APS and Regional Transmission Systems Overview

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Director Energy Delivery

Asset Management and Planning

Agenda

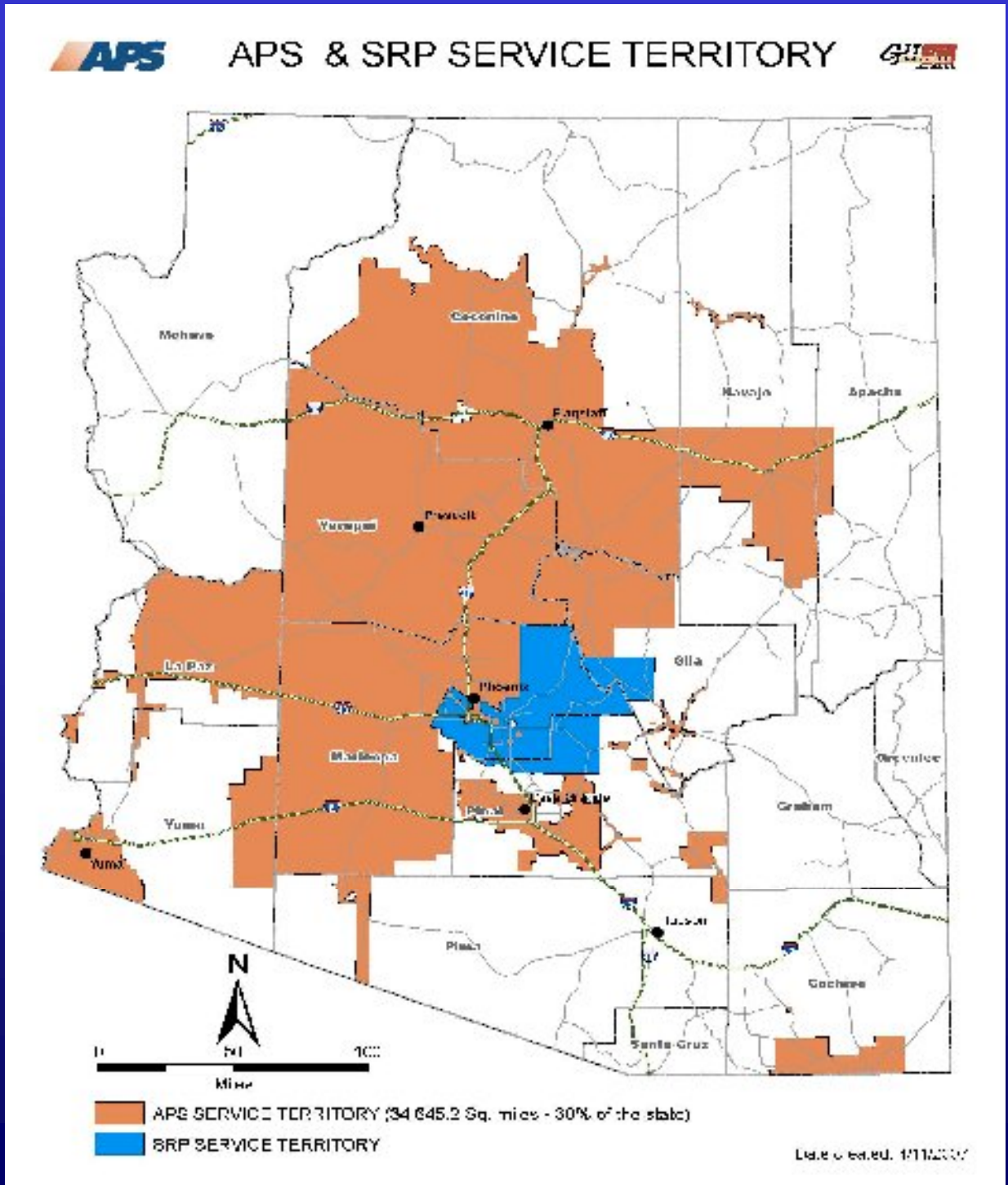
- About APS
- Regional Transmission System Overview
- APS Transmission System Overview
- Industry Challenges
- APS Unique Challenges

About APS

- Service Territory and Statistics
- Financial structure and health
- Cost structure and pricing
- Resource and fuel mix overview
- APS Customer Initiatives

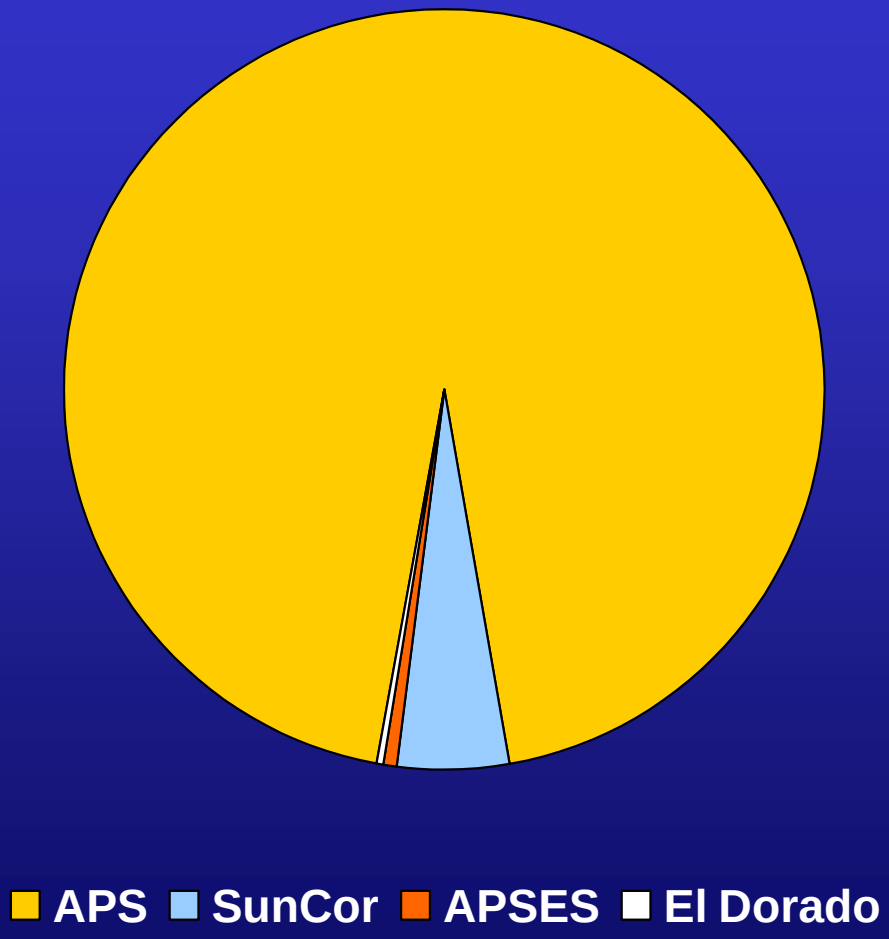
APS Service Statistics

- 11 counties
- 34,645 sq. mi. CC&N area
- 1.1 million customers
- 411 substations
- 28,022 distribution line miles
- 5,234 transmission line miles
- 54 generation units



Pinnacle West Financial Snapshot

$12 Billion Assets
December 31, 2008



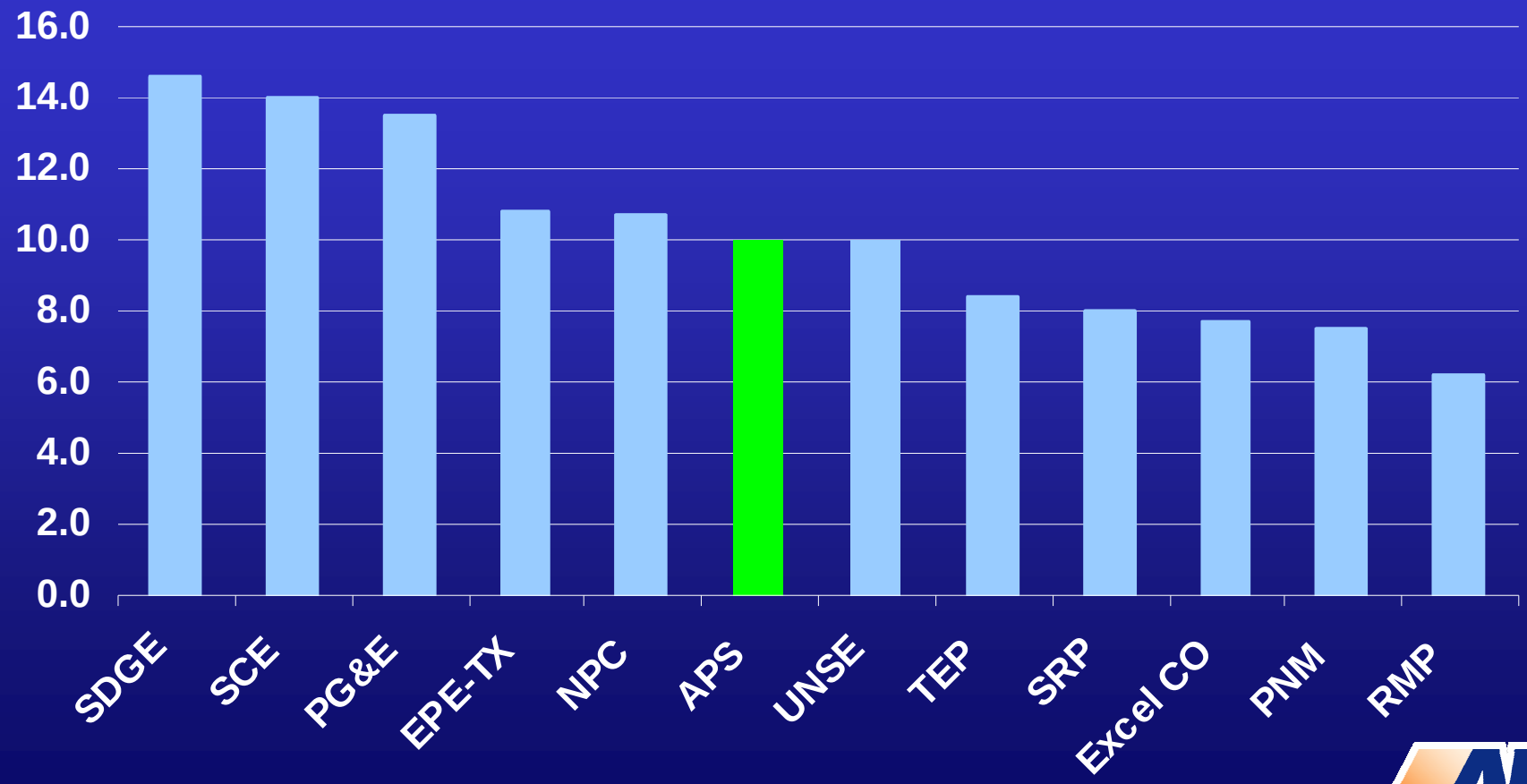
- ✓ Approximately $3 billion market cap
- ✓ 4th largest employer headquartered in Arizona
- ✓ S&P 500 Index member
- ✓ Approximately 75% of shareholders are institutional investors
- ✓ $11 billion utility assets
- ✓ $242 million net income
- ✓ $2.10 per share annual dividend

Stock Price Comparison
December 31, 2007 – March 27, 2009

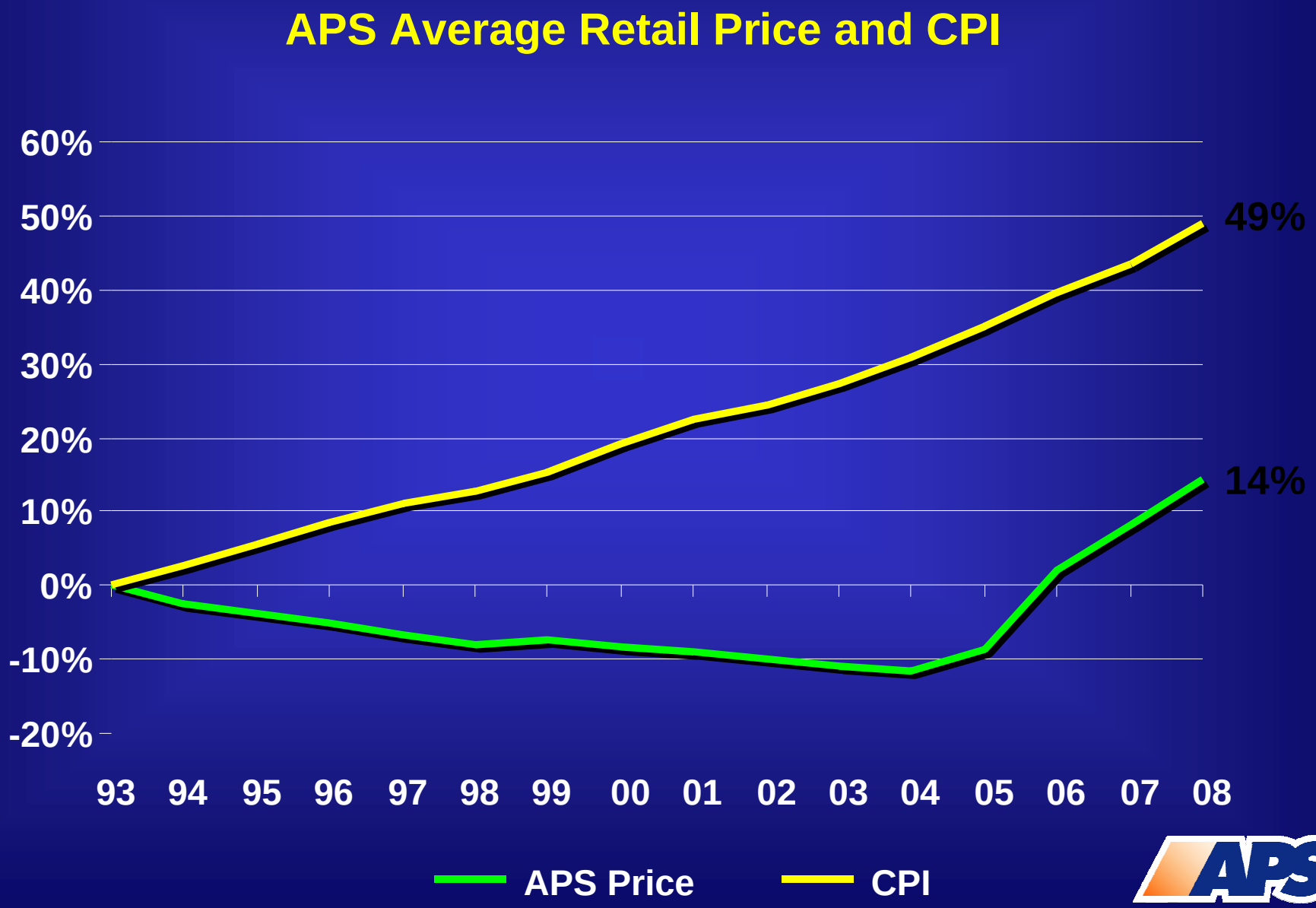
APS Prices Compared to Other Utilities

June 2008 Average Electric Prices (¢/kWh)

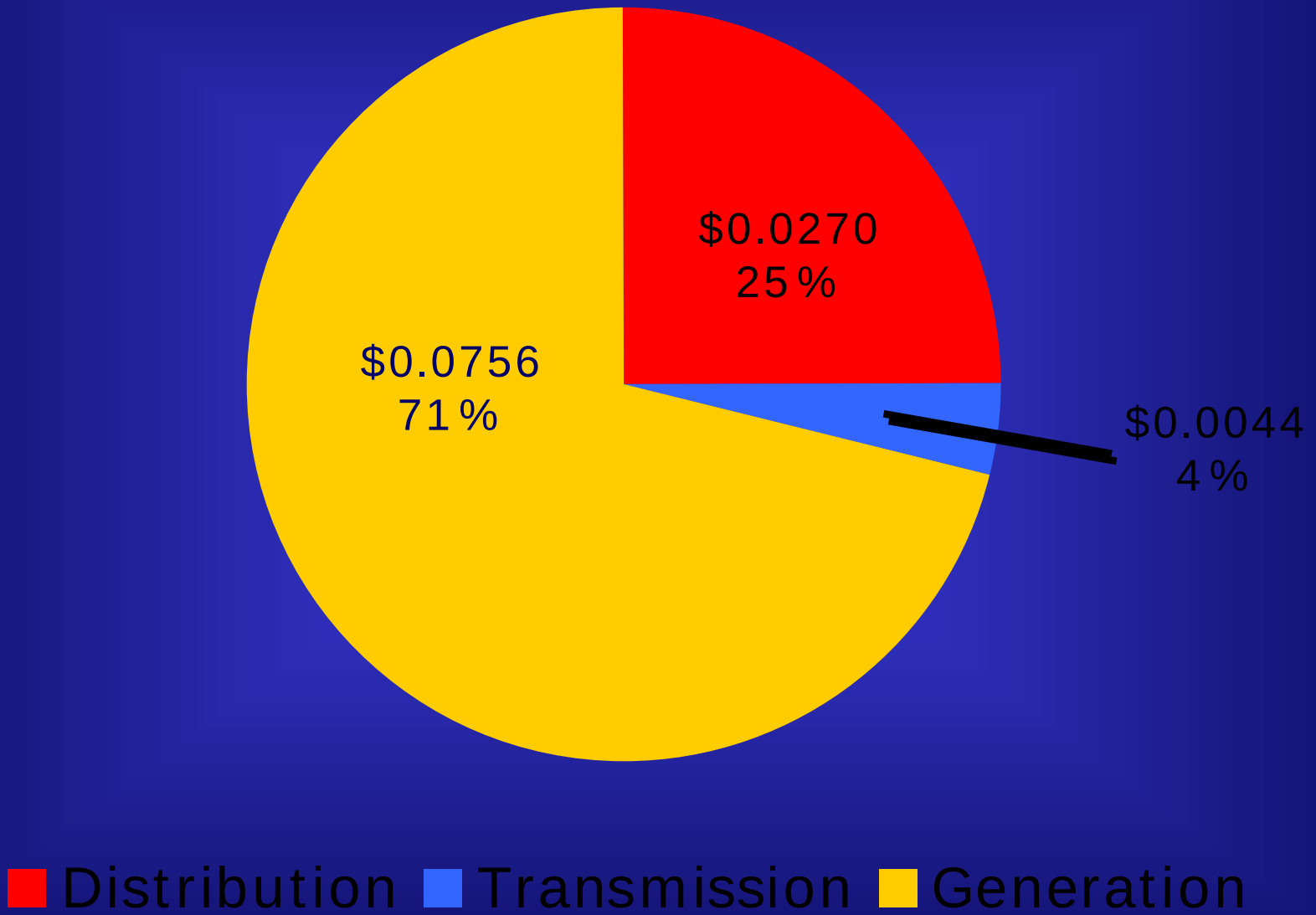
Selected Western Electric Utilities



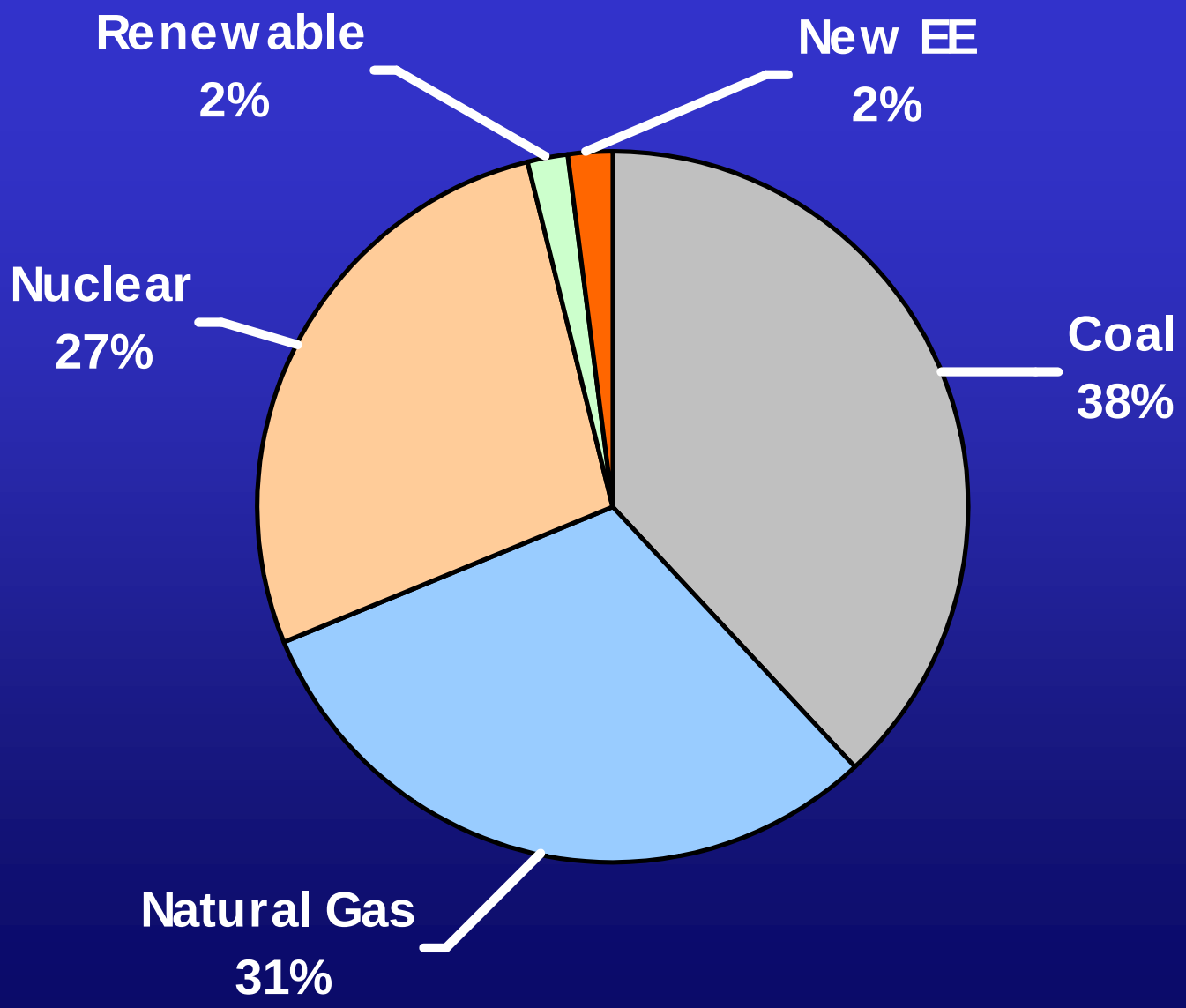
Compared to All Other Prices



APS Cost Components

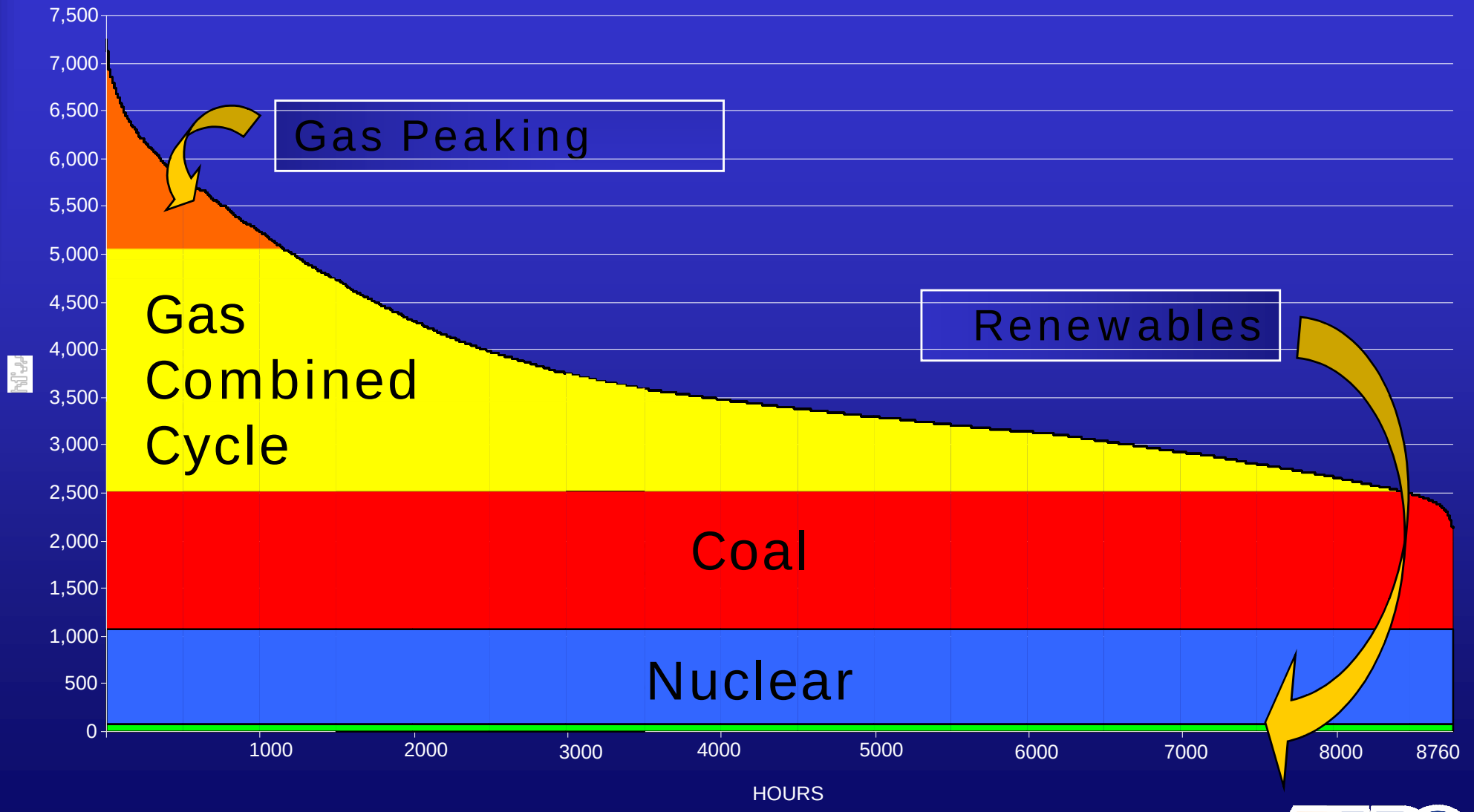


2009 Projected Energy Mix



Load Duration Curve

The “guts” of utility supply

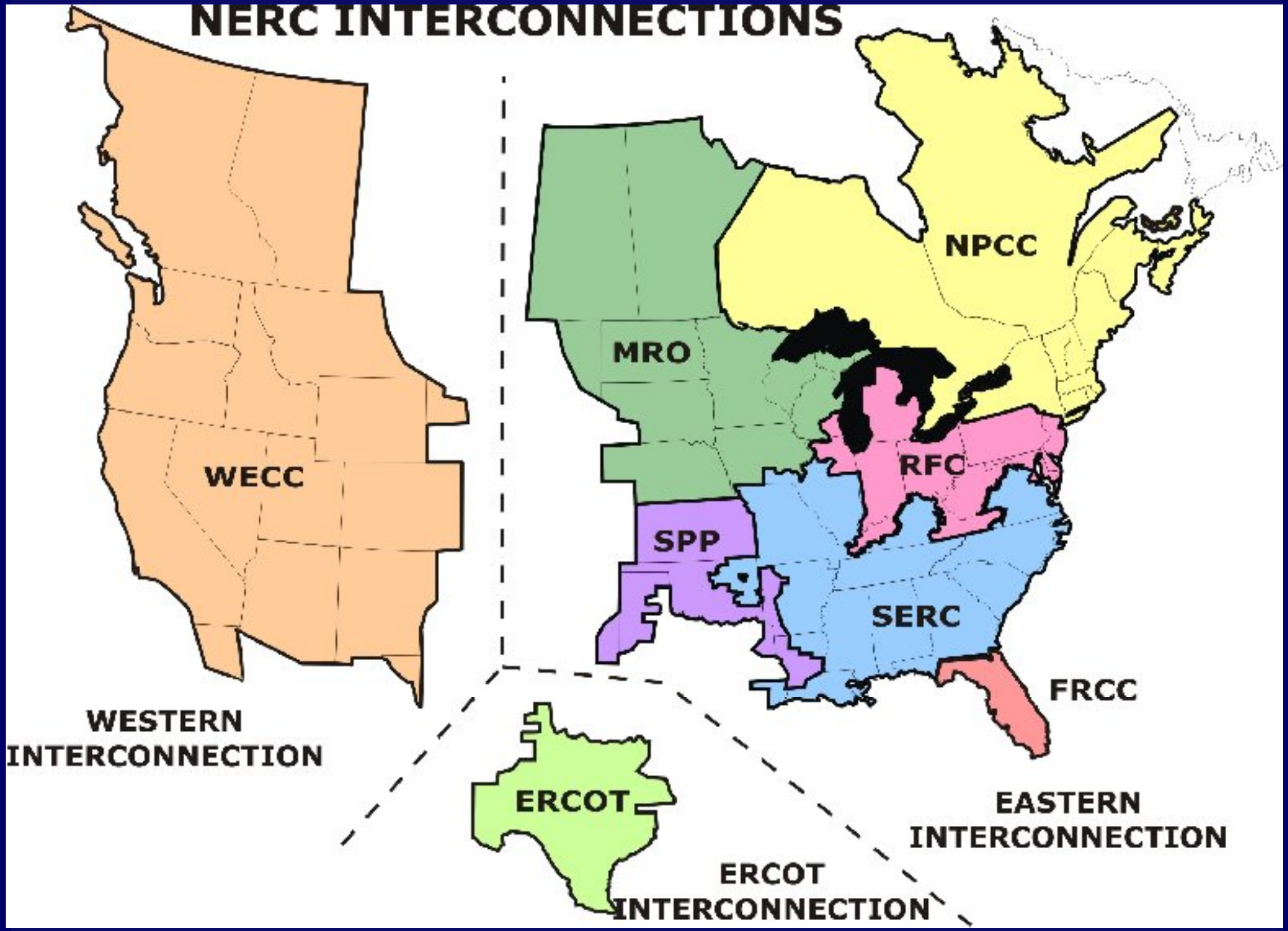


APS Customer Initiatives

- Renewable energy development
- Energy efficiency programs
- “Smart Grid” development
- Pricing options
- Customer “experience” enhancements

Western Interconnection System

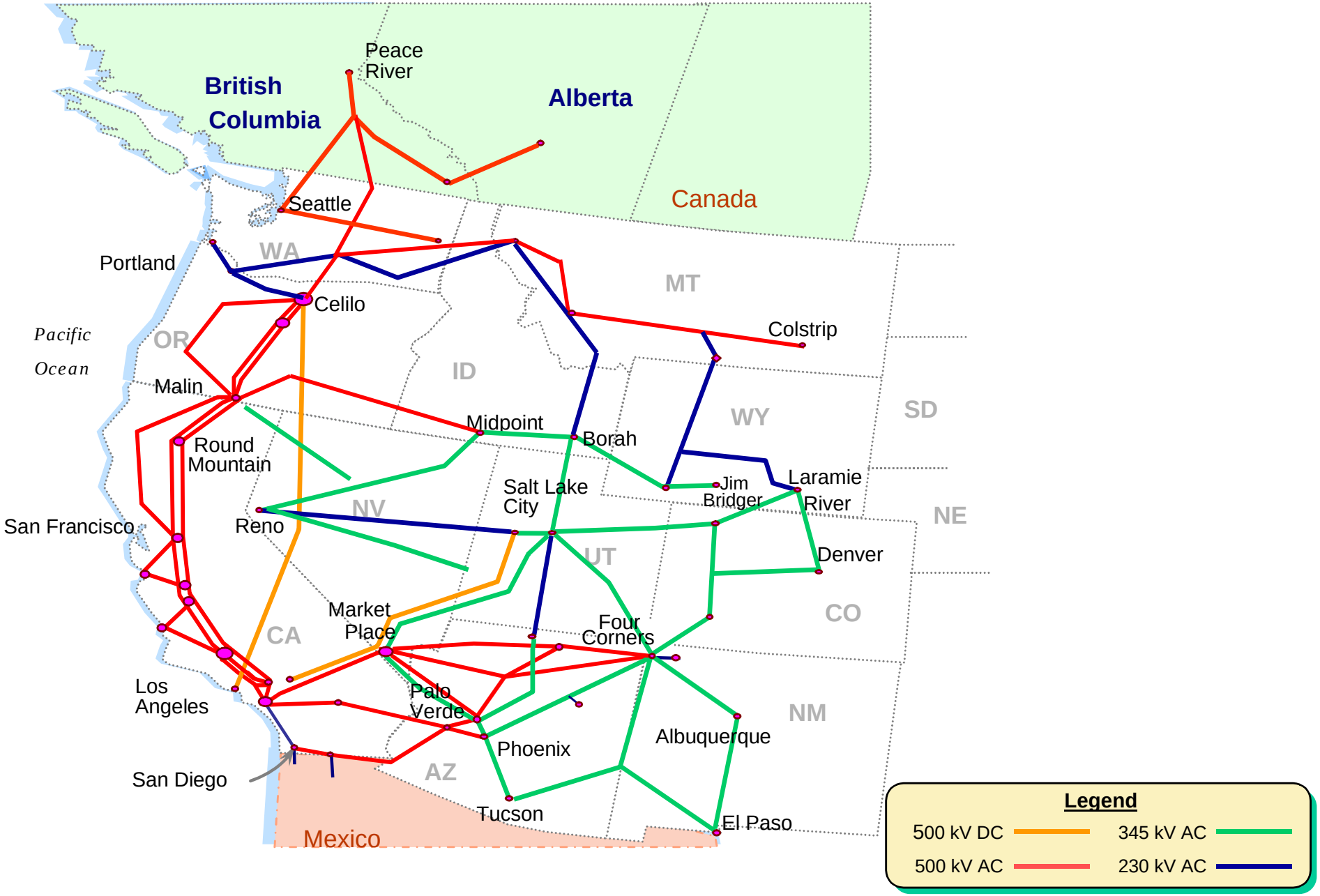
- US Electric Grid
- NERC and Regional Reliability Organizations
- Three US Interconnections
- WECC
- Major Western Interconnection Transmission
- Planning and Operational Issues
- DOE Congestion Study


NERC INTERCONNECTIONS
NPCC
MRO
WECC
RFC
SPP
SERC
FRCC
ERCOT
WESTERN
INTERCONNECTION
EASTERN
INTERCONNECTION
ERCOT
INTERCONNECTION

WECC

- Historical Reliability Coordination Organization for Western US, Canada, Mexico
- Ensure Reliable Operation and Planning Coordination
- Provide Reliability Coordination Centers
- Delegated Compliance Monitoring from NERC
- Issues:
  - Transmission Planning
  - Delegation model
  - Regional deference
  - Tensions between CAISO, BPA, rest of Interconnection

Western Transmission Grid



Planning and Operating Issues

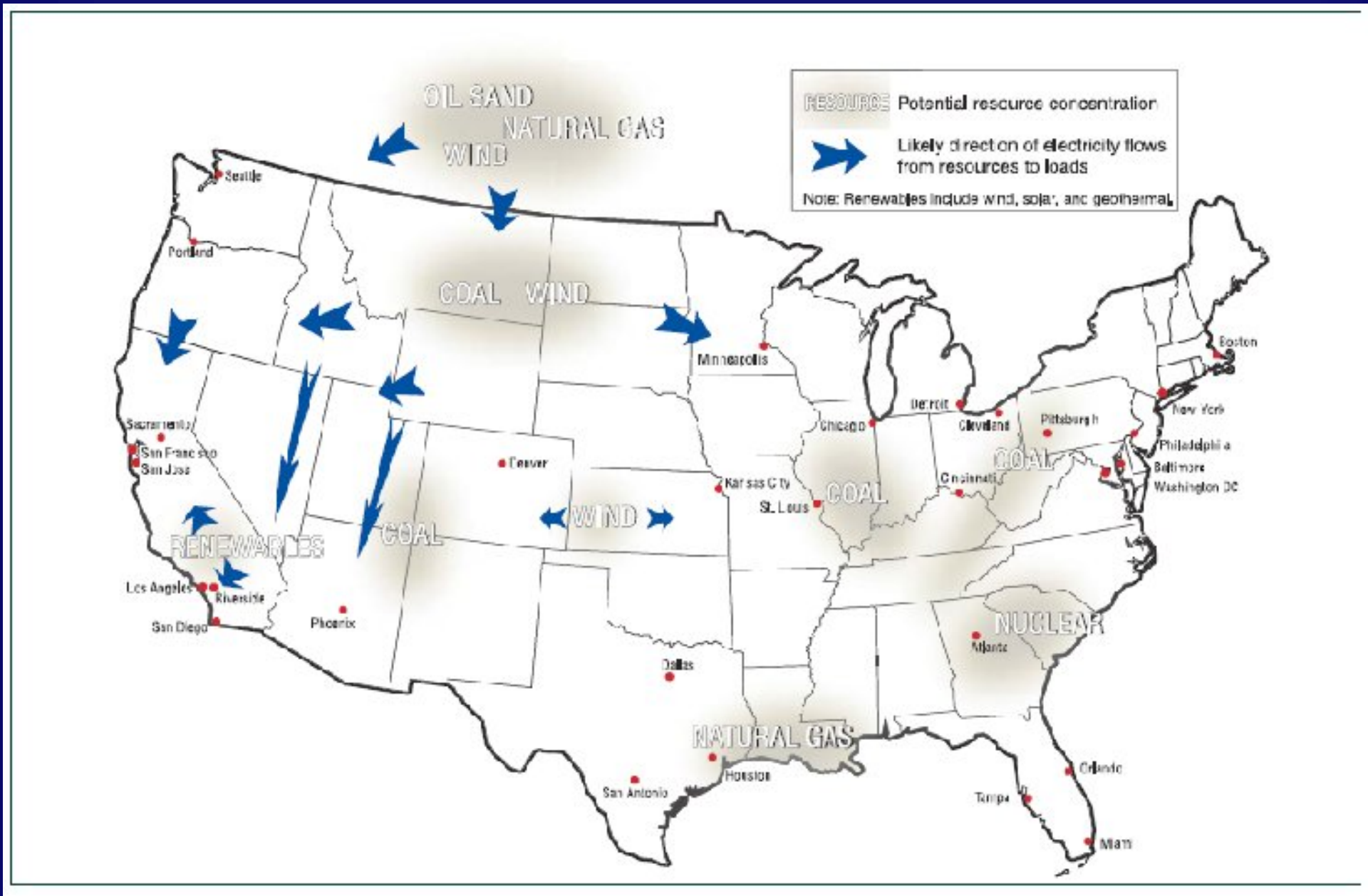
- Planning
  - Sub-Regional vs Regional (WECC)
  - Who
    - Decides
    - Builds
    - Pays
- Operations
  - Relay misoperations
  - Right of way maintenance difficulties

DOE Congestion Study

Critical Congestion and Areas of Concern in the Western Interconnection

Source:
Figures ES-3 & 5-2
U.S. Department of Energy
National Electric Transmission Congestion Study
2006

Conditional Constraint Areas



Source: Figures ES-4 & 5-5, U.S. Department of Energy, National Electric Transmission Congestion Study, 2006

APS Transmission System

State Area Transmission

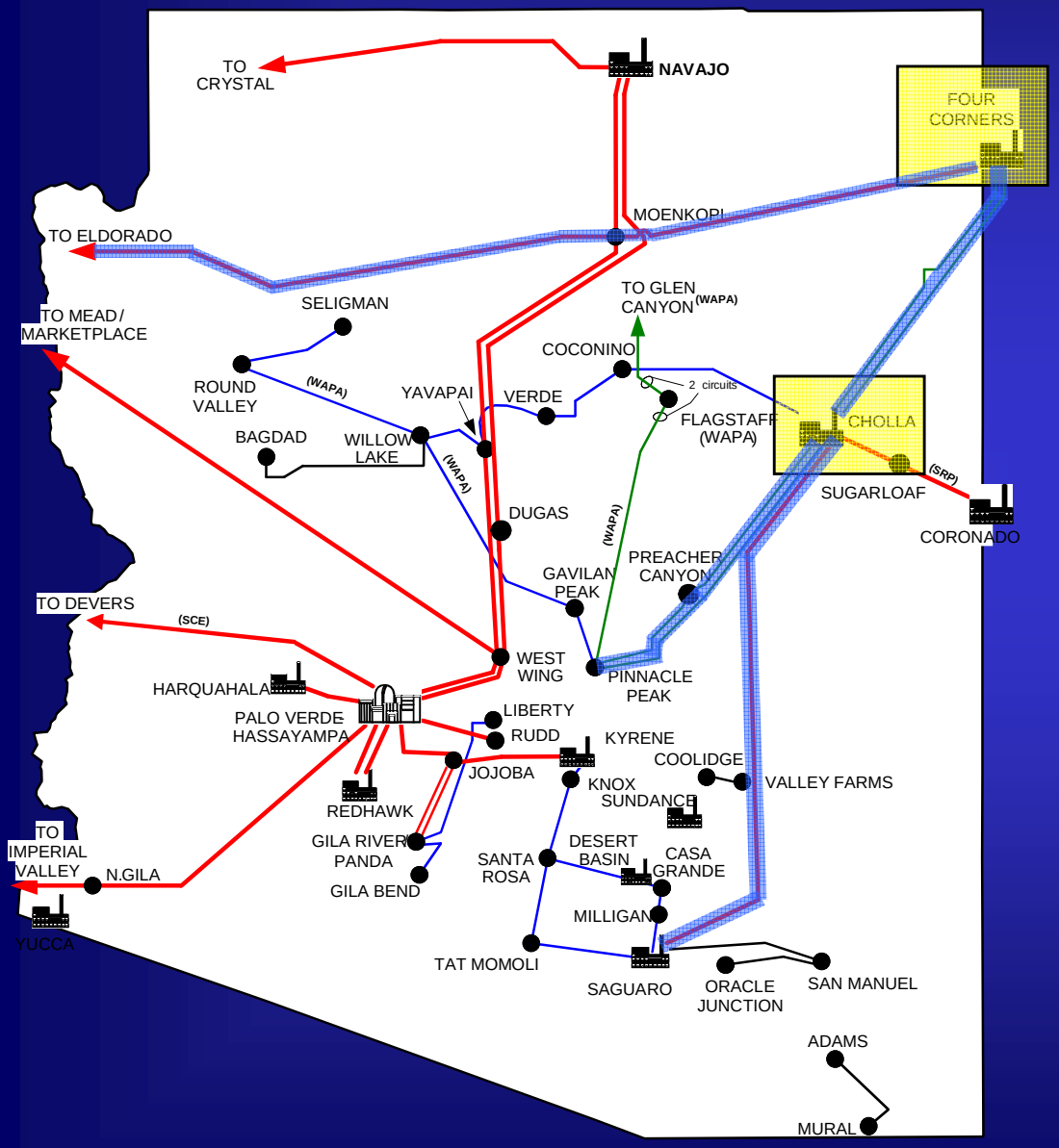
Red = 500 kV

Green = 345 kV

Blue = 230 kV

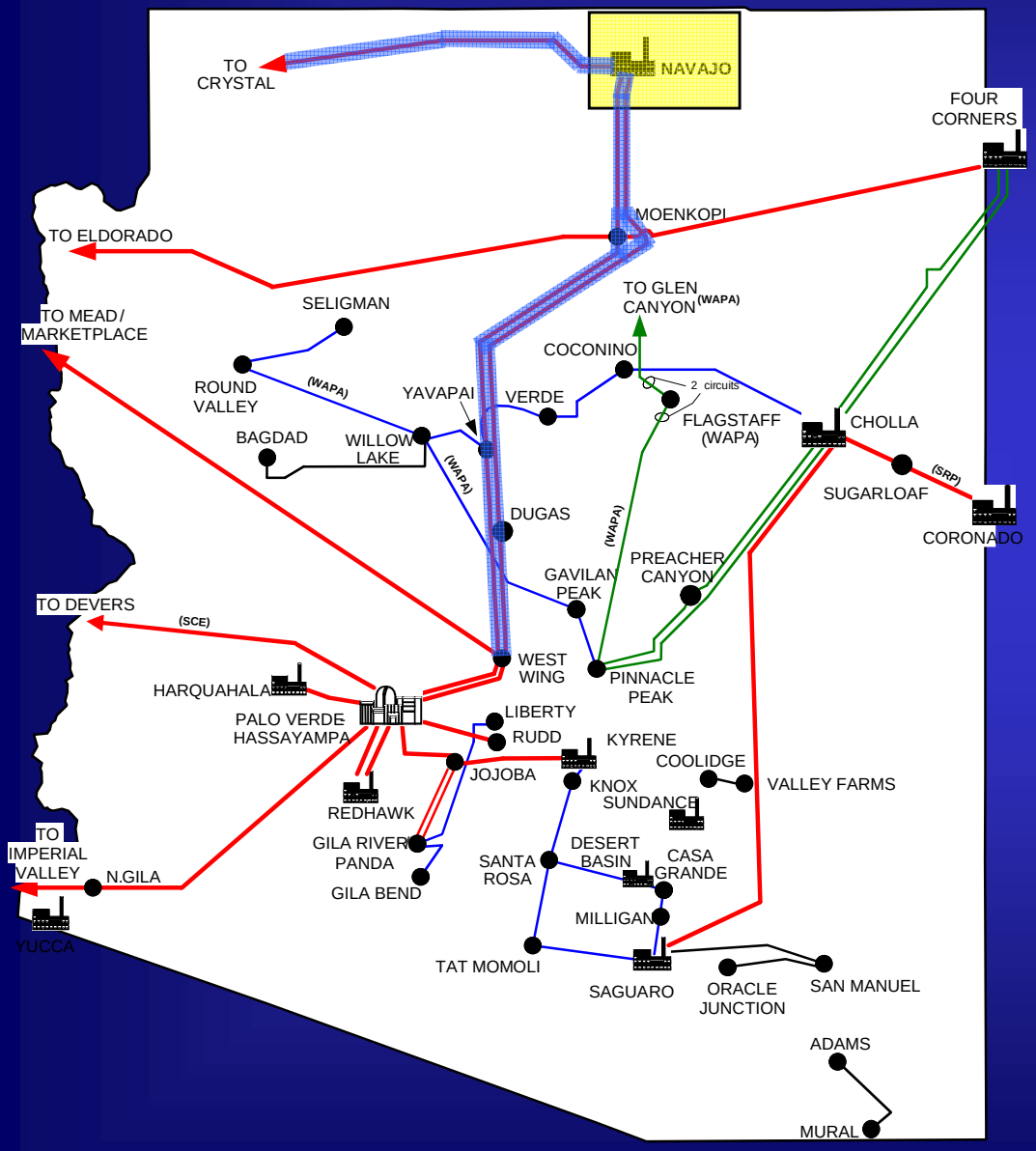
Black = 115 kV

Four Corners/Cholla System Transmission



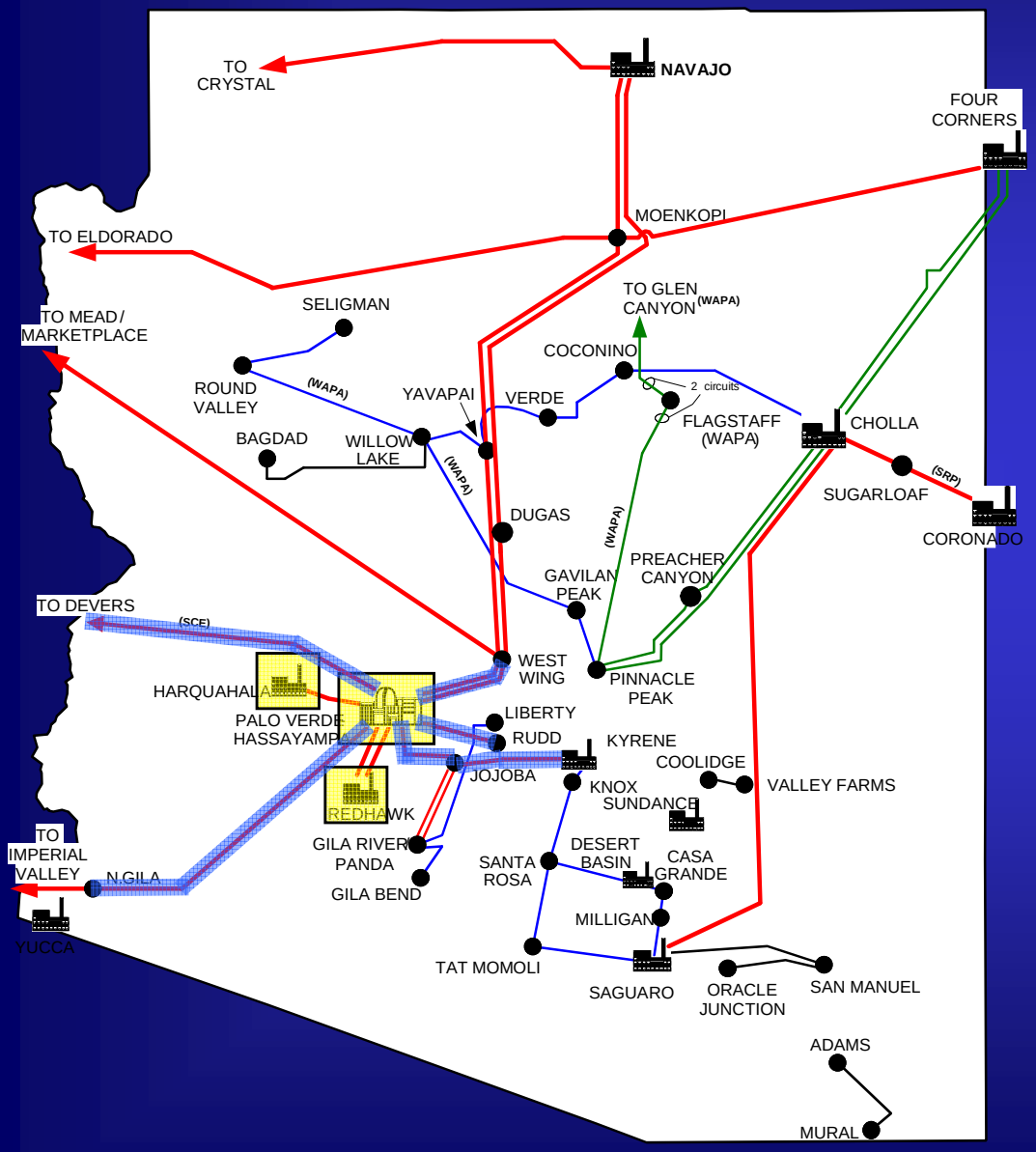
- Four Corners and Cholla Power Plants
- Four Corners-Moenkopi-Eldorado 500kV line
- Four Corners-Cholla 345kV lines
- Cholla-Pinnacle Peak 345kV lines
- Cholla-Saguaro 500kV line

Navajo System Transmission



- Navajo Power Plant
- Navajo-Crystal 500kV line
- Navajo-Westwing 500kV lines

Palo Verde Hub Transmission



- Palo Verde Nuclear Plant and Hassayampa Gas Power Plants
- Palo Verde West
  - PV-Devers 500kV line
  - Hassayampa-North Gila 500kV line
- Palo Verde East
  - PV-Westwing 500kV lines
  - PV-Rudd 500kV line
  - Hassayampa-Jojoba-Kyrene 500kV line

Mead-Phoenix Transmission

- Mead-Phoenix 500kV line

APS Coal Fired Plants

2008 Data

Four Corners 2,060 MW
597 employees

28% APS CAPACITY

47% MWH

33% FUEL $

Cholla 1,021 MW
290 Employees

Navajo 2,250 MW
545 Employees

APS Gas Fired Plants

2008 Data

53% APS CAPACITY

23% MWH

61% FUEL $

Redhawk 984 MW
48 Employees

West Phoenix 988 MW
56 Employees

Ocotillo 330 MW

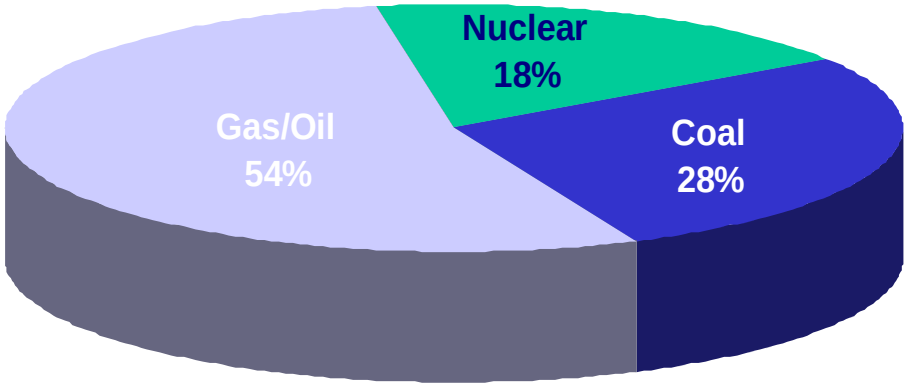
Saguaro 399 MW
Douglas 16 MW
20 Employees

Yucca 340 MW
25 Employees

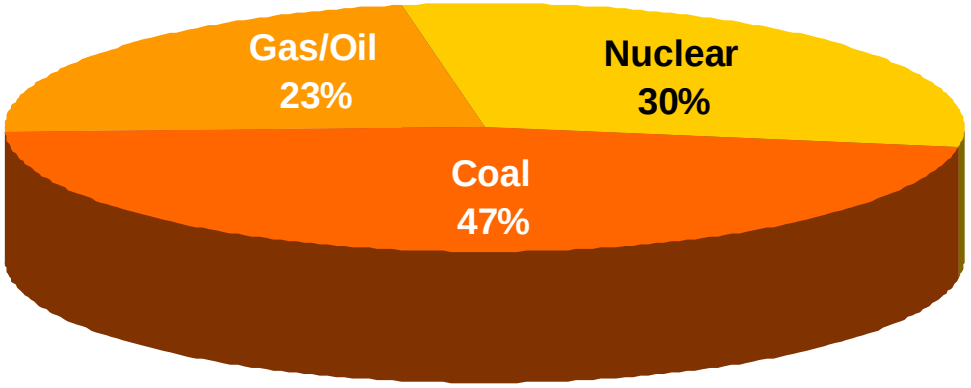
Sundance 420 MW
11 Employees

Fossil Generation Plays a Key Role

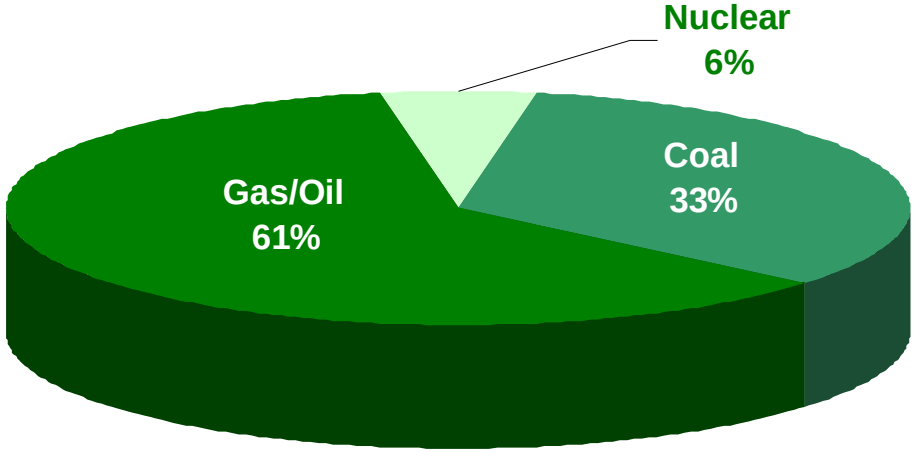
APS OWNED CAPACITY



APS GENERATION



APS FUEL EXPENSE



2008 ACTUALS - APS OWNED GENERATION			
FUEL	CAPACITY	GWH	FUEL EXP
Nuclear	1,146	8,512	$ 41,591
Coal	1,741	13,166	252,651
Gas/Oil	3,380	6,346	461,204
Renewable	6	10	0
Total	6,273	28,034	$ 755,446

7.2 Million Tons of Coal

47.6 BCF Natural Gas

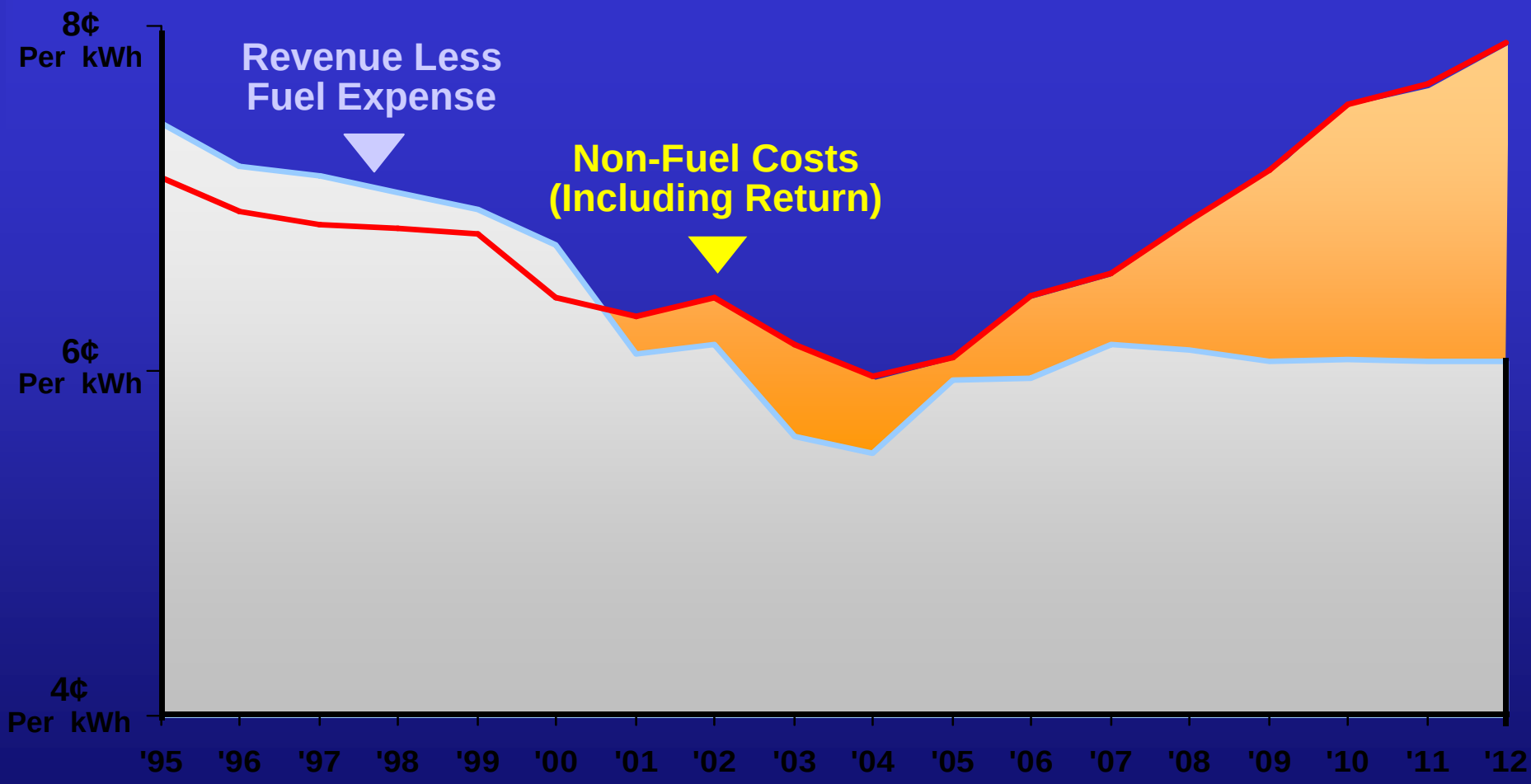
Major Challenges Confronting APS and the Utility Industry

- Infrastructure investment
- Capital Access
- Financial Health
- Technology
- Economic Turmoil
- Aging Workforce
- Regulatory Uncertainty
- Climate Change
- Upward pressure on pricing

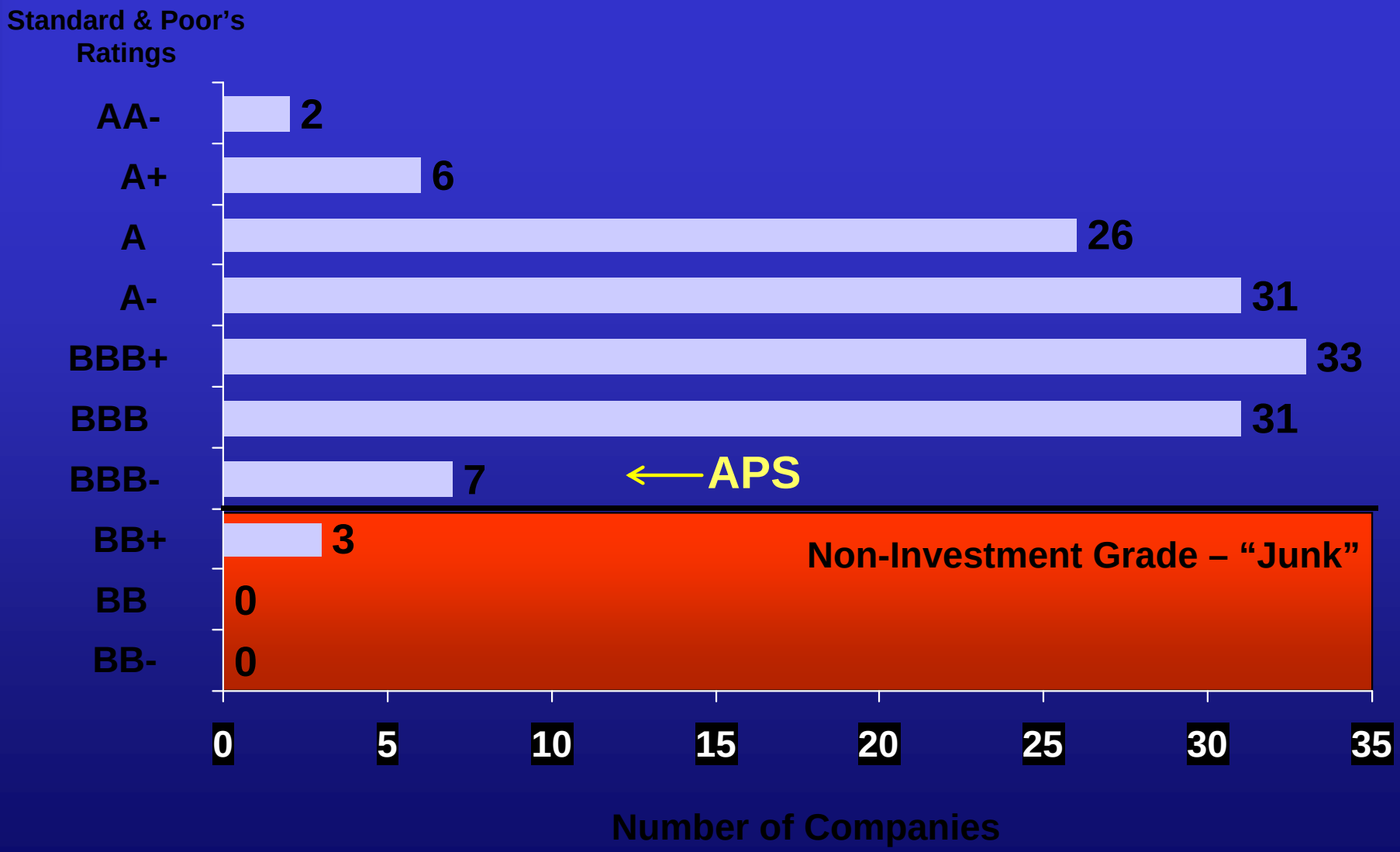
APS – Unique Challenges

- Cost Recovery
- Desert Climate
  - Heavy summer peak loading
  - Low load factor
  - Heavy inductive air conditioner load
- Expansive Service Territory
- Transmission Line Permitting
- Increased System Utilization
- Monsoon Storm Season

APS Rates Have Become Noncompensatory

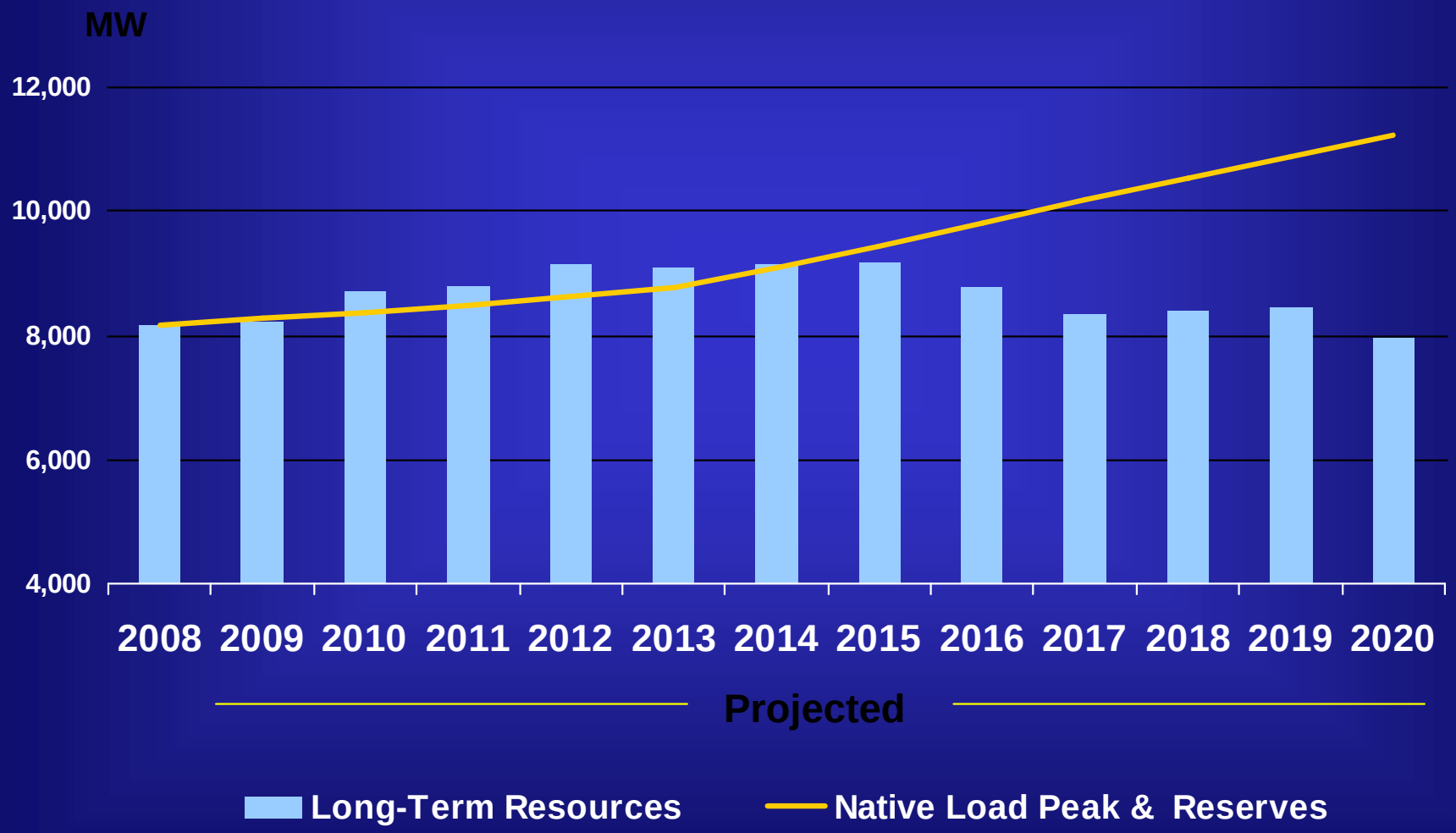


Credit Ratings Distribution
Investor-Owned Electric Utilities



Meeting Challenges of Peak Load Growth

2008 - 2020 Average Annual Load Growth 2.7%



Transmission Line Permitting

http://www.aps.com/general_info/Siting/siting_38.html

Maintenance

- Predictive Maintenance
- Preventative Maintenance
- Line inspections
- Right of Way Maintenance
  - LIDAR
- Remote Equipment Monitoring


JUL 5 2004

EEI Award

Emergency Equipment

- Mobile 69/12kV Transformers
- Emergency Towers - two Lindsey towers
- Generator – 1,500 KW Mobile Unit
- Mobile Command Center

Mobile Transformer

Lindsey Towers

Mobile Generator

Mobile Command Center

Storm Response

Questions.....