

**Before the  
Arizona Corporation Commission  
Arizona Public Service Company  
2011 Summer Readiness**

April 11, 2011



# Presenters

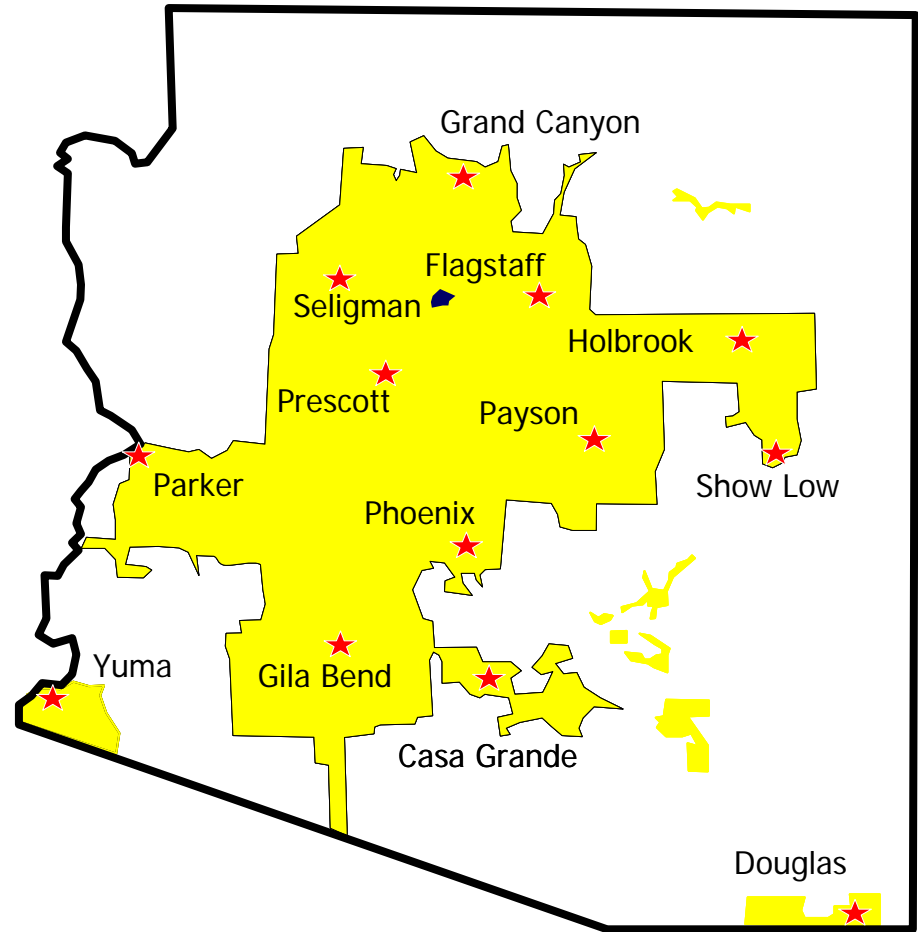
- **Steve Norris**  
Director, Transmission Operations
- **Tom Carlson**  
Director, Fuels

# Agenda

- Loads and Resources
- Fuel and Purchase Power
- Planned Maintenance Activities
- Emergency Preparedness & Contingency Planning
- Conclusions

# APS Service Statistics

- 11 counties
- 34,645 sq. mi. CC&N area
- 1.1 million customers
- 417 substations
- 28,515 distribution line miles
- 5,438 transmission line miles
- 54 generation units



# APS Existing Generation

<u>Fuel Source</u>	<u>Capacity - MW</u>
Nuclear	1,146
Coal	1,753
Gas Combined Cycle	1,871
Gas/Oil CT, Steam	1,518
Solar	6
Total	<hr/> 6,294

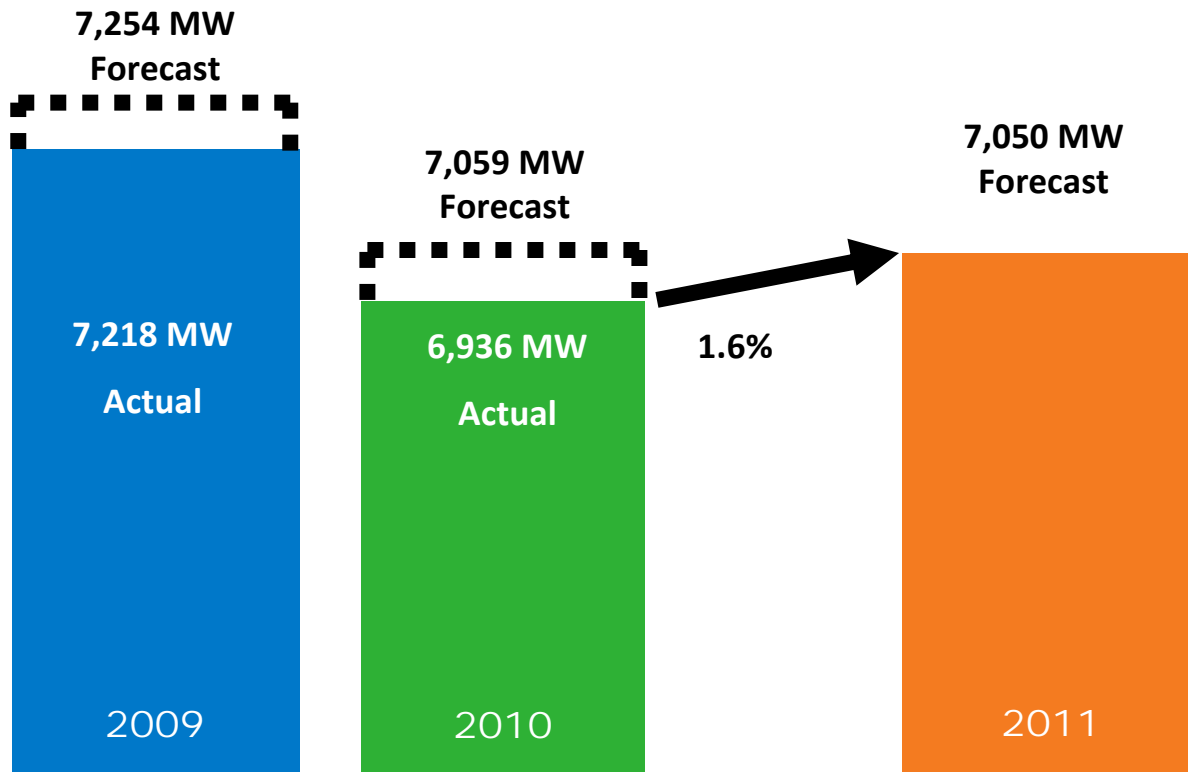
# Renewable Resources

<u>Resource</u>	<u>Peak Contribution</u>	<u>Capacity</u>
Aragonne Mesa Wind	16.1	90.0
High Lonesome Wind	11.6	97.0
Salton Sea CE Turbo	10.0	10.0
SWMP Biomass	24.5	24.5
Glendale Landfill Biogas	2.6	2.8
Solar Generation	<u>2.9</u>	<u>6.0</u>
Total (MW)	67.7	230.3

# Generation Resources

	<u>Capacity (MW)</u>
Existing Generation	6,294
Long-term Contracts	
PacifiCorp Exchange	480
SRP - Firm	36
Reliability Purchases	1,594
Demand Response Contract	59
Market Contracts for ED3	104
Renewable Contracts	68
Subtotal	2,341
	<hr/>
Total Resources	8,635

# APS System Peak Loads

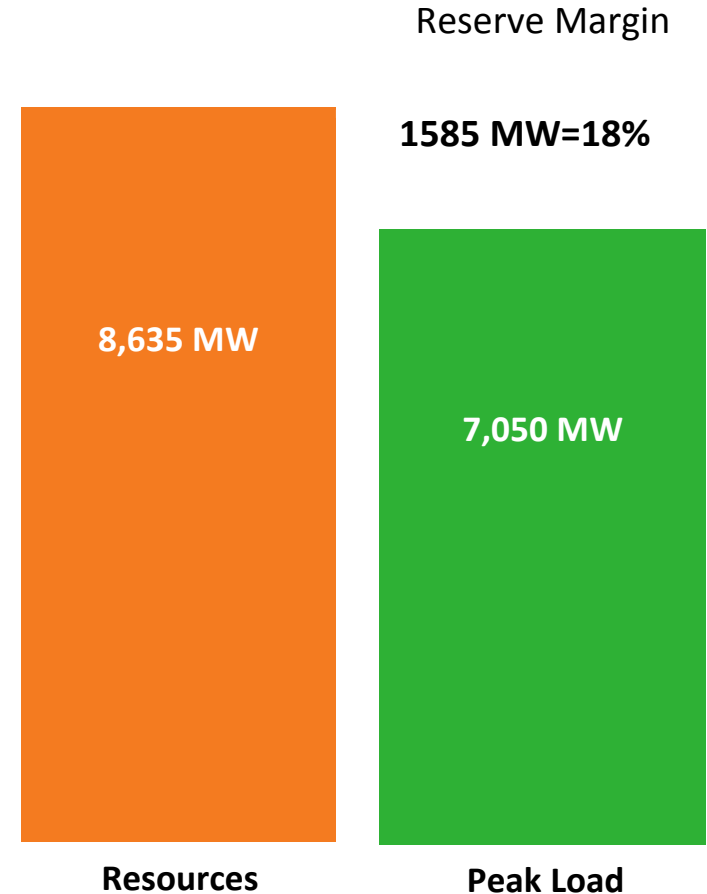




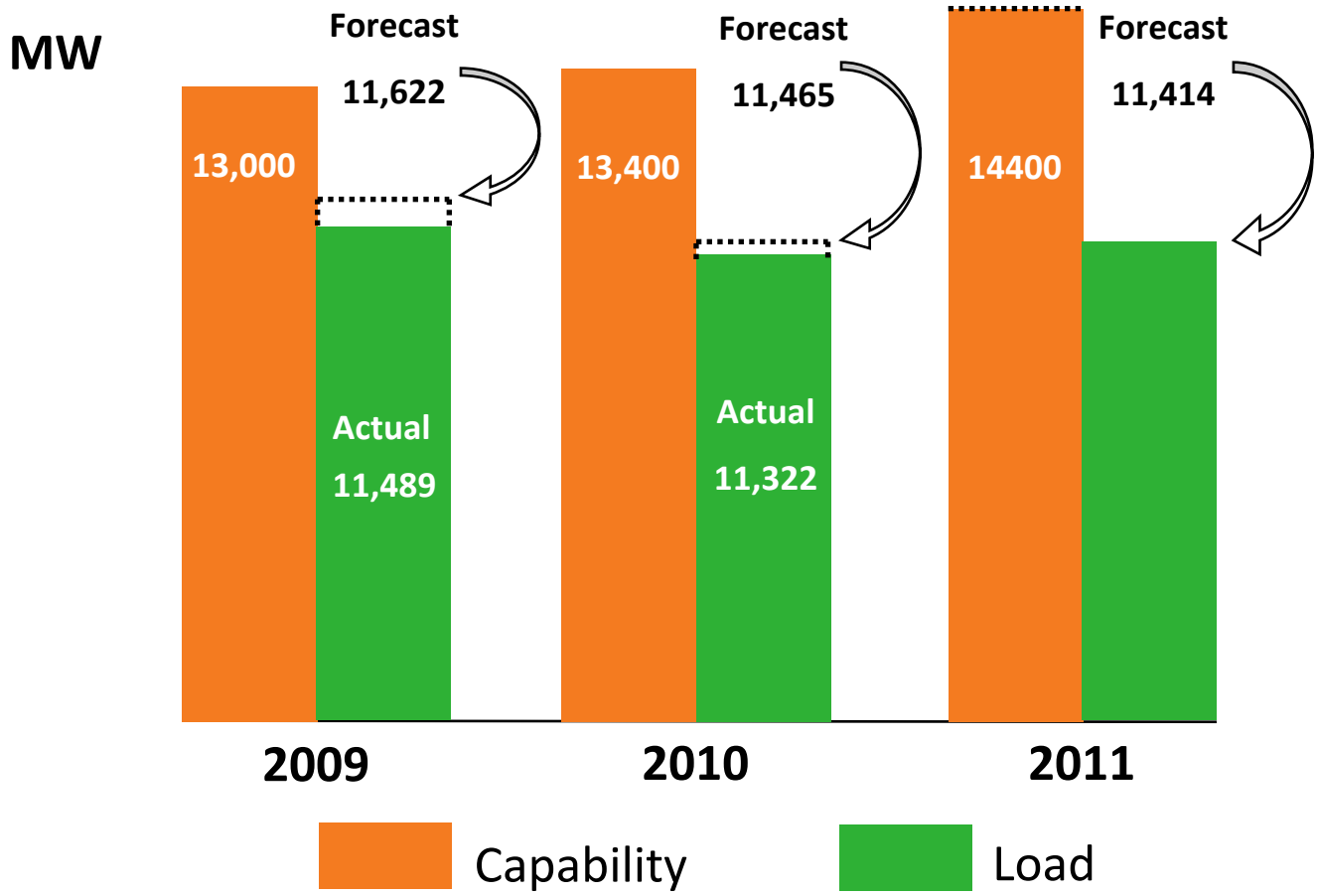
# 2011 Peak Generation Resources and Load

Planned Reserve Margin to manage uncertainties:

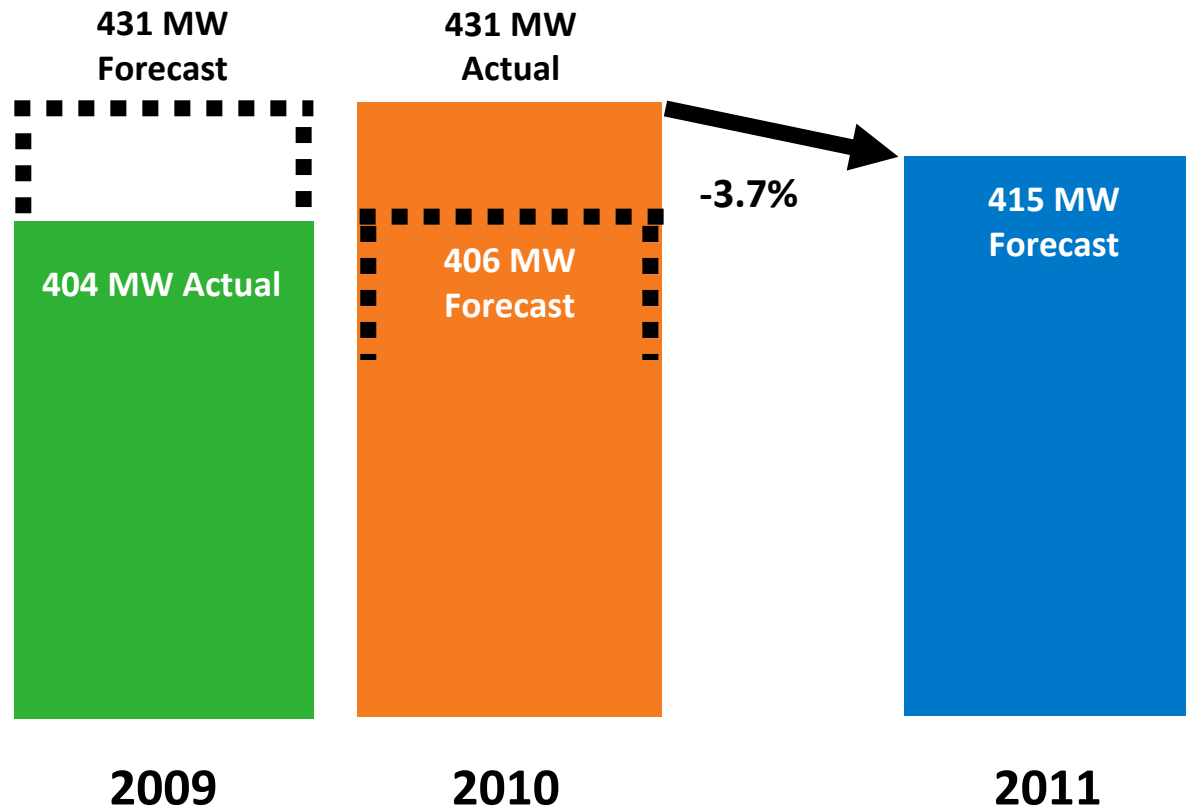
1. Load forecast uncertainties (weather, economy)
2. Multiple generator outages
3. Transmission outages



# APS/SRP Maximum Load Serving Capability, Phoenix Valley

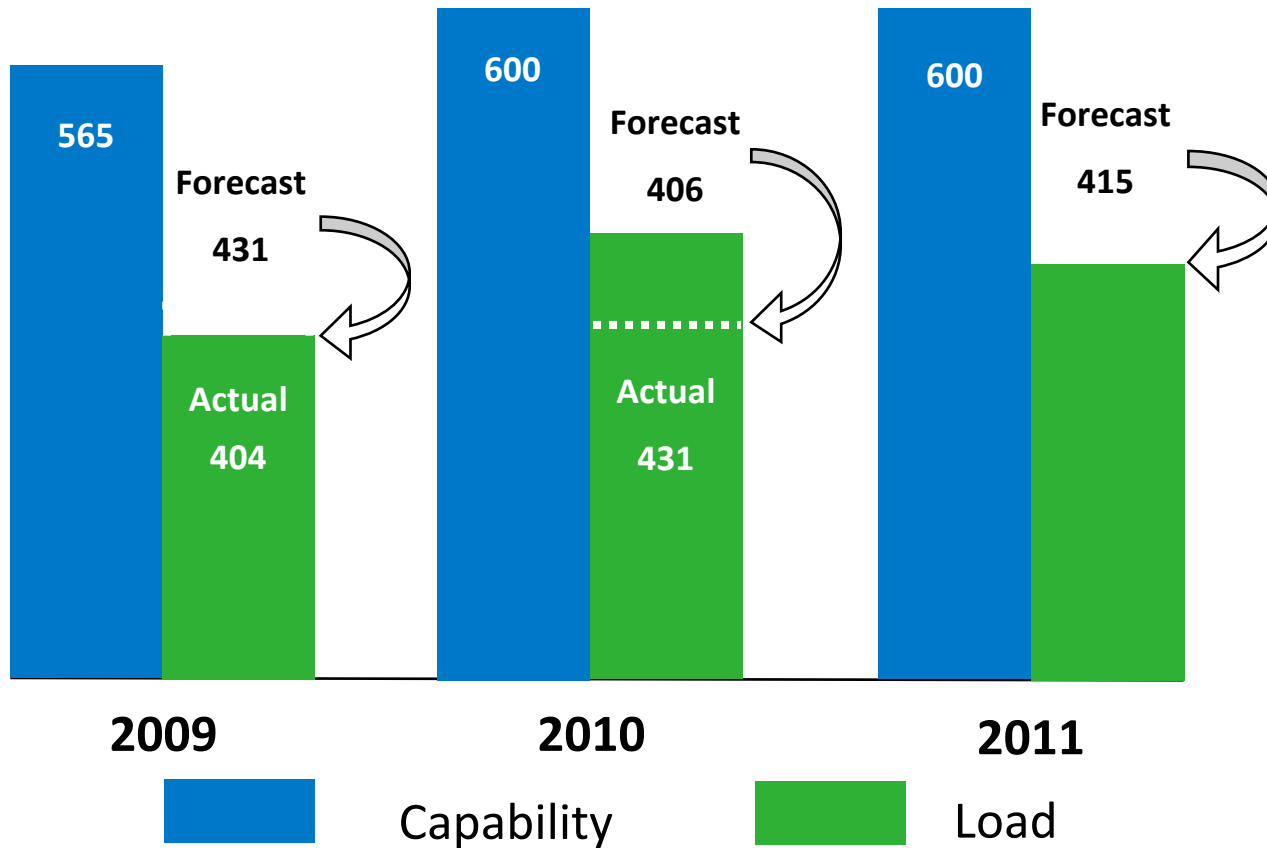


# Yuma Area Peak Loads



# Yuma Area Maximum Load Serving Capability

MW

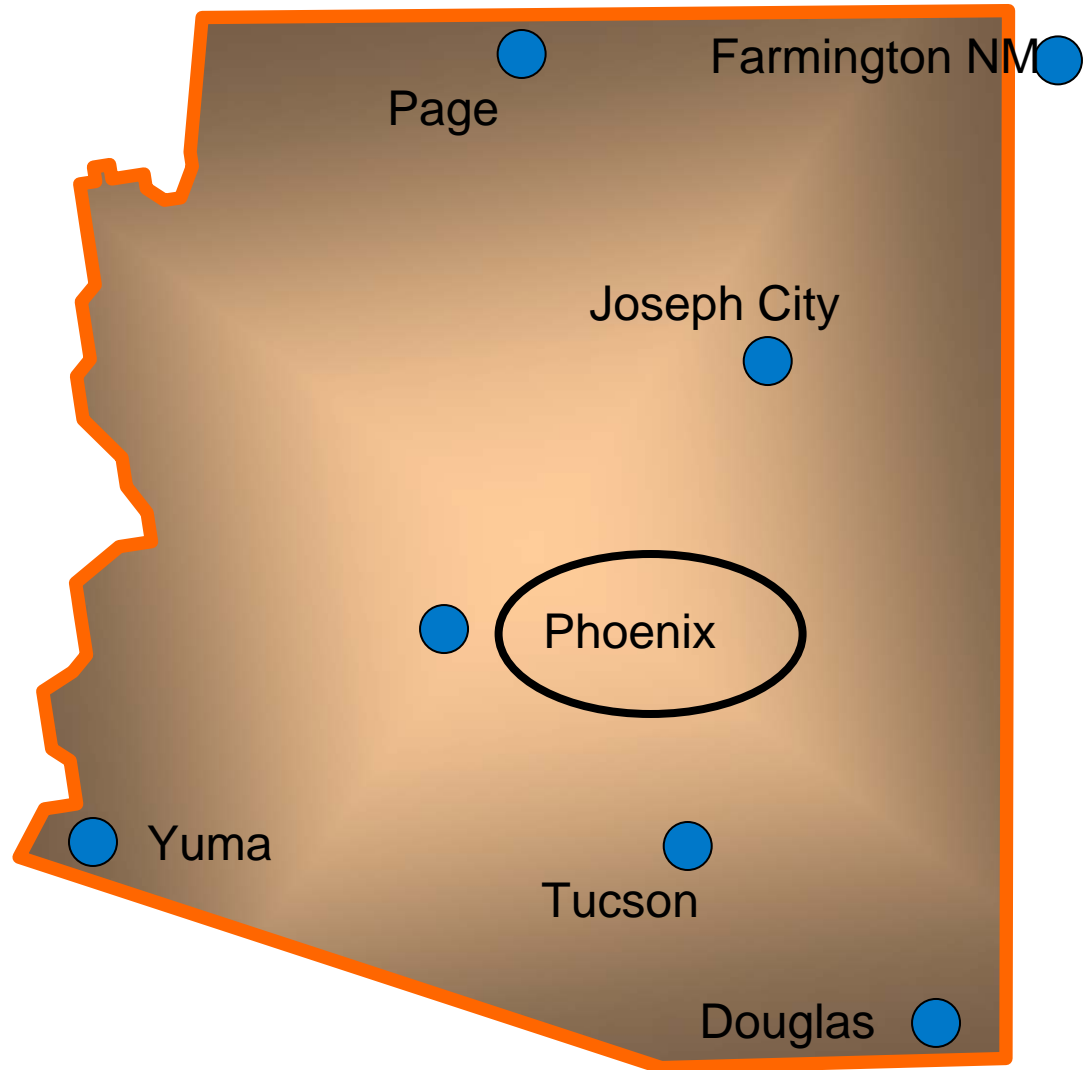


# APS Fuels Procurement

- **Tom Carlson**  
Director, Fuels

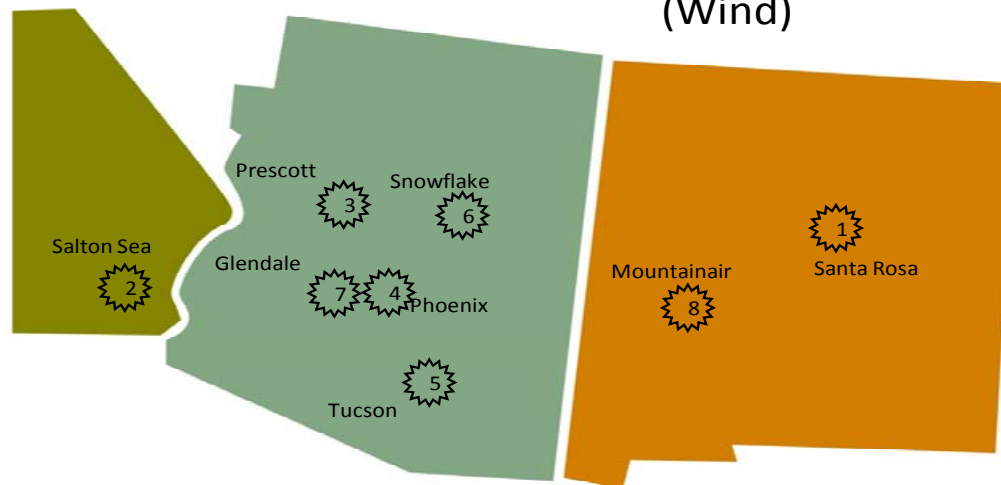
# APS Generation

- Base Load, Nuclear
  - Palo Verde
- Base Load, Coal
  - Four Corners
  - Cholla
  - Navajo
- Intermediate and Peak Load, Gas, Oil back-up
  - Phoenix Area
    - West Phoenix
    - Sundance
    - Redhawk
    - Ocotillo
  - Saguaro
  - Yucca
  - Douglas

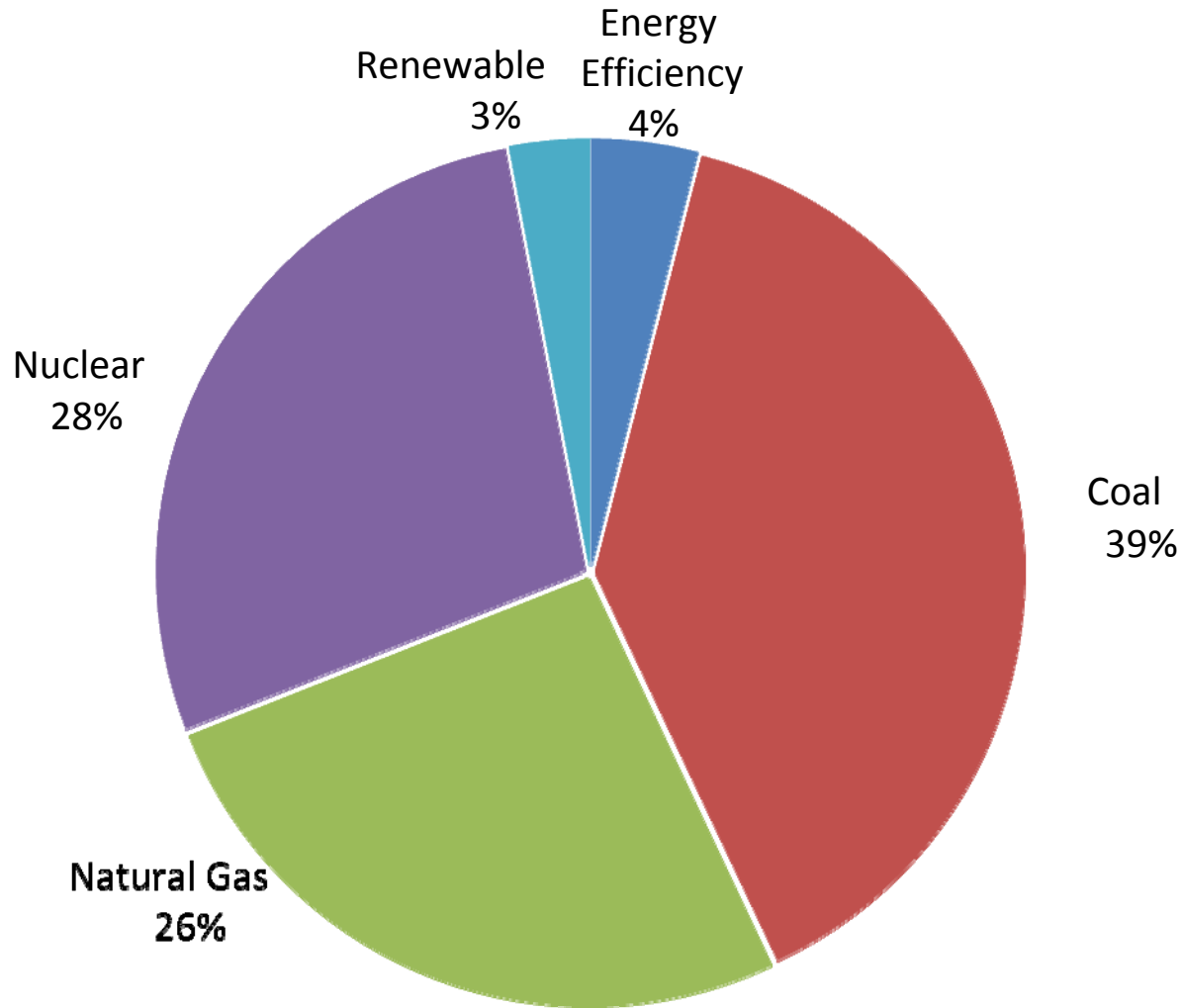


# Renewable Resources

1. Aragonne Mesa, 90 MW (Wind)
2. Salton Sea, 10 MW (Geothermal)
3. Prescott Airport, 2.9 MW (Solar)
4. STAR Center, 1.8 MW (Solar)
5. Saguaro, 1 MW (Solar)
6. Snowflake, 25 MW (Biomass)
7. Glendale LFG, 2.8 MW
8. High Lonesome, 100 MW (Wind)



# 2011 Projected Energy Mix





# Nuclear: Palo Verde

- Fuel sourced from multiple suppliers
- 100% of 2011 fuel inventory in place
- 100% of fuel requirements contracted through 2017
- Overall station capacity factor at 90.5% in 2010
- Unit 2 was world's top generator in 2010



# Coal Supply

## Four Corners Power Plant

- Mine mouth plant with BHP Navajo Mine
- Contract term currently runs through 2016
- 60-70 days of reserves



## Cholla Power Plant

- Fuel Source: El Segundo mine near Grants, NM
- Contract commitments in place through 2024
- 45-60 days of reserves

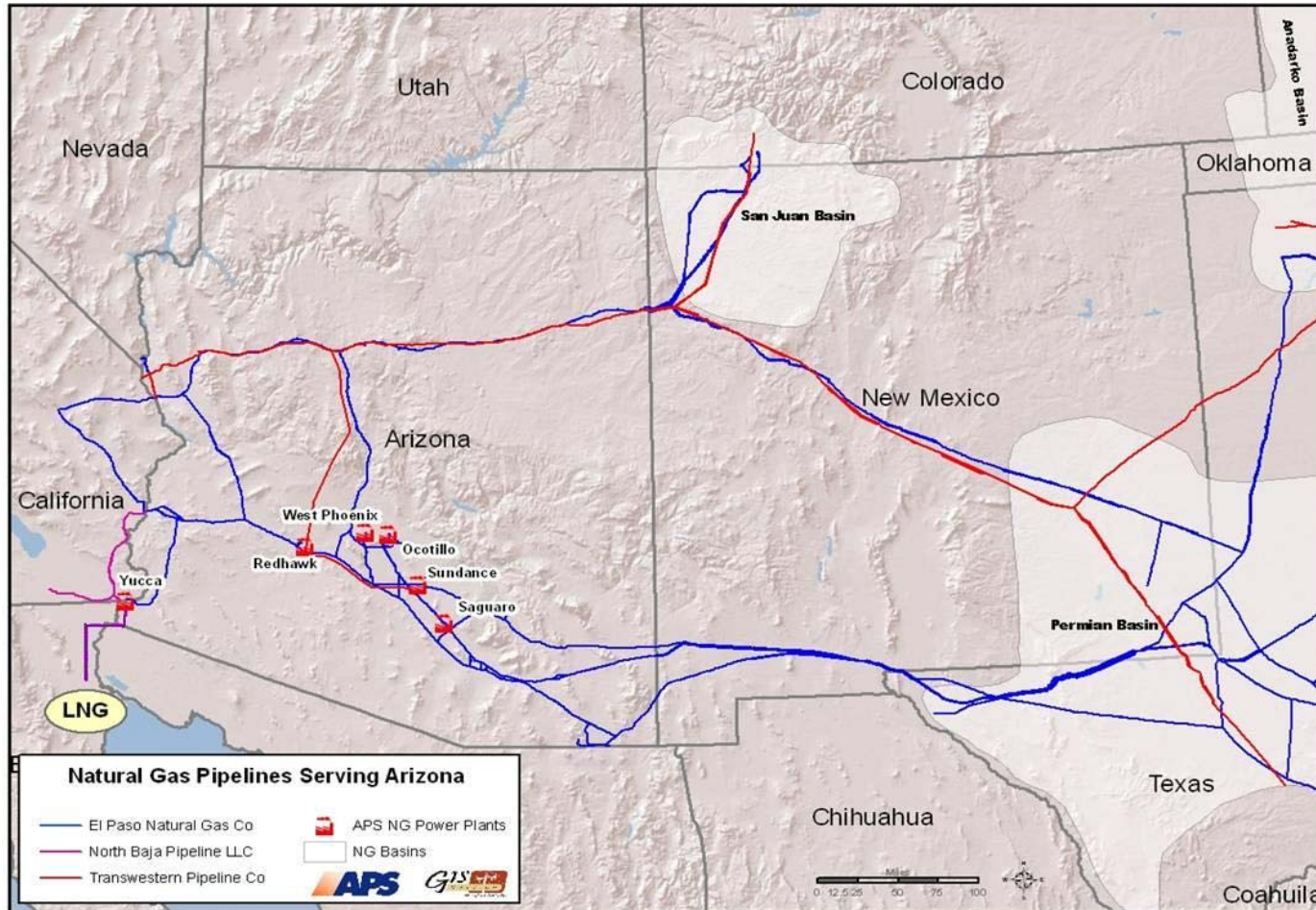


# Natural Gas Supply

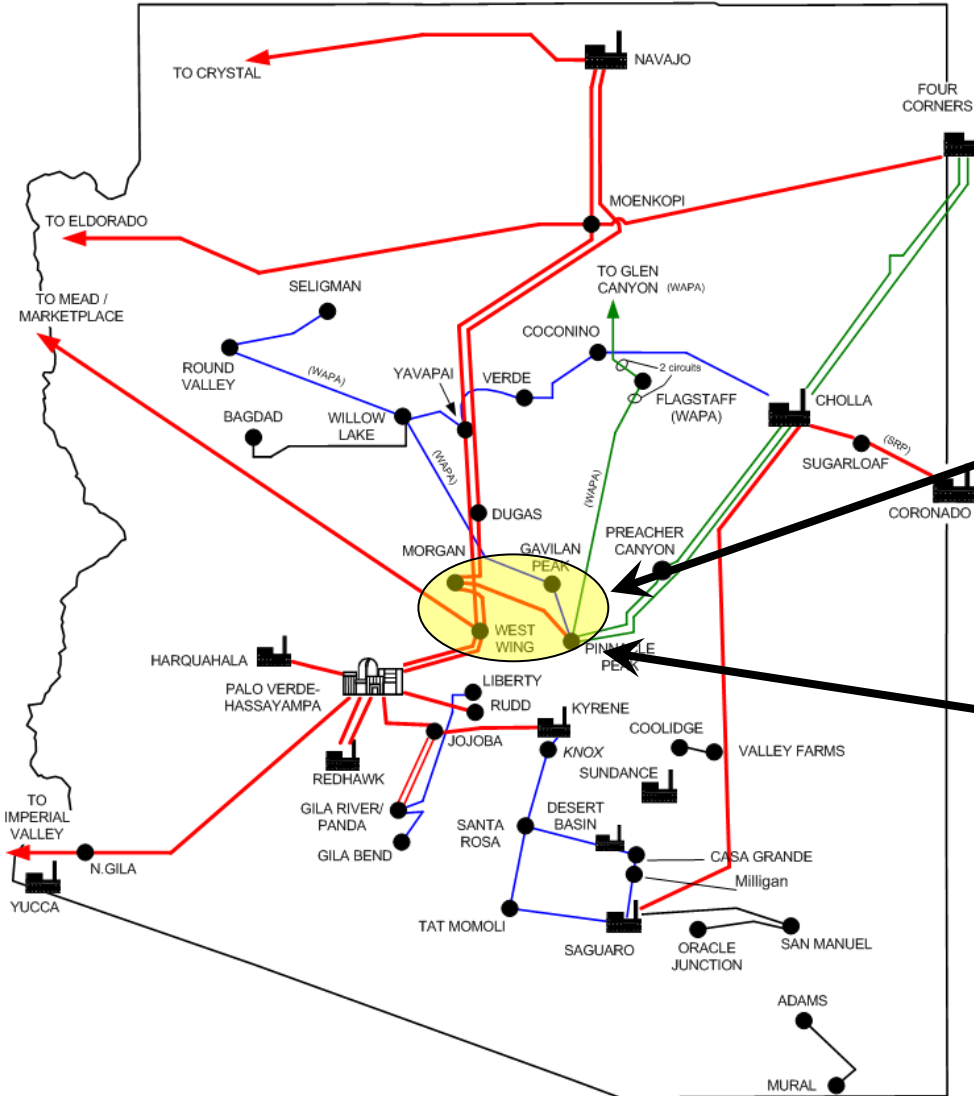
- APS has sufficient firm transport and supply under contract to meet peak system needs.
- El Paso Natural Gas supplies all APS natural gas plants.
- Transwestern Pipeline also supplies the APS Redhawk and Sundance power plants.
- North Baja Pipeline placed in service March 2010 - serves Yucca Units 5 & 6



# Natural Gas Pipelines Serving Arizona



# Transmission Additions 2011



Morgan-Pinnacle Peak 500/230kV double-circuit line

New Pinnacle Peak 500kV substation with new 500/230kV transformers

# Planned Reliability Activities:

- Transmission / Distribution Maintenance, Monitoring:
  - U-Type Bushing Replacement Program
  - Web-based Software to Assess Substation Equipment Health for Strategic Maintenance
  - TOAN analysis software
  - Annual line inspections
  - Switchyard Equipment Maintenance / Relay Testing
  - Predictive Maintenance Expanded Scope to Include Line Scans as well as Substation Scans

# Planned Reliability Activities

- Vegetation Management: Focus on safe, reliable power supply / reduction in wildfire risk
  - Wildfire planning
    - Annual Wildfire Academy, Prescott
    - Pre-wildfire Season Meetings with Five National Forests
    - On-Site Incident Command presence
  - Transmission corridor bulk clearing, 69 kV and above
  - Distribution line-clearing: trim and strategic removal
  - 2011 Fire Season above normal fire potential

# Emergency Planning, Government:

- Government Engagement:
  - State-wide Emergency Mock Drills
  - Incident Command Training
  - Regular Emergency planning updates with Emergency Response partners: State, County, Municipal levels
    - Agency familiarization – facility layout (Westwing, Pinnacle Peak)
    - Review of Curtailment Plan annual filing



# Emergency, Business Planning - APS

- Business Continuity Plans updated, exercised
- Incident Command Training
- Emergency Operations Training
- Curtailment Plan: Development, Filing, Exercise
- ECC Disaster Recovery, Back-up Center Testing, Regional Black Start Drill
- State-wide Operations Coordination:
  - Joint Procedures: APS / SRP / WAPA / TEP
  - Begins May 15<sup>th</sup>

# APS is Well Prepared

- **Generation** resources are in place to meet customer load and reserve requirements
- **Transmission** capacity in place to import remote generation and purchases
- **Distribution** infrastructure improvements on schedule to meet customer needs
- **Plans in-place** to respond to extreme conditions