

Open Meeting of the Arizona Corporation Commission 2006 Summer Assessment

March 30, 2006

Steve Bischoff – General Manager

Construction, Operations & Maintenance

Tom Carlson - Portfolio Manager

Marketing & Trading

Cary B. Deise – Director

Transmission Operations and Planning

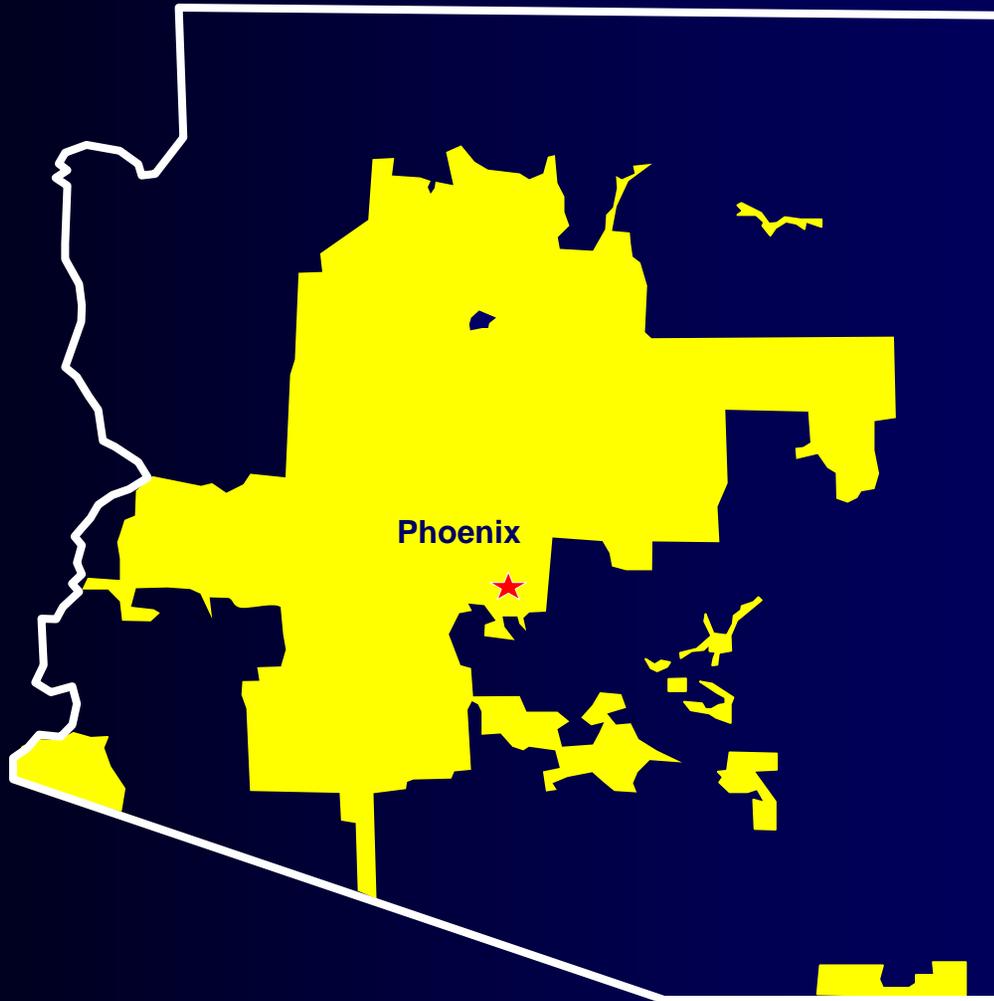


Executive Summary

Agenda

- **System Improvements – 2005 / 2006**
- **Planned Maintenance Activities**
- **External Coordination Activities**
- **Fuel & Purchase Power Adequacy**
- **Loads & Resources - Adequacy**
- **Transmission Adequacy**
- **Contingency Planning**
- **Conclusions**

APS Service Territory



 APS Retail Service Territory

System Improvement Plans

System Improvements - 2005

- **Connected over 46,000 new meters**
 - **Added 8 new distribution substations (693 MVA – 6.4% increase)**
 - **Increased transmission substation capacity by 524 MVA**
 - **Installed 51 distribution feeders (4.7% increase)**

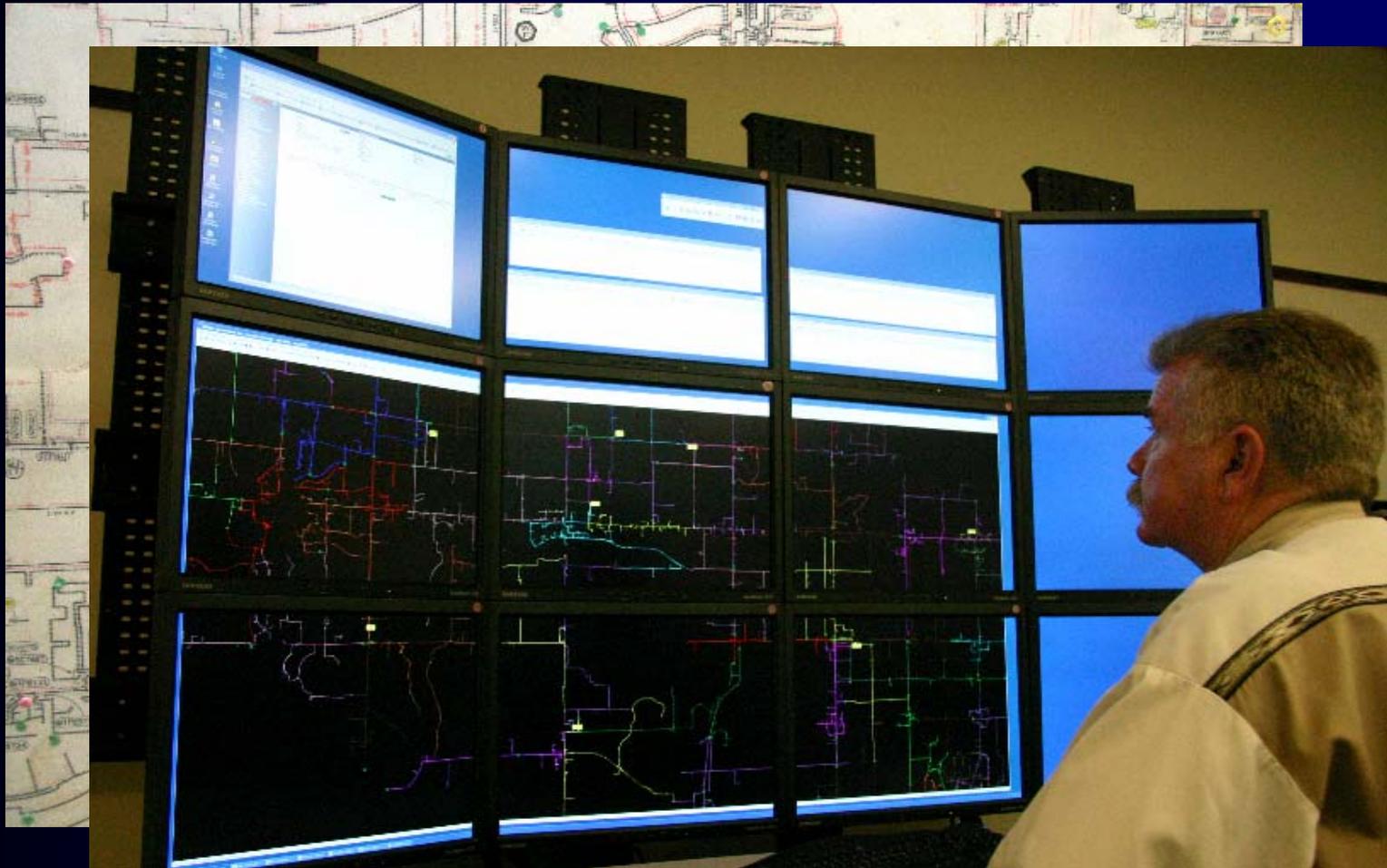
System Improvements - 2005

- **Connected over 46,000 new meters (cont'd)**
 - **Constructed over 754 miles of new distribution lines (93% underground)**
 - **Total distribution nearly 27,000 miles**
 - **Placed over 4,000,000 feet of backbone underground distribution cable**
- **T&D Capital Expenditures of \$ 363 million**

System Improvements - 2006

- **Distribution**
 - **Adding 16 new 69/12kV transformers**
 - **10 new Substations**
 - **Upgrading 11 - 69/12kV transformer**
 - **Total capacity increase of 588 MVA**
 - **Installing 53 new feeders**
 - **Continue development of our new Distribution Operations Management System (DOMS)**

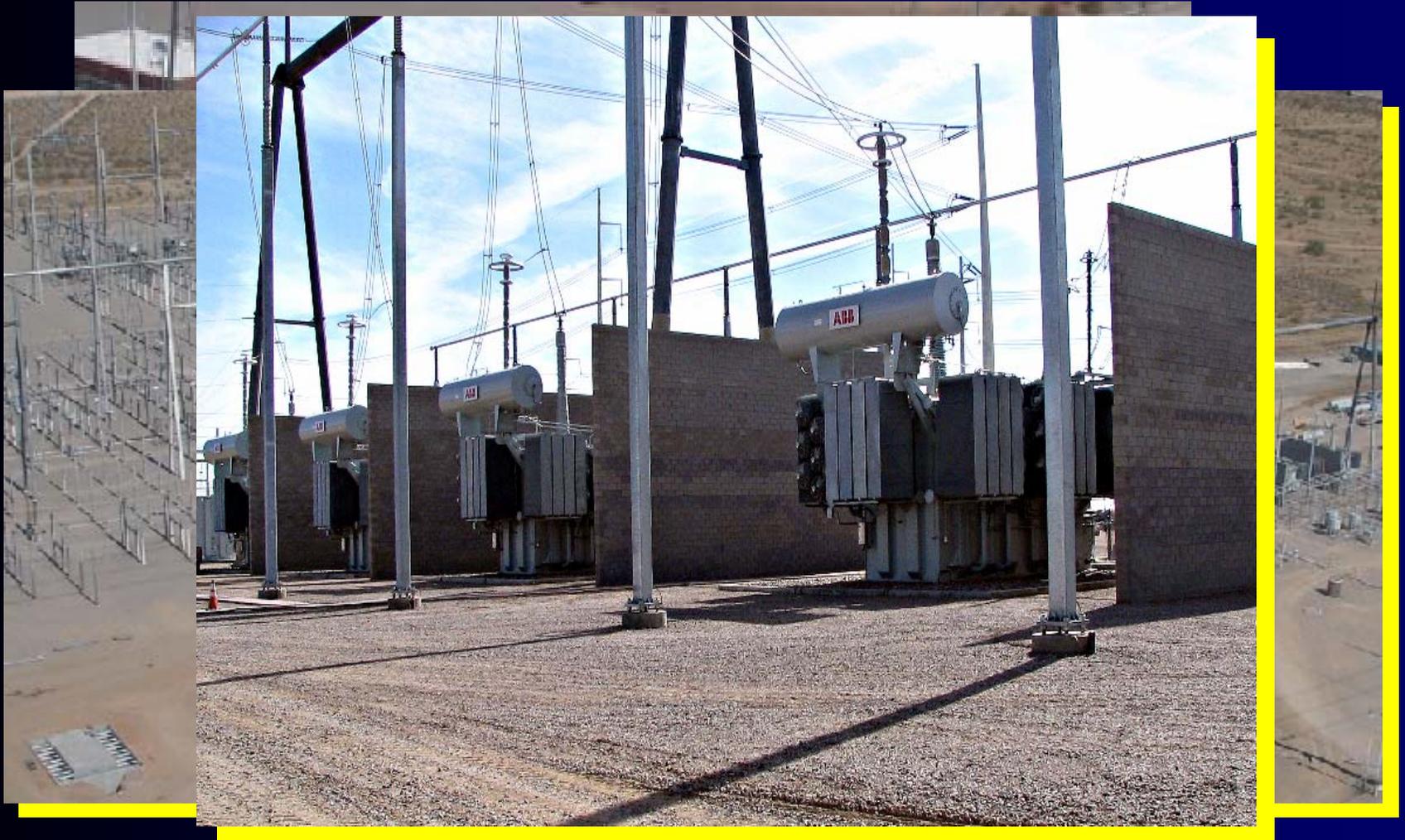
DOMS



System Improvements - 2006

- **Transmission**
 - **1 new 230/69kV transformer (188 MVA)**
 - **Upgrade 1 230/69kV transformer (167 MVA to 188 MVA)**
 - **Upgrade 500kV reactors and series capacitor bank**
 - **Continue improvements at Westwing**

Westwing Update



System Improvements - 2006

- **Transmission (cont'd)**
 - **Rebuild West Phoenix – Lincoln Street 230kV line using composite conductor**
 - **Increase capacity of the Sunnyslope – Meadowbrook UG 230kV line**
- **T&D Capital Expenditures of \$ 404 million**

Planned Maintenance Activities

Generation

- **Planned Maintenance - Completed by Summer 2006:**
 - Palo Verde 1 & 3
 - Cholla 1 & 3
 - Navajo 3
 - Four Corners 3 & 4
 - W. Phoenix CC 1, 2, 3 & 5 and CT 1 & 2
 - Redhawk CC 1 & 2
 - Saguaro Steam 1 & 2 and CT 1 & 2
 - Yucca CT 1-4
 - Ocotillo Steam 1 & 2 and CT 1 & 2
 - Sundance CT 1 - 8
 - Douglas CT

Transmission / Distribution

- **Periodic equipment testing on schedule - increasing the use of on-line monitoring**
- **Annual line inspections on schedule**
- **Testing new EMI technology for transmission line inspections**
- **Continued special emphasis on vegetation management**
 - **On going drought conditions**
 - **Bark beetle infestation**
 - **Compliance with new NERC standards**

External Agency Coordination

External Coordination

- **Federal / State / County / Local**
 - **Wildland Fires**

Wildland Fires



External Coordination

- **Federal / State / County / Local**
 - **Wildland Fires**
 - **Response to Electrical Emergencies**
 - **Integrated Operating Procedures**
 - **Joint Training**
 - **Preplans at Major Switchyards**

Training



External Coordination

- **Federal / State / County / Local**
 - **Wildland Fires**
 - **Response to Electrical Emergencies**
 - **Integrated Operating Procedures**
 - **Joint Training**
 - **Preplans at Major Switchyards**
 - **Curtailment**

External Coordination

- **Extensive plans currently exist**
- **Integrated Emergency Planning – continue to expand our thinking / planning**
- **Solid relationships exist with the various emergency management agencies**
- **Build on those relationships to develop integrated plans to meet future needs**

Summary

- **Expansion of the electric infrastructure is on schedule to meet peak demands**
- **Pre-summer maintenance efforts are likewise on track**
- **Continued emphasis on joint planning with involved agencies for emergency preparedness**

Fuel and Purchased Power Adequacy

Tom Carlson

Fuel and Purchased Power Adequacy

■ Nuclear

- Full requirements under contract.

■ Coal

Cholla

- Current inventory and contract commitments provide adequate coal for the projected 2006 burn.
- Normally 35 days or more of inventory on-site.

Four Corners

- Mine mouth plant with full supply contract in effect.
- Coal supplier maintains in-pit and processing plant inventory
- Normally 35 days of inventory available.

Fuel and Purchased Power Adequacy

■ Natural Gas

- Sufficient firm gas transport on El Paso system to supply APS' natural gas requirements
- Majority of physical gas supply under firm contracts
- Gas purchased on spot market to adjust for fluctuations in need with firm contracts
- Adequate supplies available from Permian/San Juan basins
- Regional gas storage inventory currently above 5 year average
- Fuel oil back-up at the Yucca, West Phoenix and Saguaro Plants

Fuel and Purchased Power Adequacy

Palo Verde Replacement Power

- **APS has purchased 100% of the replacement capacity and energy**
- **Sufficient firm capacity is under contract to maintain 15% reserve margin with PV Unit 1 unavailable**
- **Reserves are sufficient to meet contingency requirements**

Fuel and Purchased Power Adequacy Palo Verde Replacement Power

- **In the event PV Unit 1 does not return to service as anticipated, sufficient replacement capacity is available in the market for the summer months**

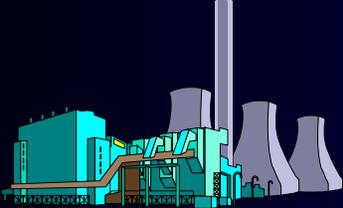
Loads/Resources Adequacy

Cary Deise

Loads/Resources Adequacy

APS Resources – Existing Generation

<u>Fuel Type</u>	<u>Capacity - MW</u>
Nuclear	1129
Coal	1736
Gas	3280
<u>Other</u>	<u>6</u>
Total	6151



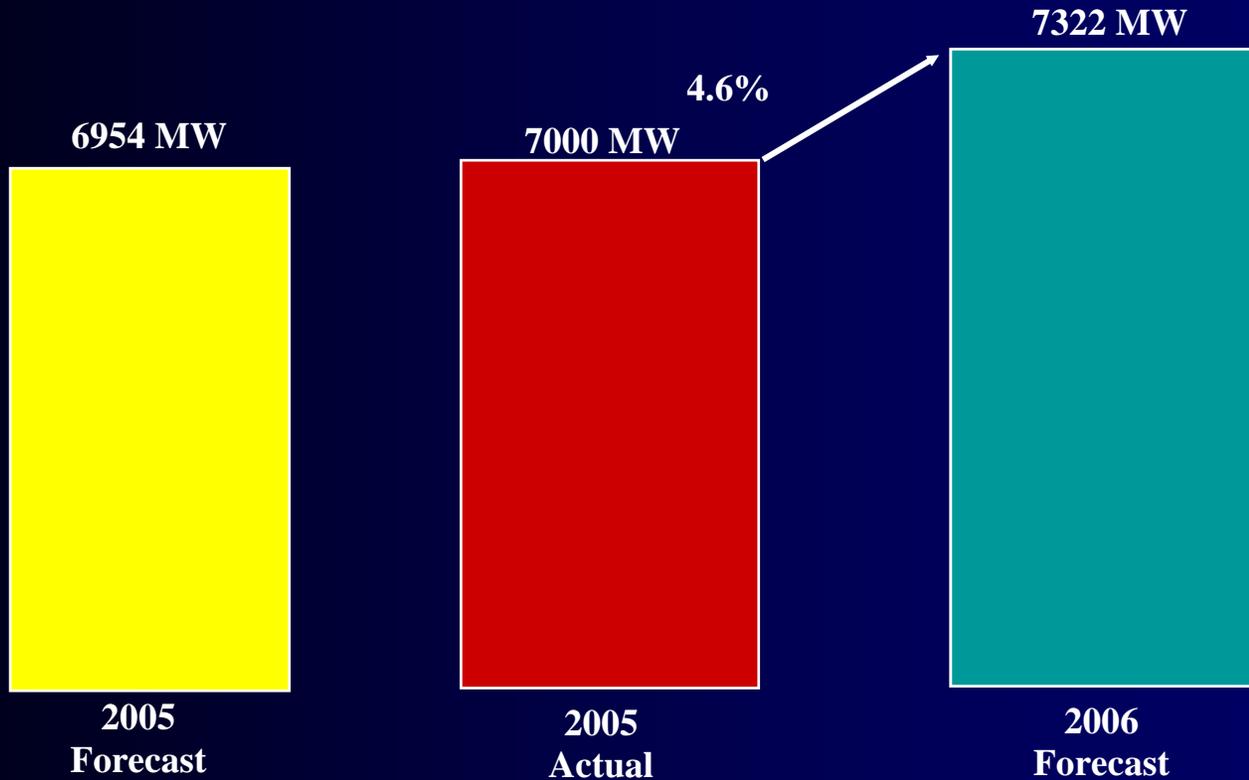
Loads/Resources Adequacy

Resources

● Generation	<u>2006</u> (MW)
Existing Generation	6151
● Long-term Contracts	
UniSource	402
Pacificorp Exchange	480
<u>SRP</u>	<u>372</u>
Subtotal	1254
● Short-term Market Contracts	925
● Total Resources	8330

Loads/Resources Adequacy

APS Peak Load Forecast

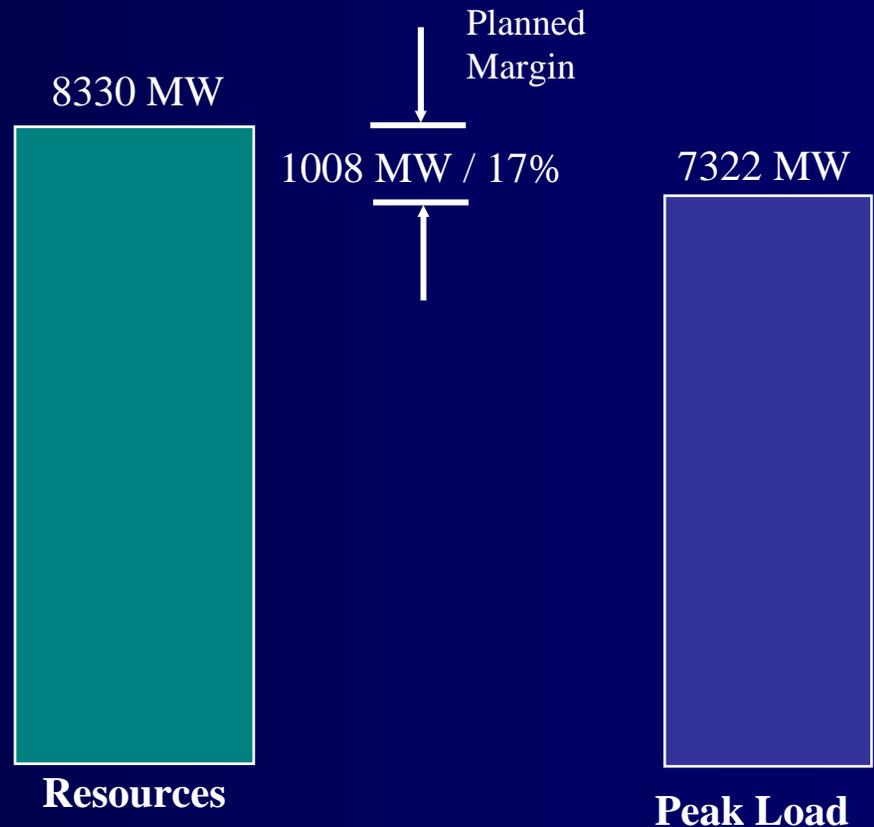


Loads/Resources Adequacy

APS Load and Resources

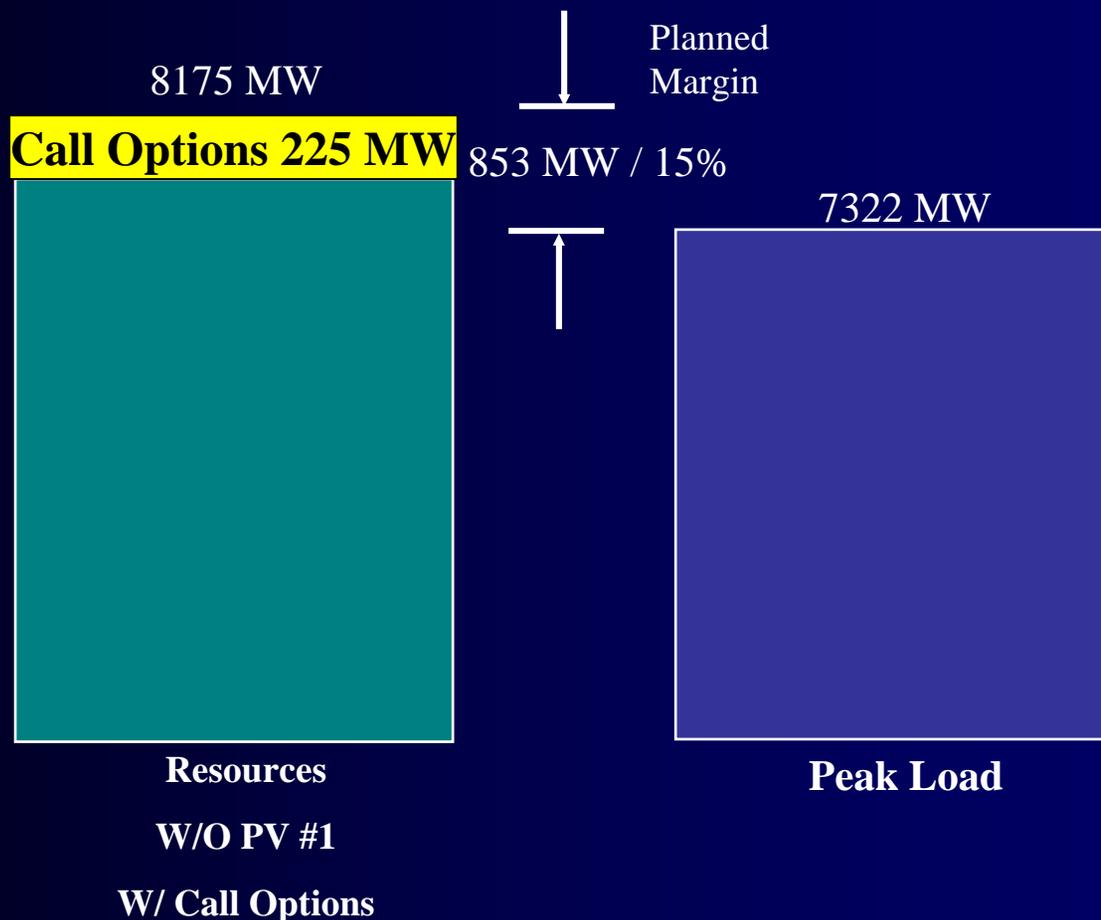
- Planned Margin (Reserves) are required to manage uncertainties such as:
 1. Load Forecast Uncertainties
 - A. Extreme Weather
 - B. Economic Changes
 2. Multiple Generator Outages
 3. Transmission Outages
- Planned Margin Equals Resources minus Annual Peak Load.
- Typical Industry Planned Margin is 12 to 18%.

Note: PV at full output

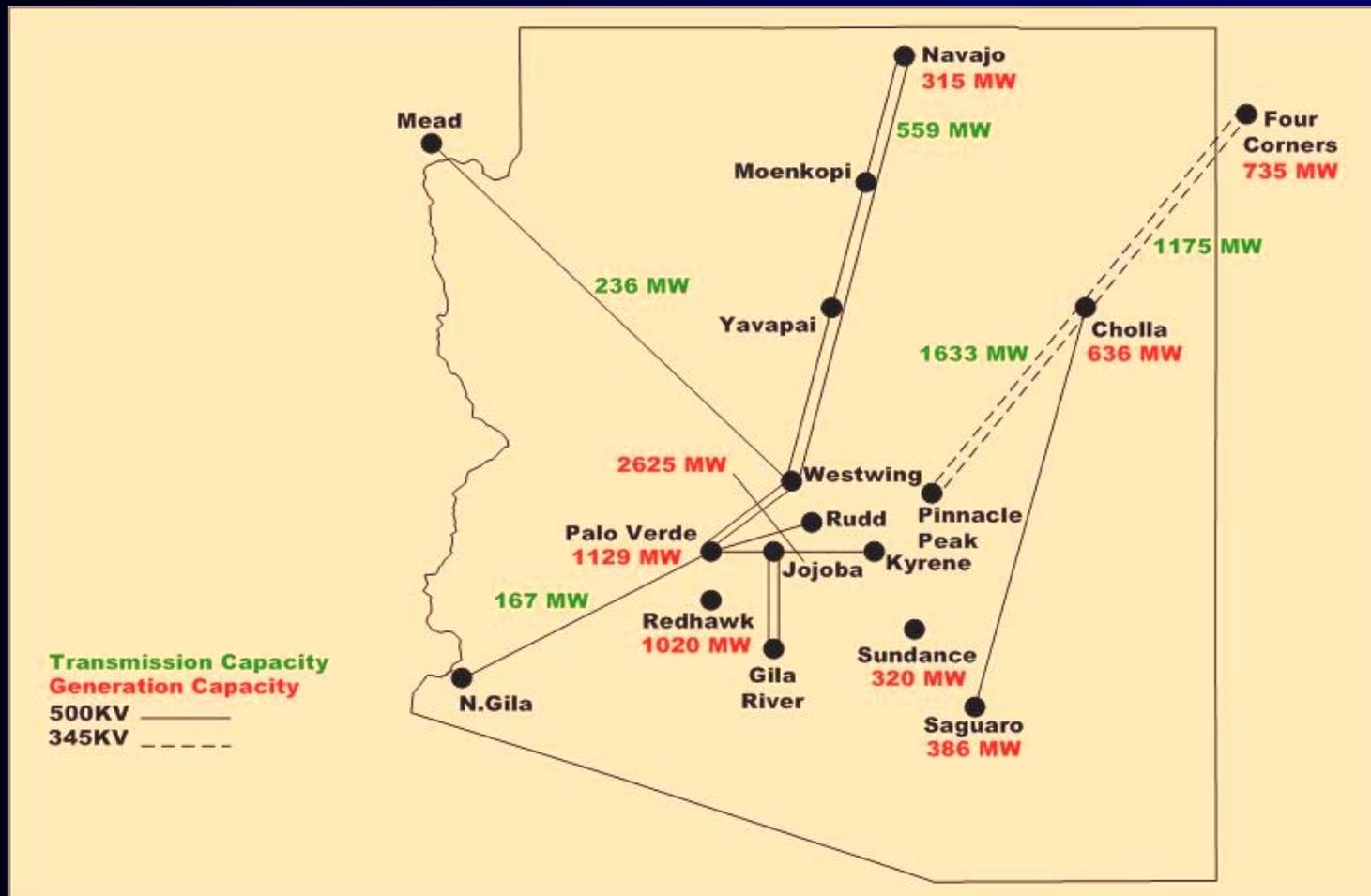


Loads/Resources Adequacy

APS Load and Resources PV#1 Out



Transmission Adequacy

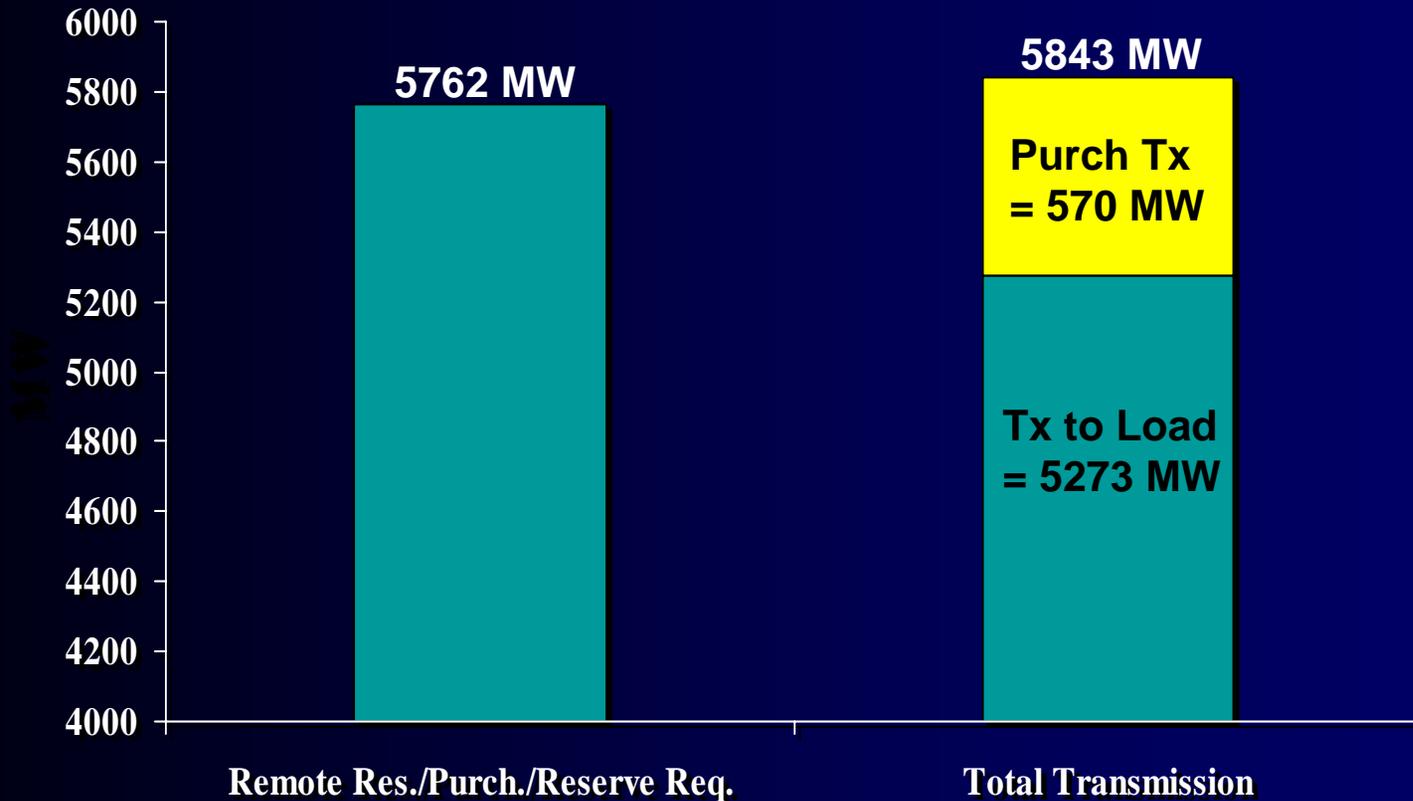


APS EHV System
Transmission Capacity less wheeling obligations

Transmission Adequacy

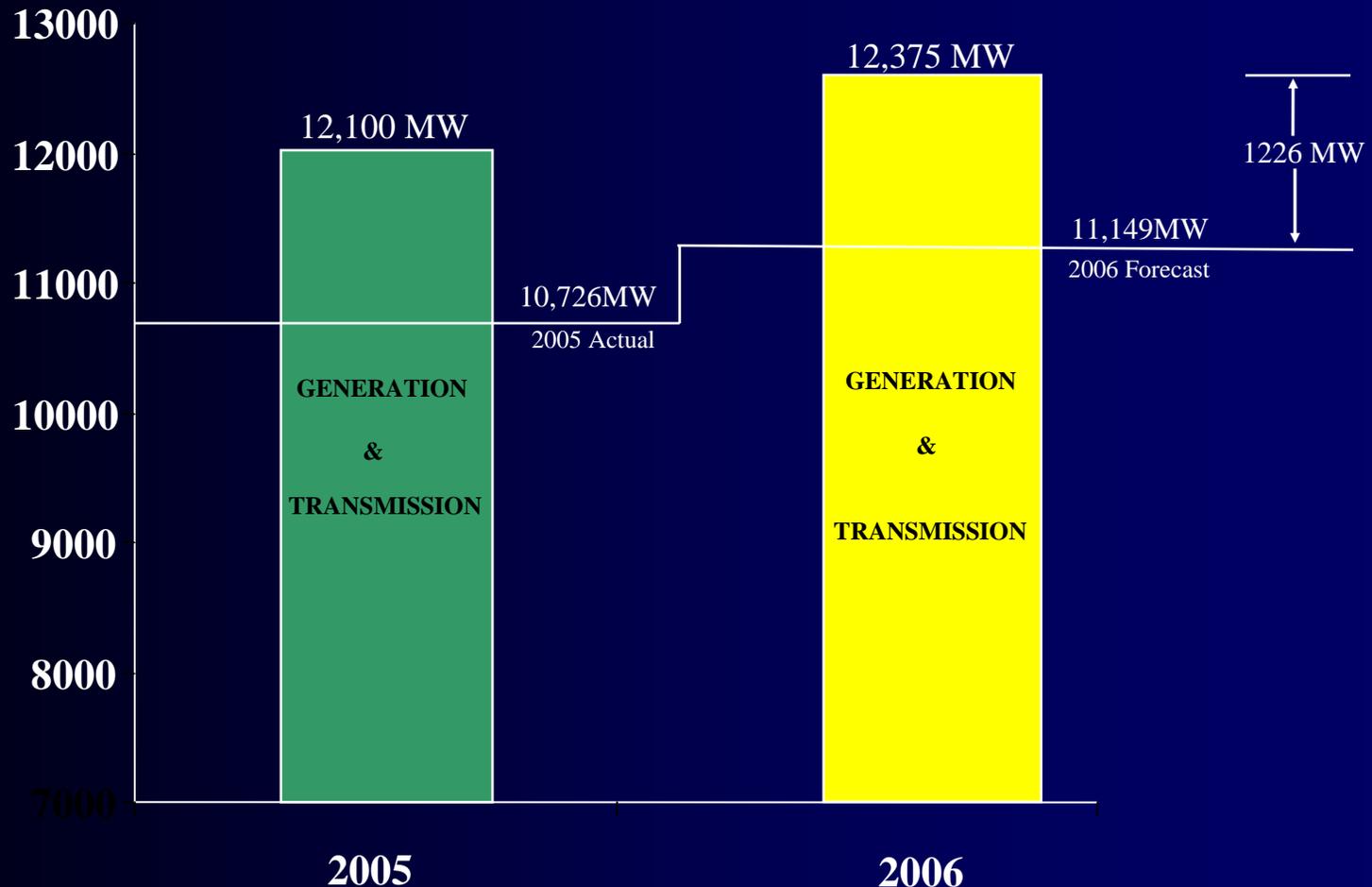


APS EHV System



Transmission Adequacy

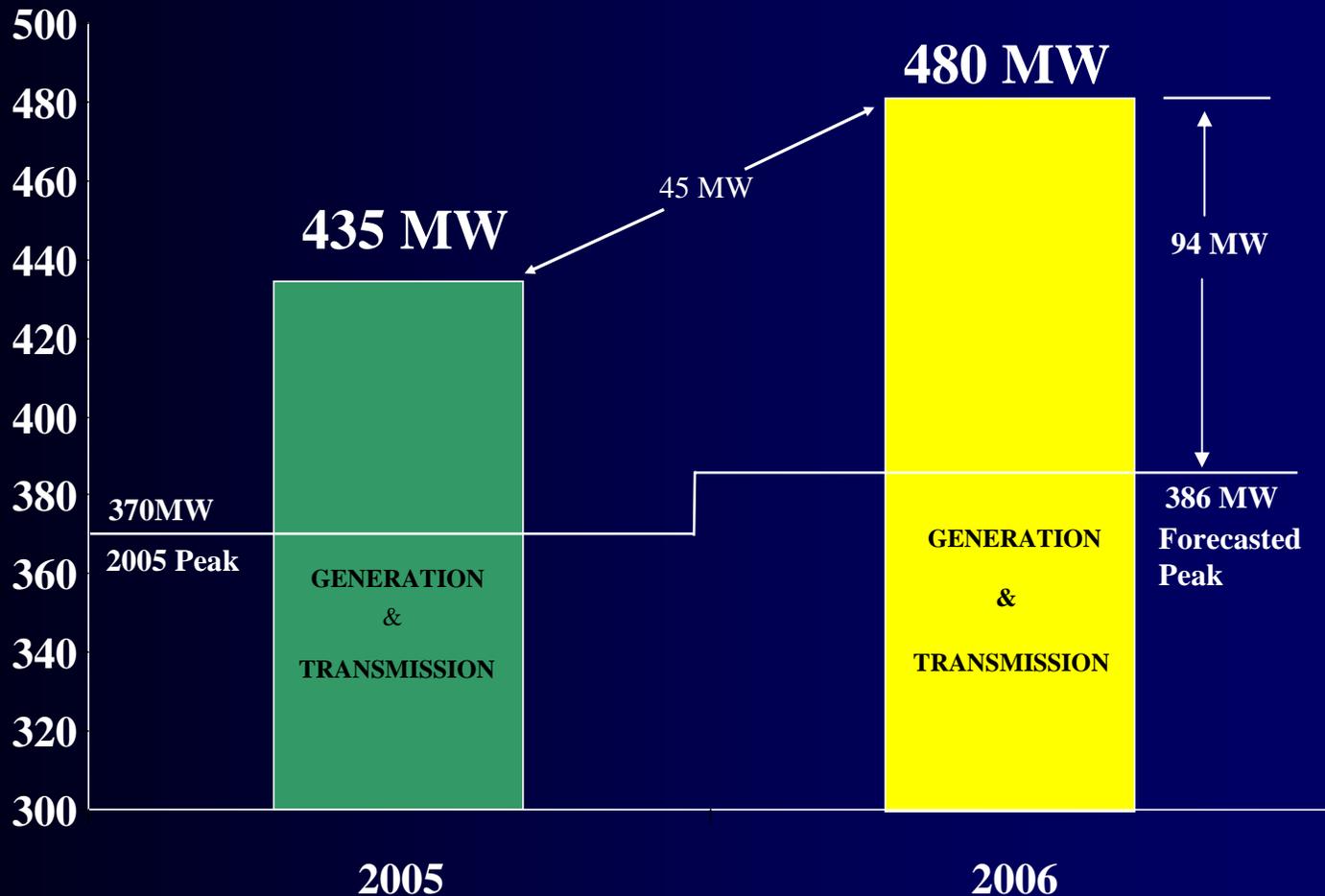
APS/SRP Valley Maximum Load Serving Capability



Note: PV Unit#1 is outside the area & does not affect these numbers

Transmission Adequacy

Yuma Maximum Load Serving Capability



Contingency Planning

Contingency Planning Training & Drills

- Backup Center Testing January
- Regional Black Start Drill March



Emergency Equipment

Mobile 69/12kV Transformers

Location	Xfmrs
Phoenix	4
Flagstaff	2
Yuma	1
Total	7

Emergency Towers

- Two Lindsey towers

Generator

- 1500 KW Mobile Unit

State Wide Operations Coordination

- Procedure Developed by APS/SRP/WAPA/TEP
- Starting May 15th, Mondays or as needed
- Timeline

7:00AM Update status of equipment and field conditions for each utility

9:00AM APS/SRP/WAPA/TEP Conference call to discuss:

Planned/Current generation outages

Planned/Current transmission outages

Weather forecast

Load forecast

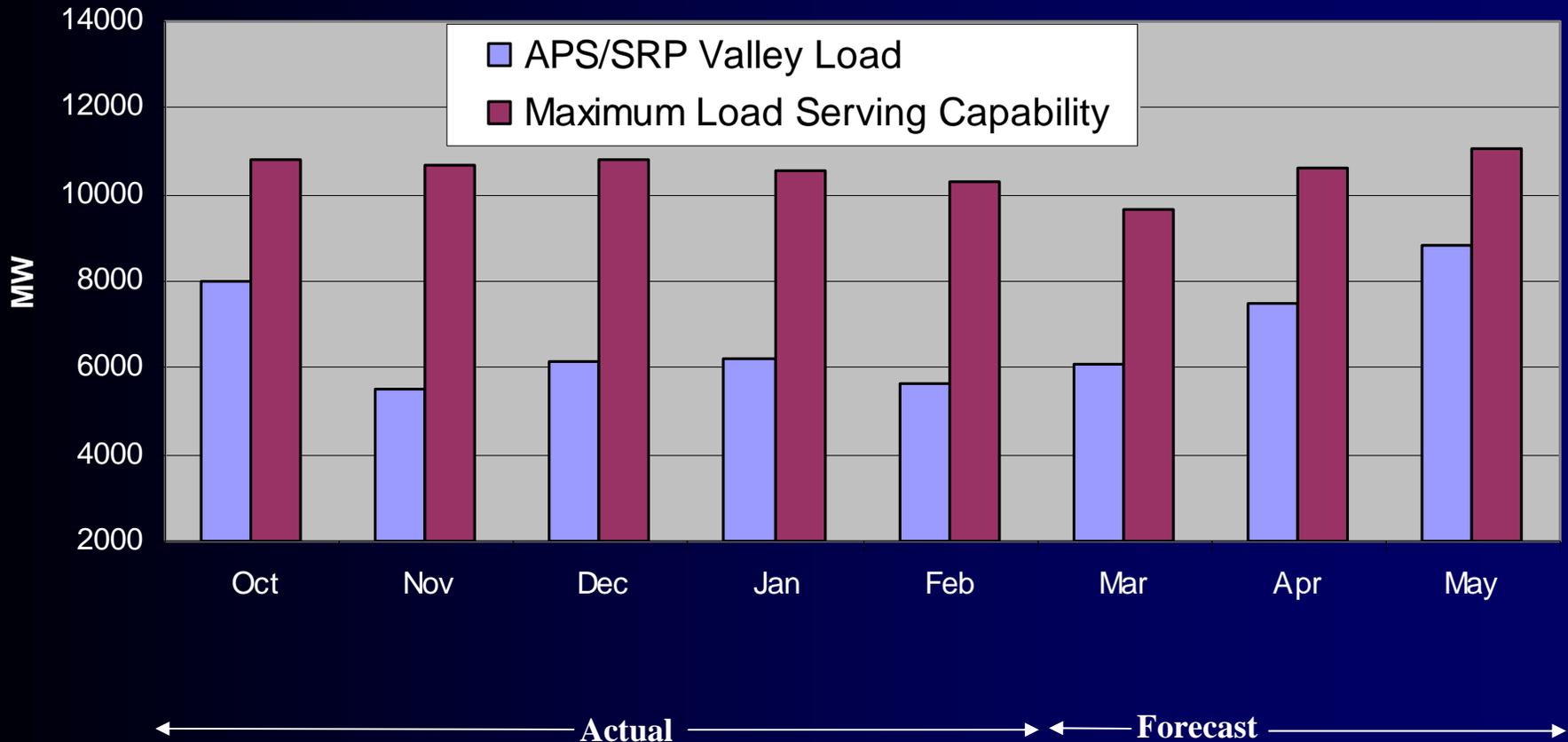
Forest fires

10:00AM Internal meeting based upon current events

Contingency Planning (N-1-1)

Westwing Transformer #4 Out of Service Oct 31, 2005 - May 1st, 2006

West Phoenix – Lincoln St. 230kV Out Of Service March 6 – April 15, 2006



Conclusions

Conclusion

- Adequate resources to meet customer load and reserve requirements
- Sufficient transmission to import remote generation and purchases
- Procured replacement power for anticipated PV Unit 1 outage
- Plans in-place to respond to extreme conditions
- Coordination/training effort is ongoing with various State and local agencies