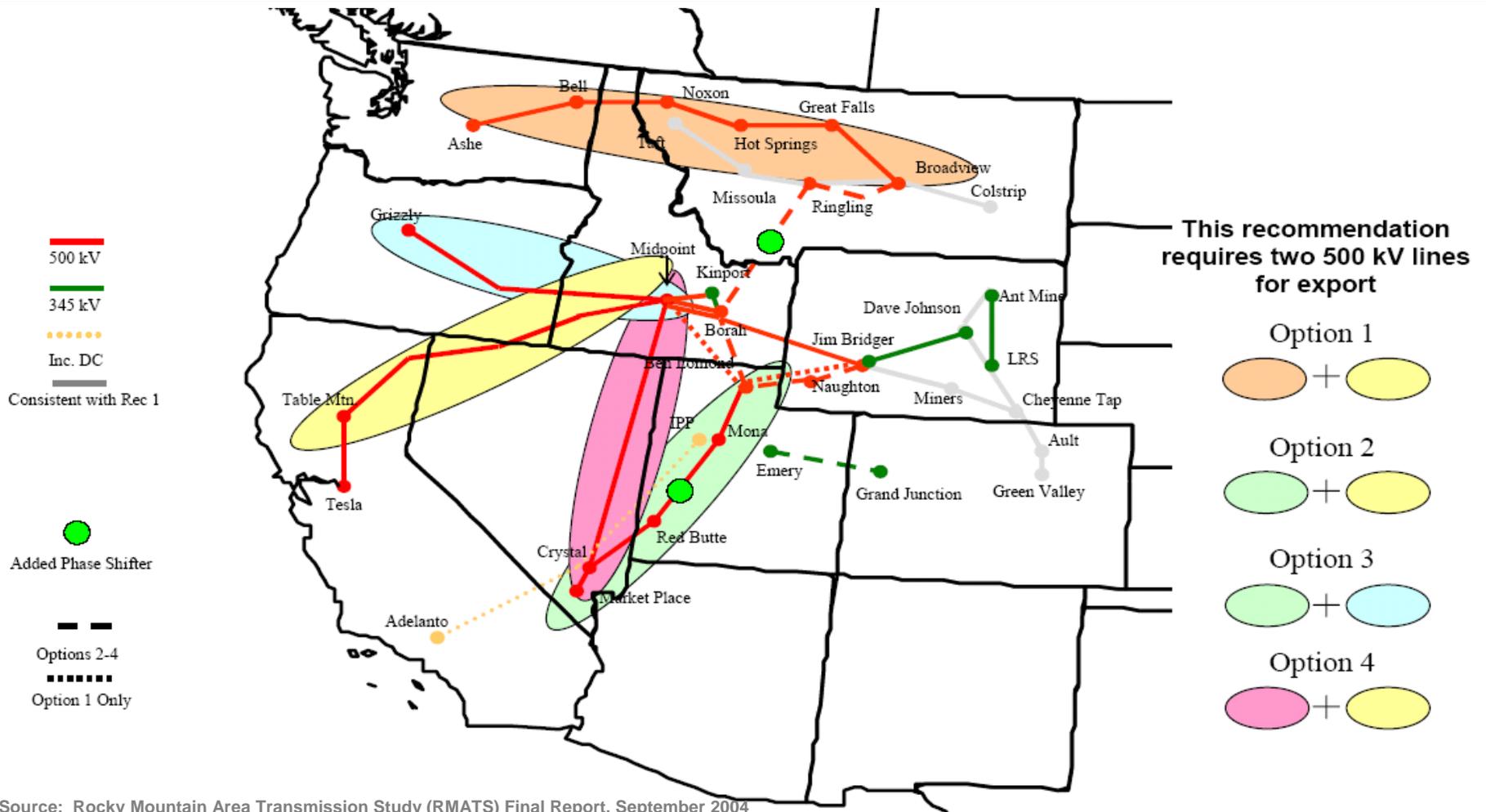
Source: POWERmap, CEC Draft Staff White Paper "Upgrading California's Electric Transmission System: Issues and Actions for 2004 and Beyond" July 2004, NERC Summer Assessment 2005 and FERC database

# Path 15 Upgrade Will Help In-State



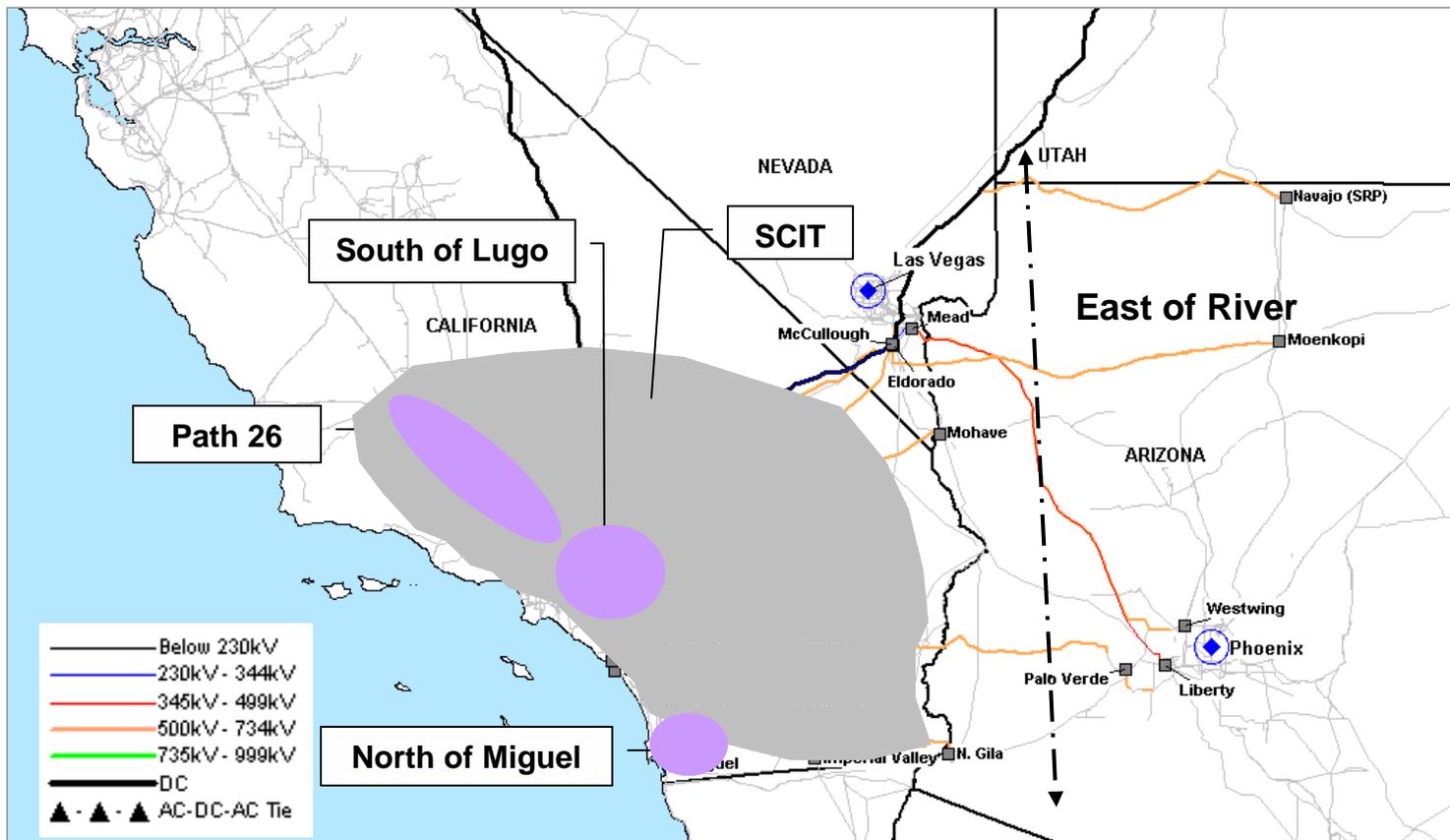
Source: POWERmap, FERC Western Energy Infrastructure 2003

# Transmission Help: The Frontier Project



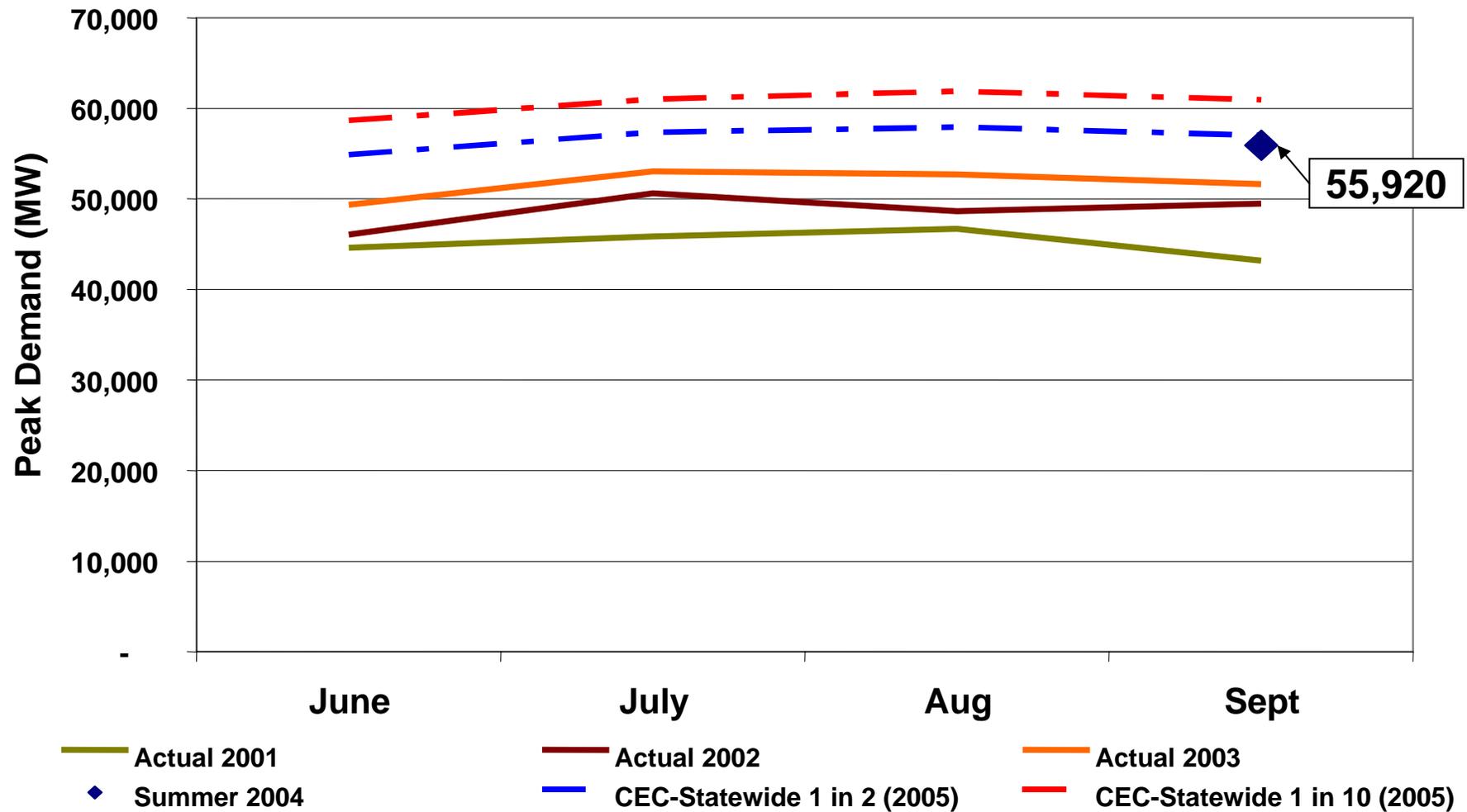
Source: Rocky Mountain Area Transmission Study (RMATS) Final Report, September 2004

# Congestion Problem Area Summer '05



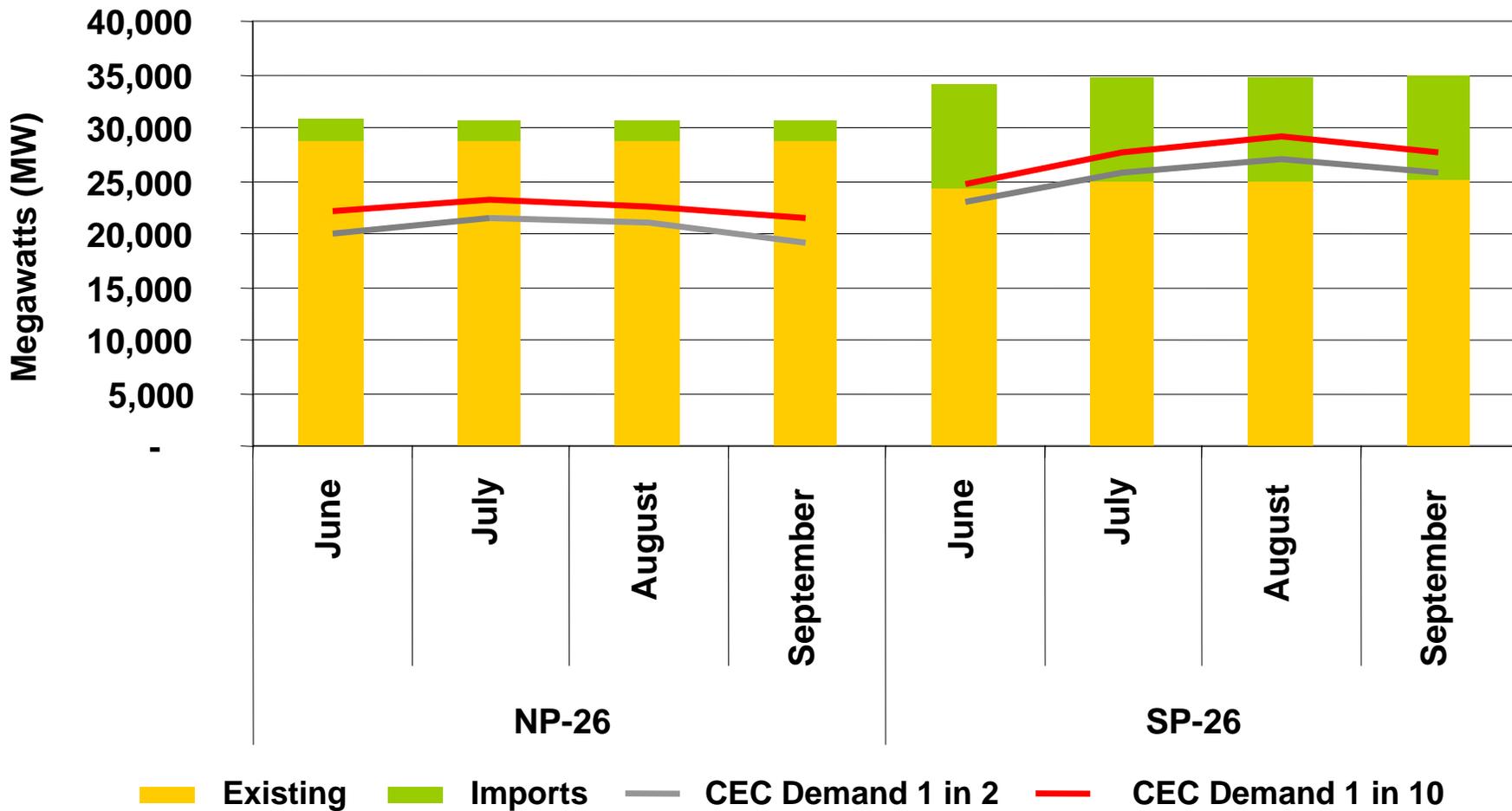
Source: POWERmap, NERC Summer 2005 Assessment

# Summer Peaks Keep Increasing



Source: WECC's Summary of Estimated Loads and Resources

# SP26 Needs Imports

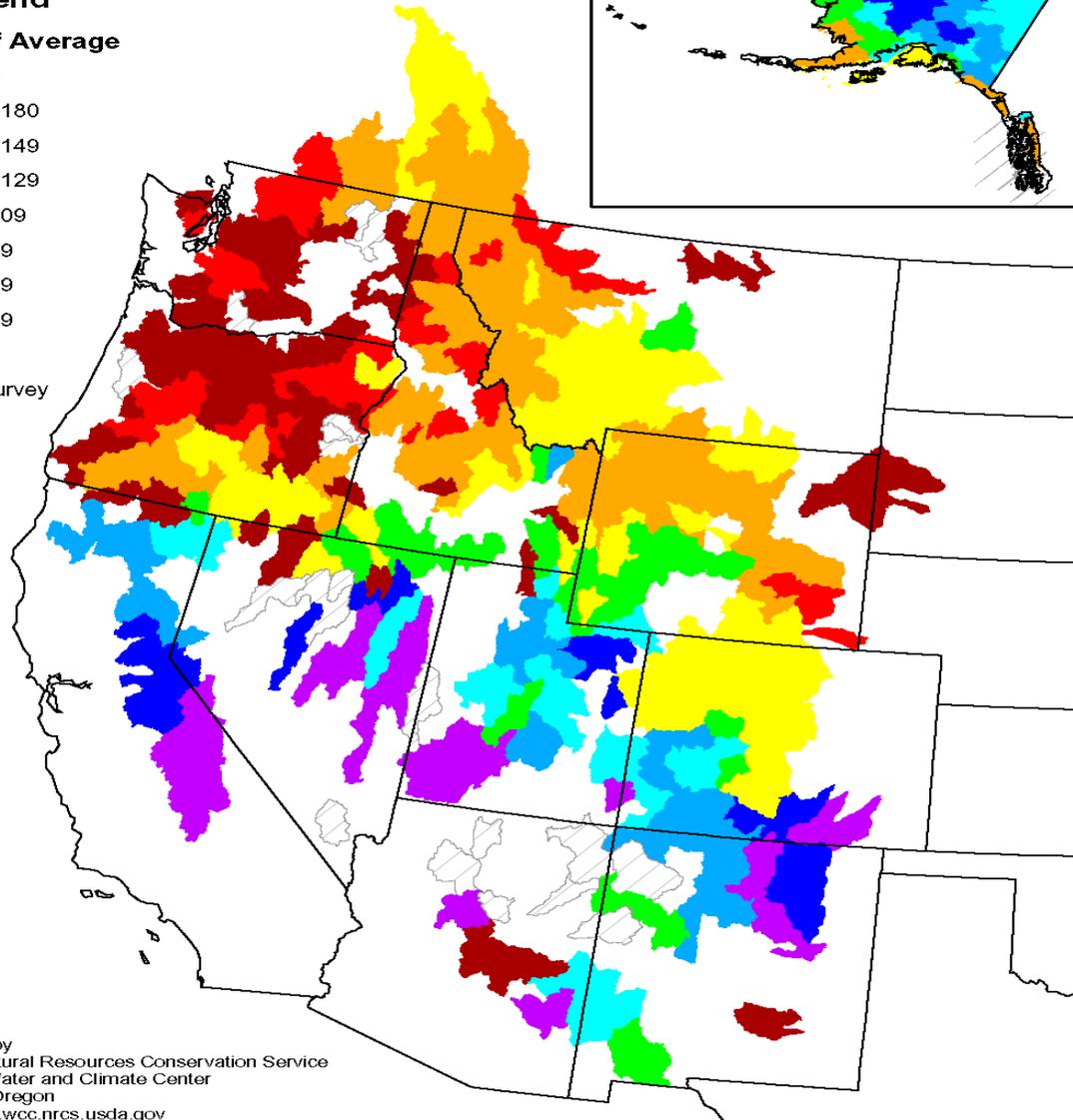


Source: California ISO "2005 Summer Operations Assessment," March 2005

# Mountain Snowpack as of May 1, 2005

## Legend

### Percent of Average

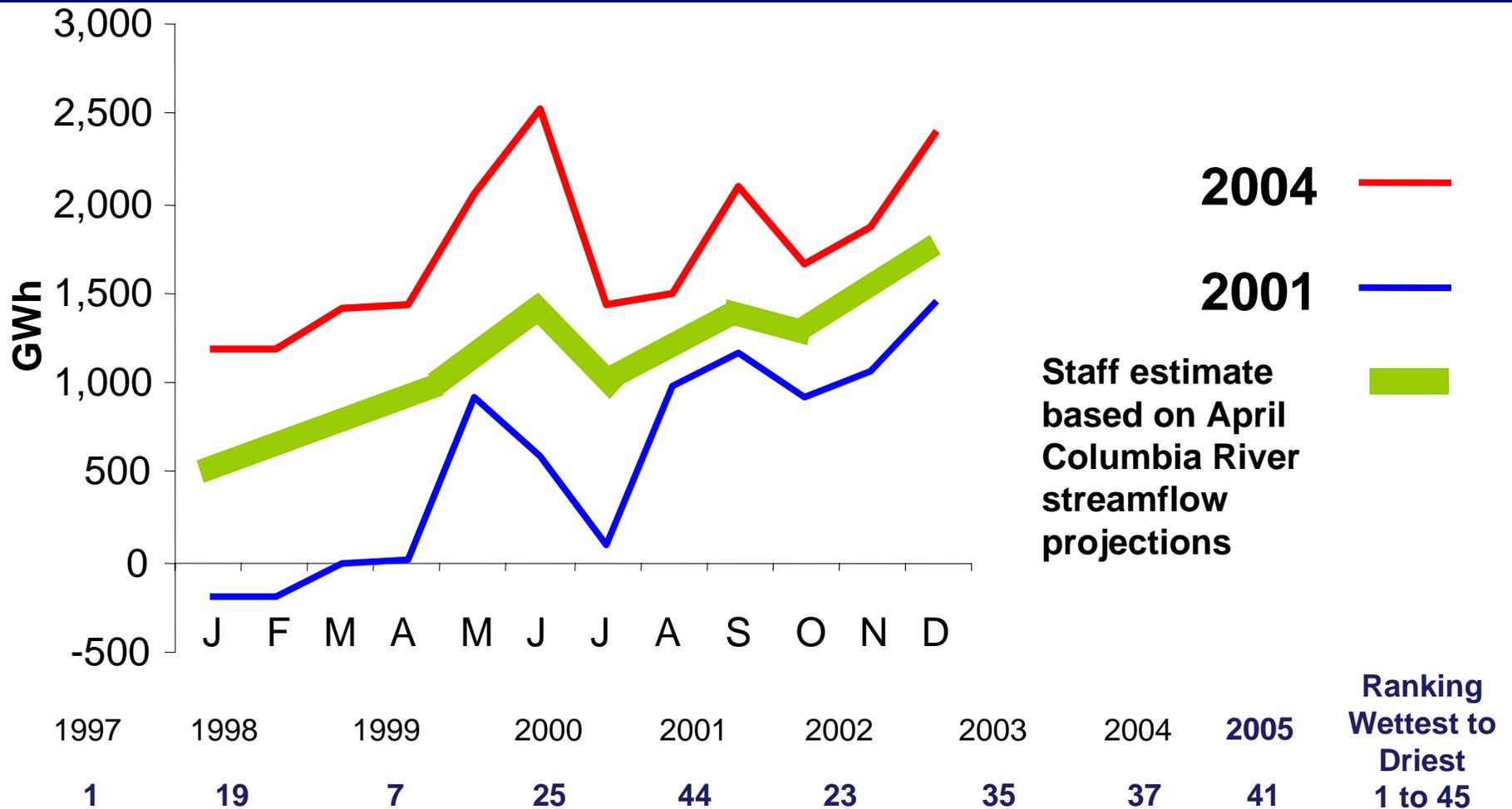


Prepared by  
USDA, Natural Resources Conservation Service  
National Water and Climate Center  
Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>



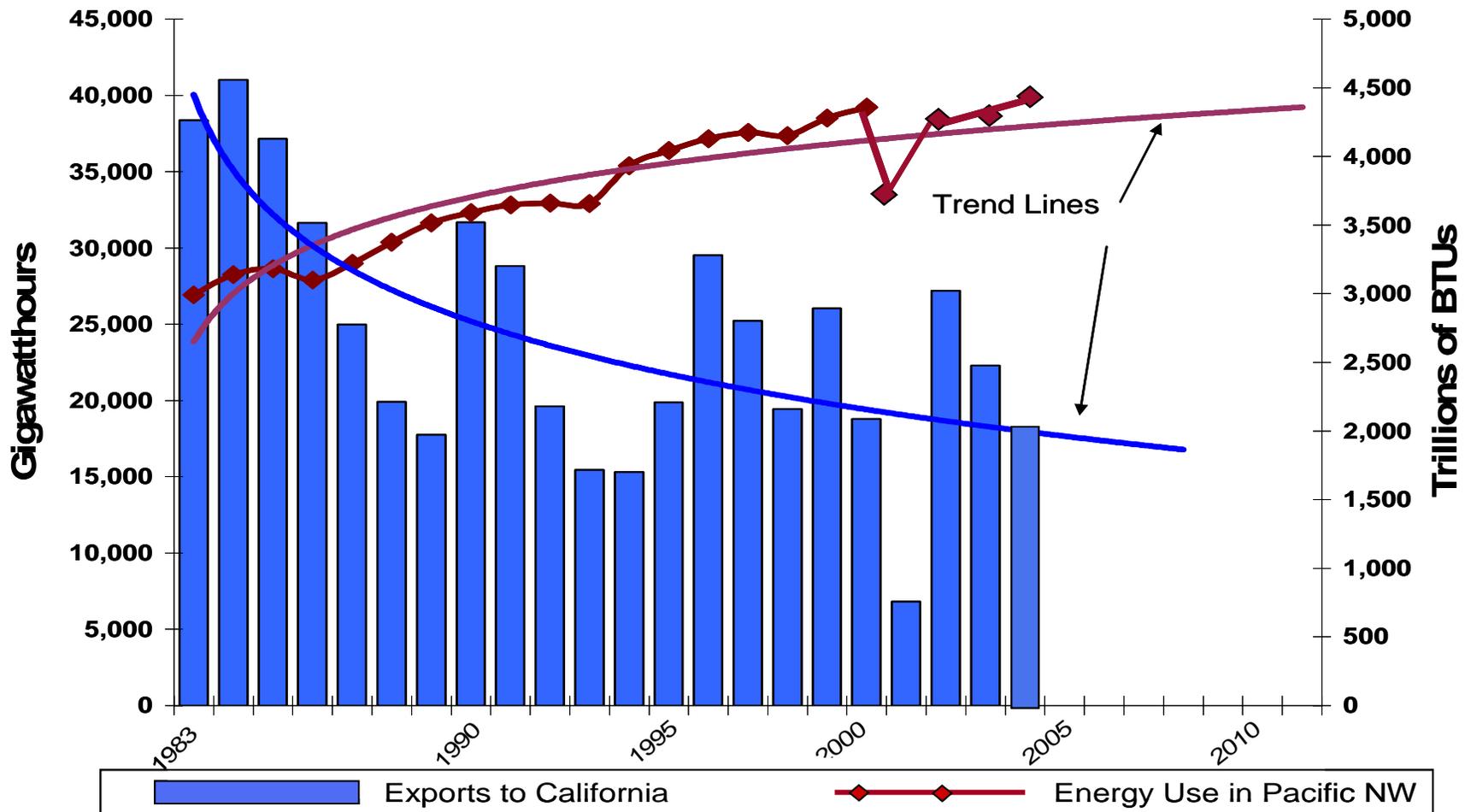
2005:  
Dry in  
Northwest;  
Wet in  
California

# Dry Year = Less Hydro Imports



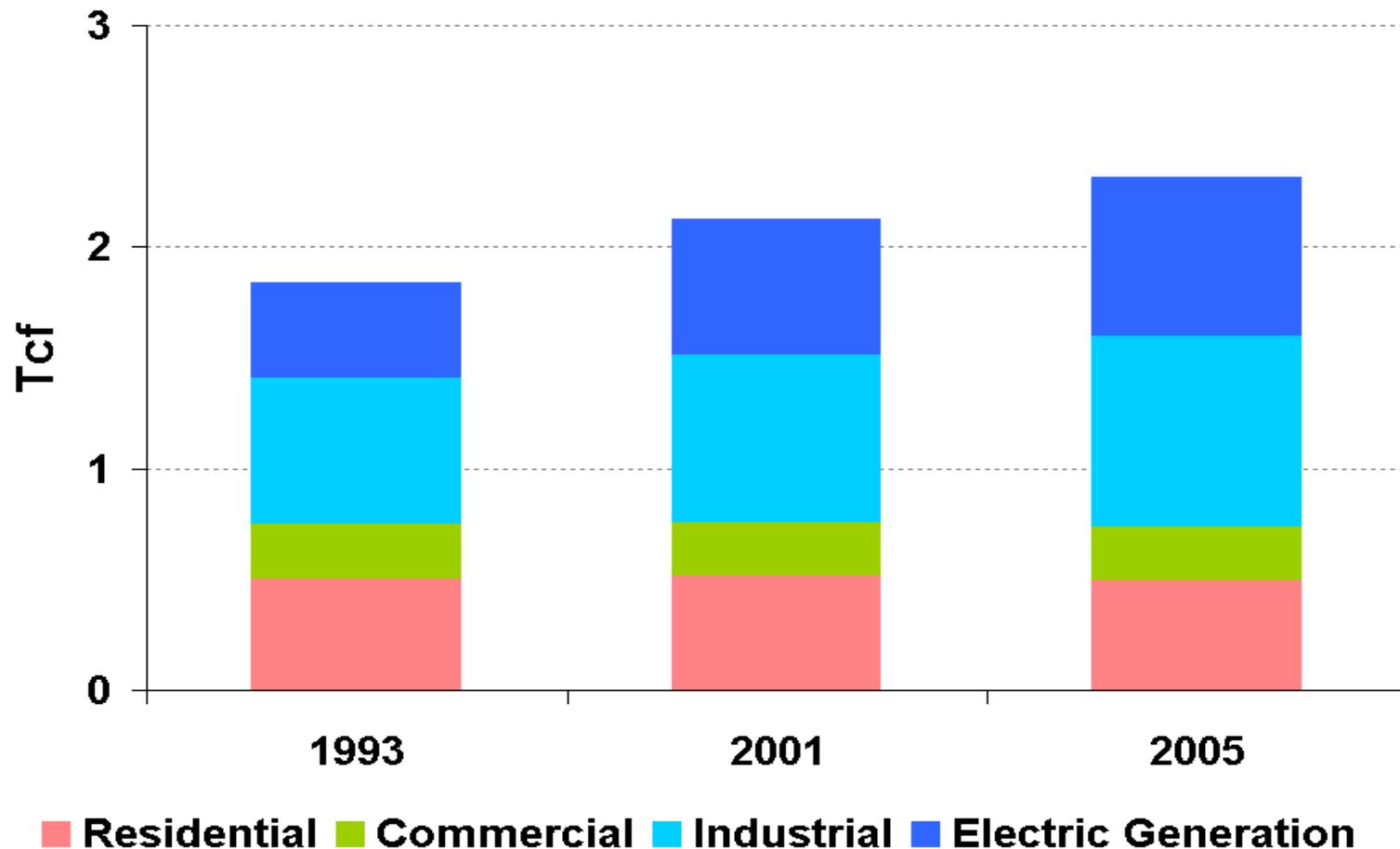
Source: Northwest Power Pool

# Northwest Load Increases, Hydro Exports Decline



Source: CEC, NWPPC, and U.S. Census

# Power Generation Drives Gas Demand

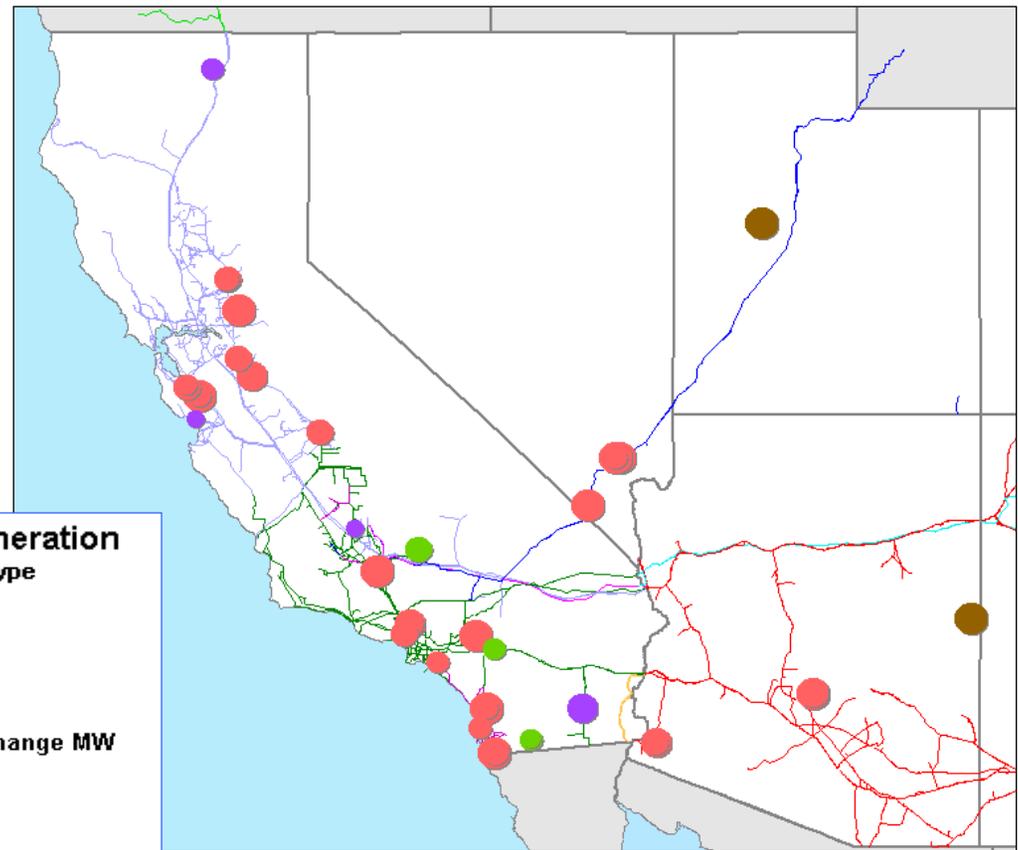


Source: Data from EEA's April 2005 Compass

# Future Generation Needs More Gas



Year	Proposed Generation in MW	Related gas demand with heat rate of 5,687 Btu/kWh (MMcf/d)	Related gas demand with heat rate of 7,000 Btu/kWh (MMcf/d)
2005	3,691	293	361
2006	1,070	85	105
2007	160	13	16
2008	593	47	58
Total	5,514	438	540



**Pipeline Companies**

- El Paso Natural Gas Co.
- Gas Transmission Northwest Corp.
- Kern River Gas Transmission Co.
- Mojave Pipeline Co.
- NORTH BAJA PIPELINE
- Pacific Gas and Electric Co.
- San Diego Gas & Electric Co.
- Southern California Gas Co.
- Transwestern Pipeline Co.

**Future Power Generation by Primary Fuel Type**

- Natural Gas
- Other
- Coal
- WIND

**by Maximum Capacity Change MW**

- 400 to 900
- 200 to 400
- 78 to 200
- 40 to 78
- 3 to 40

Source: Based on Platts NewGen and PowerMap.

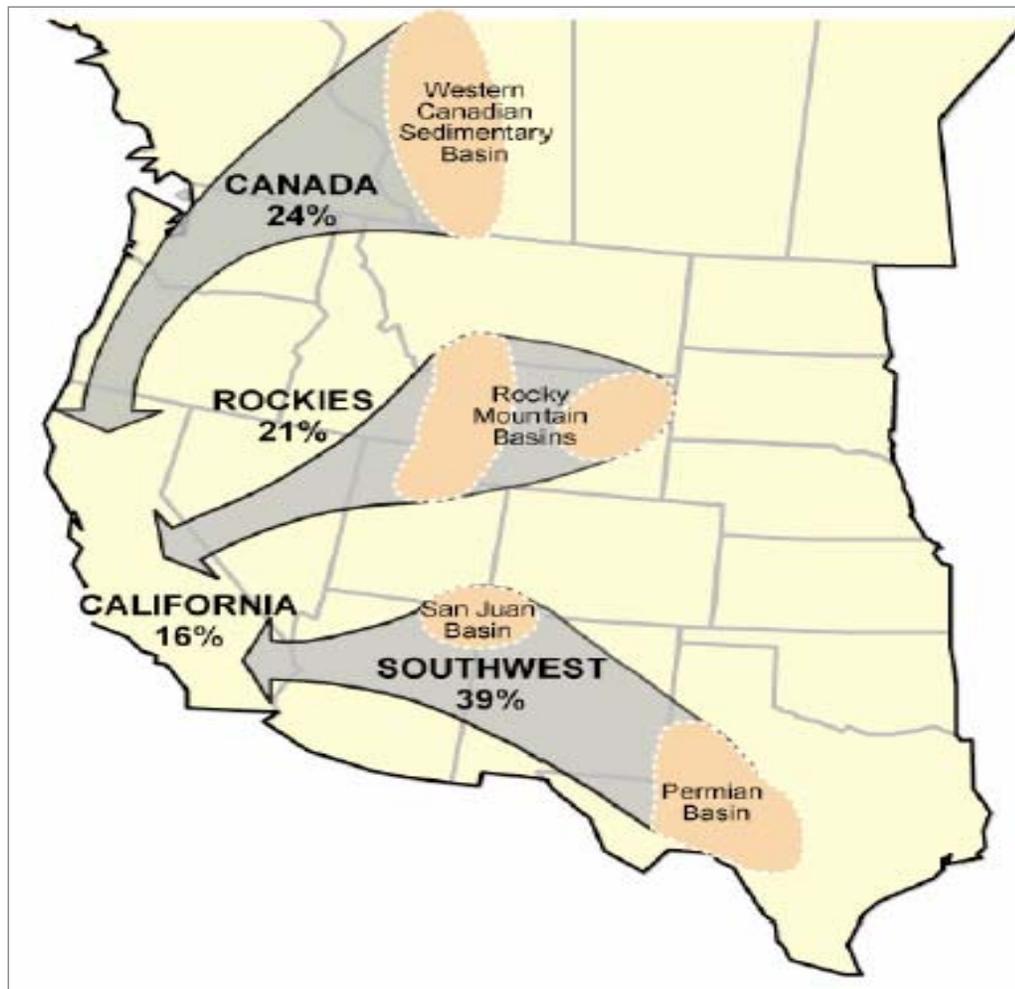
# California Gas Facts



	United States	California	% of United States
<b>Total Gas Consumption</b>	<b>21.6 Tcf</b>	<b>2.3 Tcf</b>	<b>11%</b>
<b>Total Dry Gas Production (2003)</b>	<b>19.4 Tcf</b>	<b>0.3 Tcf</b>	<b>2%</b>
<b>Total Proved Gas Reserves (2003)</b>	<b>189.0 Tcf</b>	<b>2.4 Tcf</b>	<b>1%</b>
<b>Total Storage Capacity</b>	<b>8.2 Tcf</b>	<b>0.45 Tcf</b>	<b>5%</b>
<b>Total Net Imports from Canada</b>	<b>3.3 Tcf</b>	<b>0.48 Tcf</b>	<b>15%</b>
<b>Total Exports to Mexico</b>	<b>0.4 Tcf</b>	<b>0.08 Tcf</b>	<b>20%</b>

Source: Data from EIA's Natural Gas Monthly February 2005 and US Crude Oil, Natural Gas, and Natural Gas Liquid Reserves 2003 Report; EEA's April 2005 Compass; CEC's Natural Gas Assessment Update, Staff Report 02/05; DOE's Fossil Energy's Natural Gas Imports and Exports 4<sup>th</sup> Quarter Report; and the NEB's Natural Gas Export by US Region

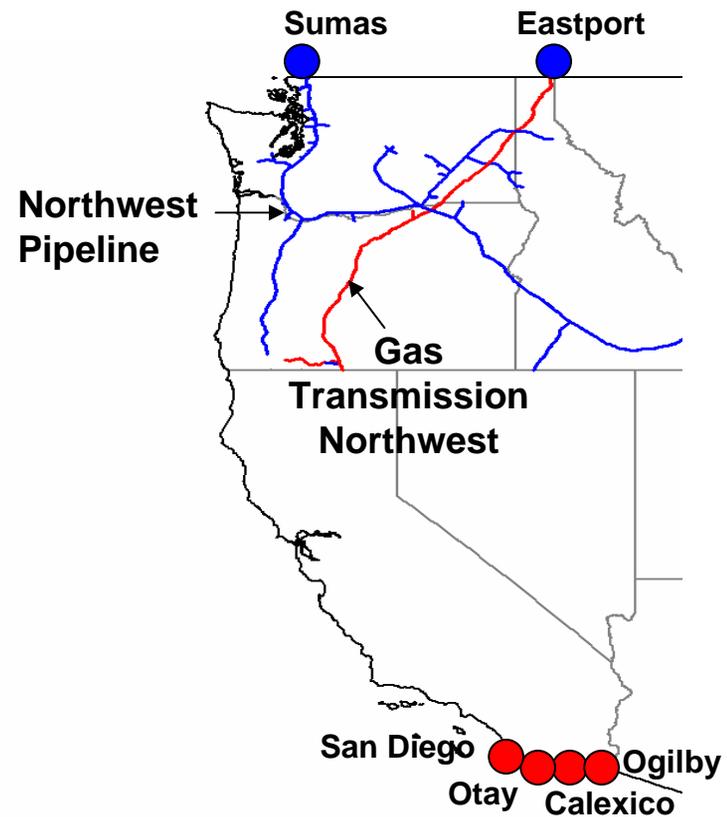
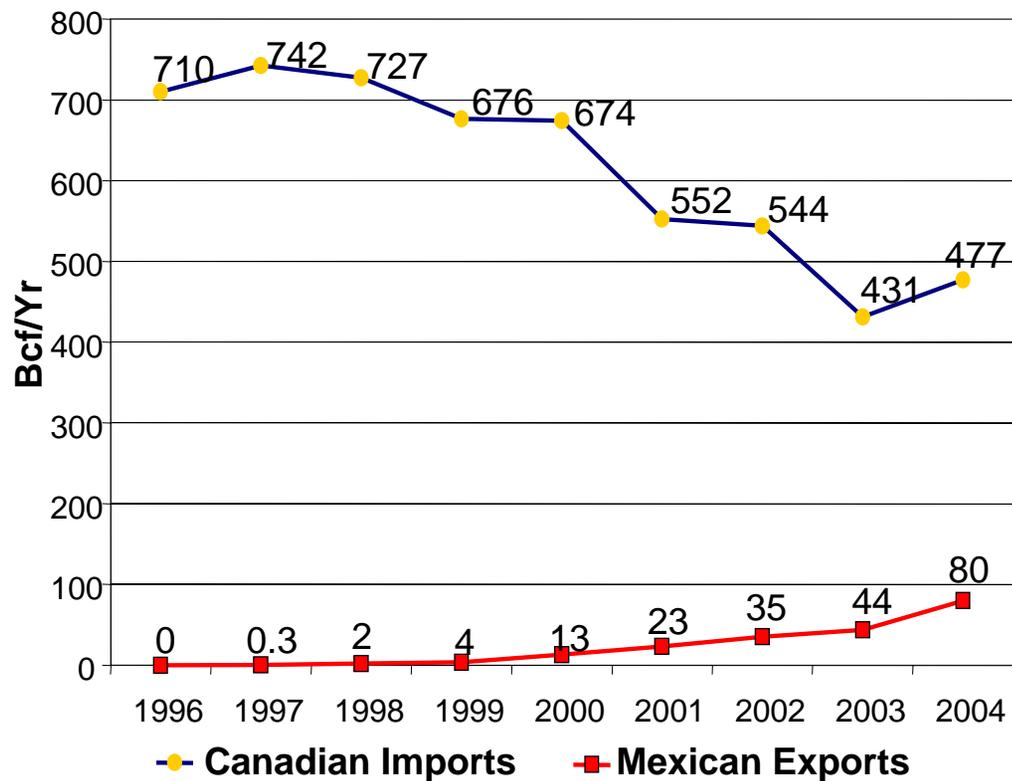
# California Gas Sources



California imports approximately 85 percent of its natural gas supplies from other states and Canada. The four major supply sources to California are the Permian Basin; San Juan Basin; Rocky Mountains; and Western Canada.

Source: Figure 14 and data from The California Energy Commission's Natural Gas Assessment Update, Staff Report dated February 2005

# Pipeline Imports Trending Lower



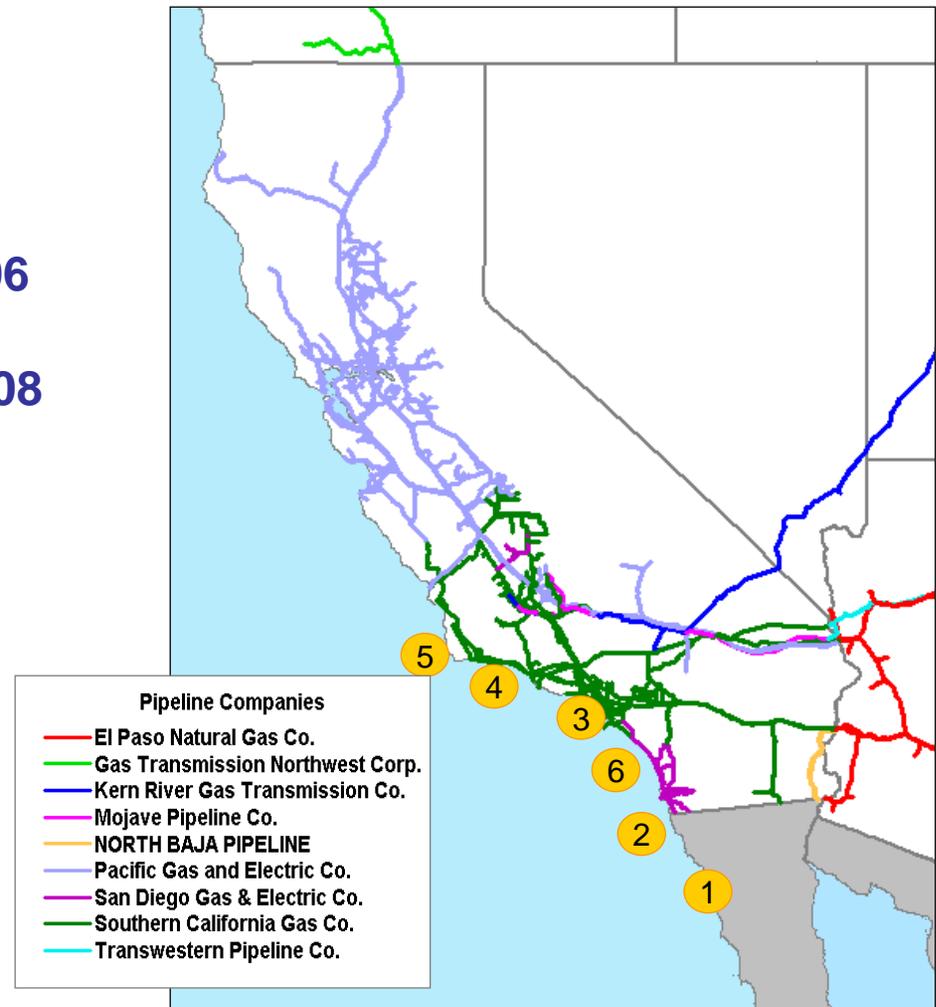
Source: Platts Power Map; Office of Fossil Energy's Natural Gas Imports/Exports for 2004; EIA's Natural Gas Annual 2001 through 2003; and the NEB's Natural Gas Exports by US Region

# LNG Could Help



## Planned LNG Import Terminals

1. Baja California: 1.0 Bcfd, 2007  
(Sempra/Shell)
2. Baja California Offshore: 1.4 Bcfd, 2006  
(Chevron Texaco)
3. Long Beach Harbor, CA: 0.7 Bcfd, 2008  
(Mitsubishi/ConocoPhillips)
4. S. California Offshore: 0.5 Bcf/d, 2006  
(Crystal Energy)
5. California Offshore: 1.5 Bcfd, 2008  
(BHP Billiton)
6. California Offshore: 0.75 Bcfd, 2009  
(Chevron Texaco)



Source: Platts Powermap; The California Energy Commission's Website; and FERC Staff



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# Conclusions