

WESTCAS

2009 Fall Conference

Sustainable Water Planning

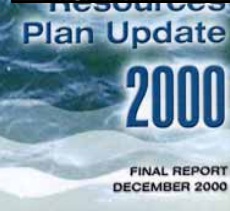
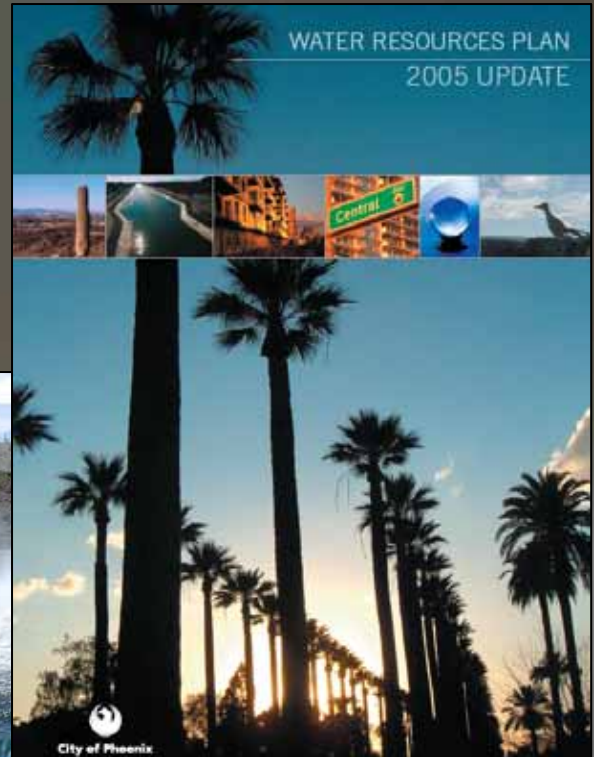
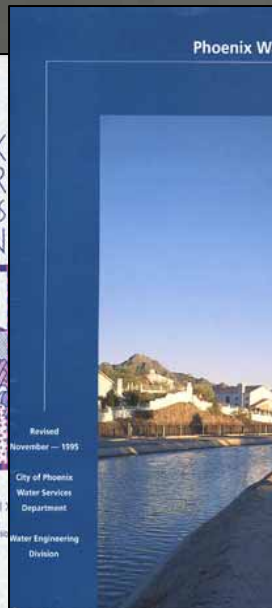
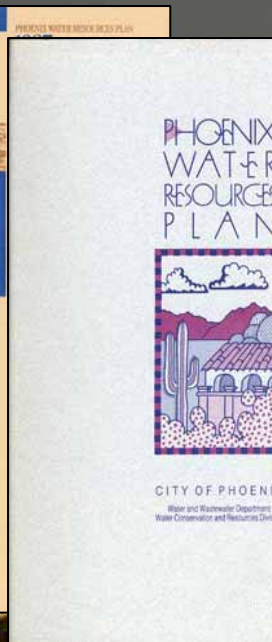
Tom Buschatzke
Water Resources Management Advisor
City of Phoenix

October 28, 2009



WATER RESOURCES

Planning Goal: Ensure availability of sufficient sustainable water supplies to meet the City's 50-year demands under normal and shortage conditions.



Major Water Resource Planning Components

- *Water Supply Acquisition and Development*
 - Phoenix portfolio: less vulnerable to shortages than other cities
 - Continue to build water portfolio to meet uncertain future conditions (growth, drought, climate change, etc.)
 - Water Resource Acquisition Fee: growth pays for itself
- *Demand Management*
 - Continue to build on water efficiency/water conservation gains
 - Pro-active planning to avoid or reduce impacts due to shortages



Regional and Statewide Water Challenges

UPPER BASIN DEVELOPMENT

LAWSUITS

INFRASTRUCTURE FINANCING

ARSENIC STANDARD

INFRASTRUCTURE CAPACITY

Now, THIS is water pressure!

WATERSHED HEALTH

COLO. RIVER SHORTAGE SHARING

SURFACE WATER ADJUDICATION

GROUND DEPLETION

ENDANGERED SPECIES

SALINITY

GROUNDWATER CONTAMINATION

INDIAN SETTLEMENTS

COST OF WATER/RATES

LAND SUBSIDENCE

GROUNDWATER RIGHTS

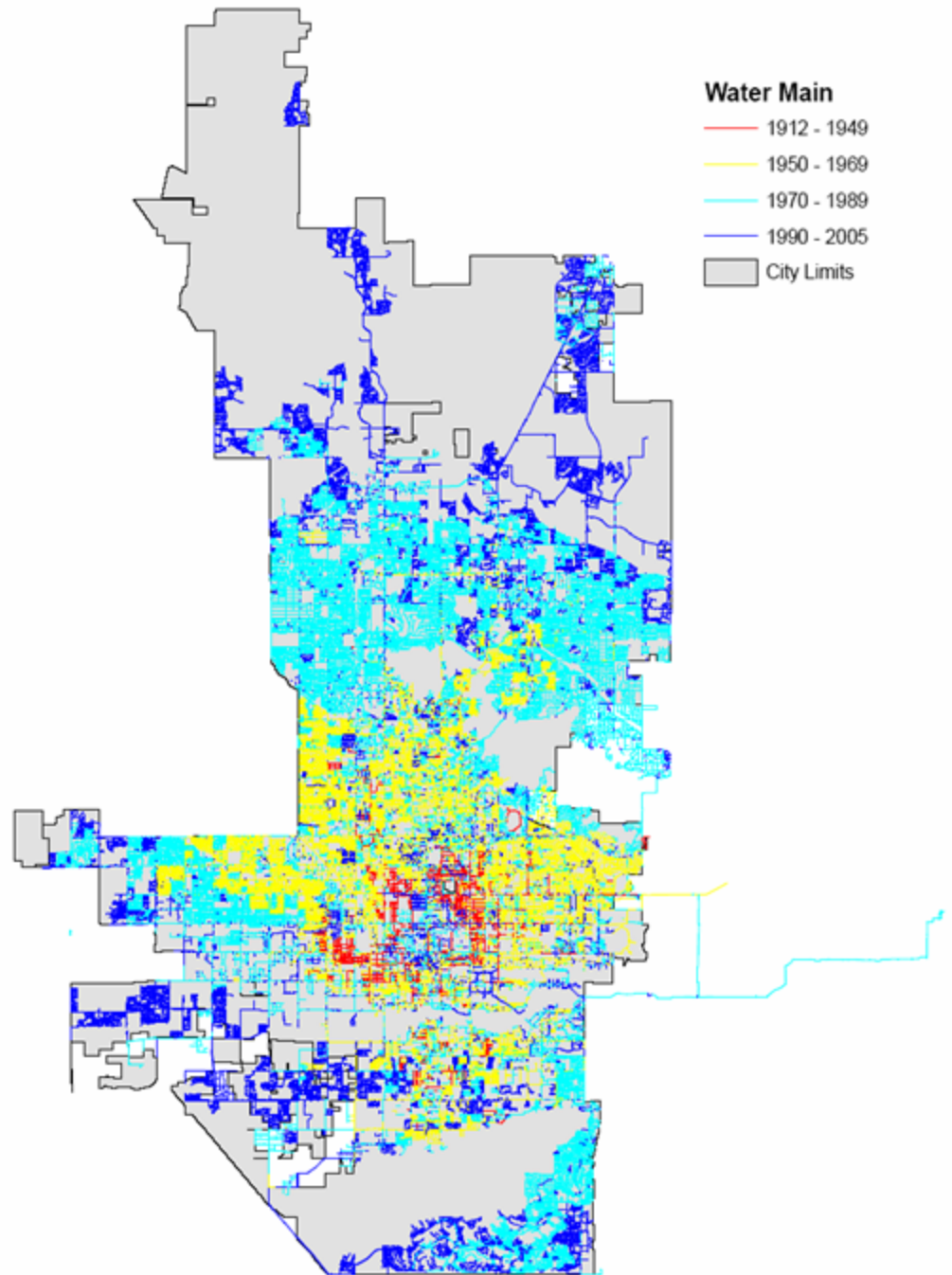
ENVIRONMENT

CONSERVATION

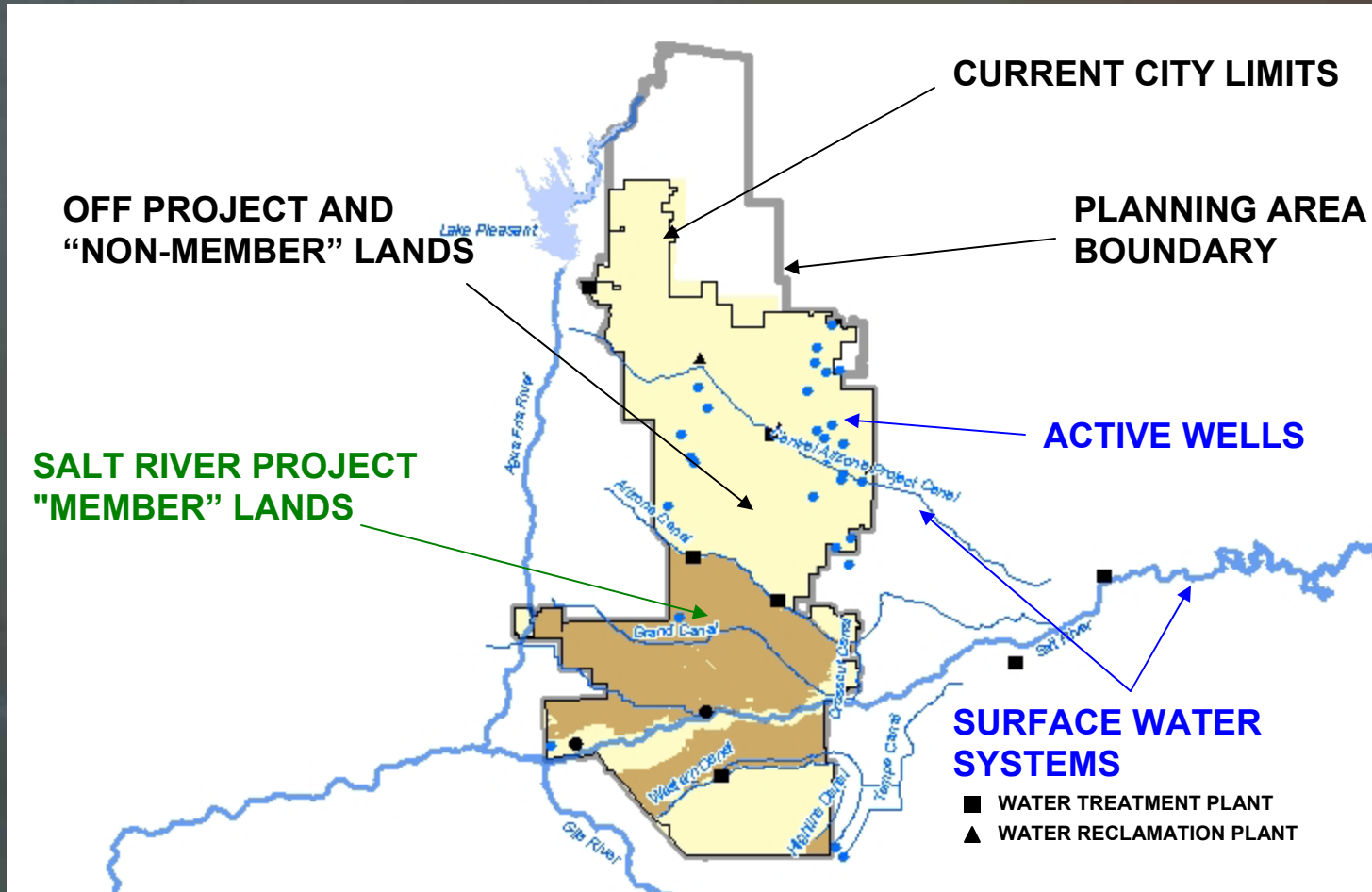
INTERNATIONAL TREATIES

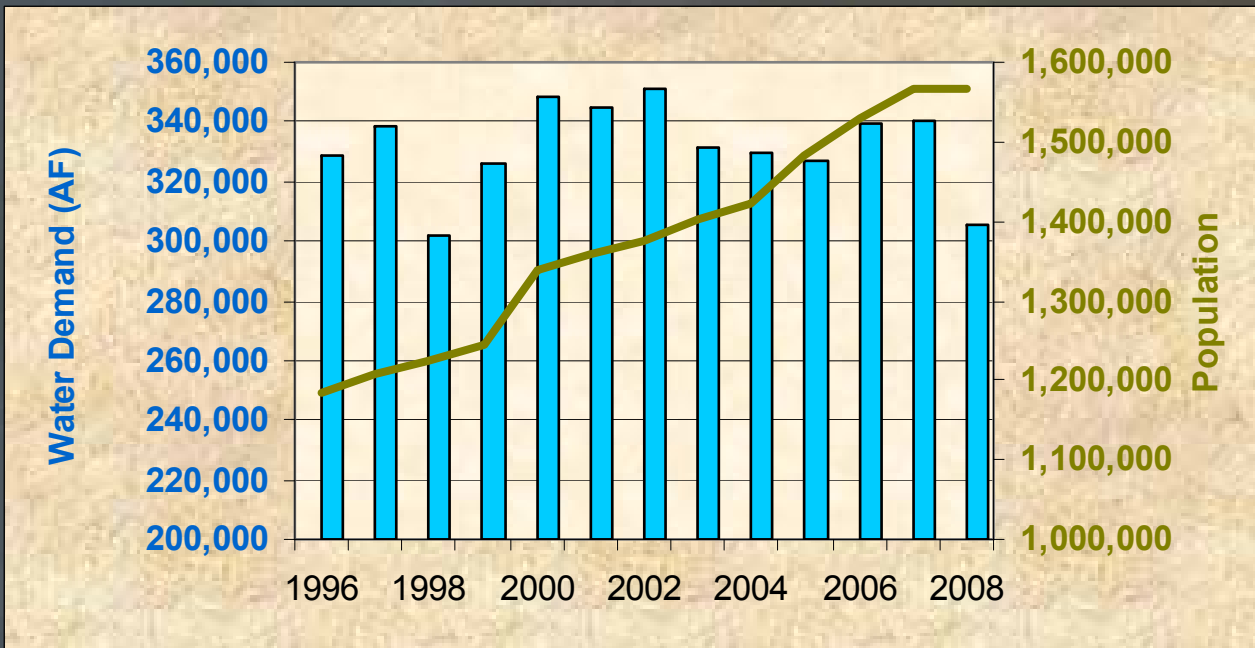


Phoenix Service Area Growth



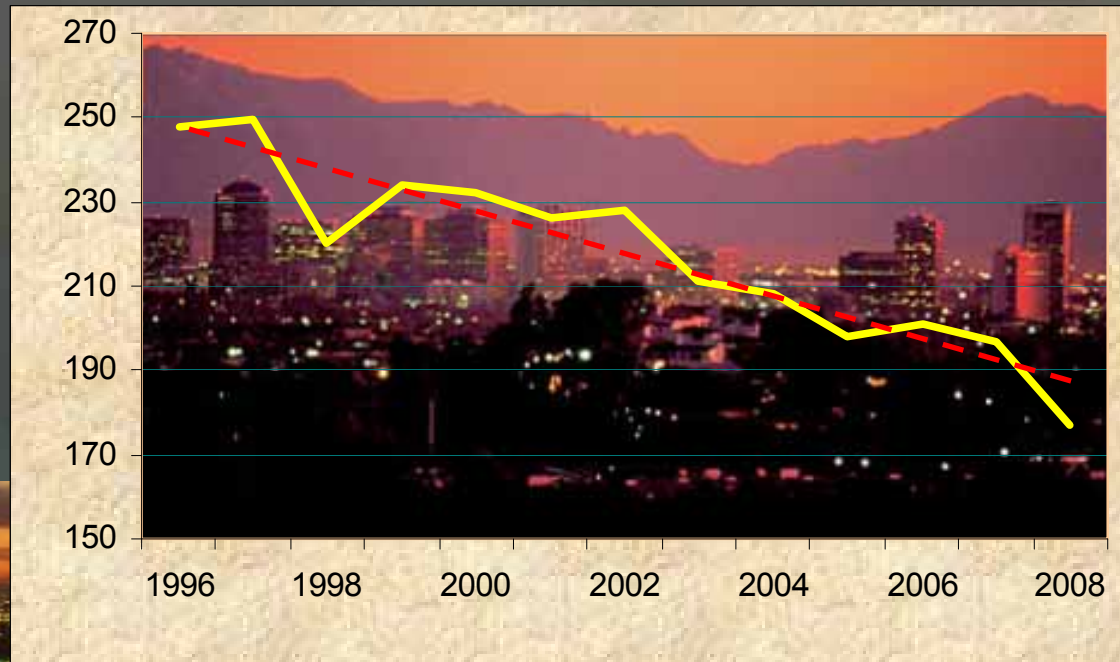
Phoenix Water Planning Boundaries



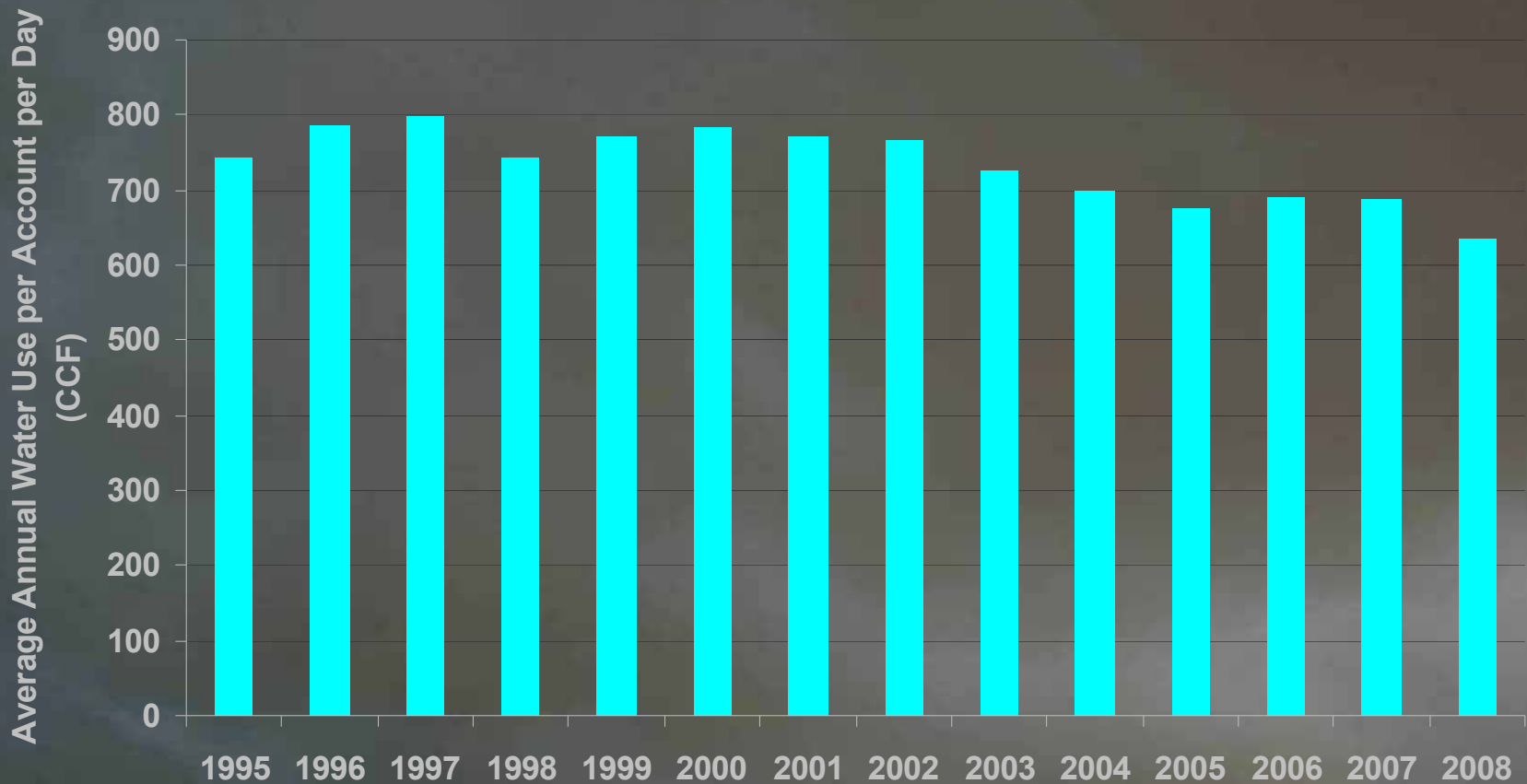


Water Consumption:
1996-2008

Per-Capita Use:
1996-2008



Downward trend in average water use per account



Factors: Increased awareness, efficient technology, desert adapted plants, water rate increases, development trends, low water use lifestyle

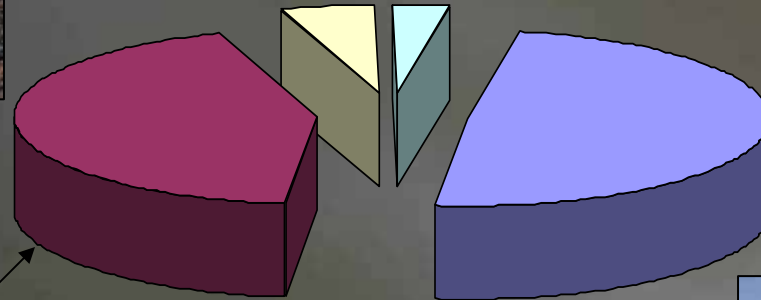


Current Water Supplies Typical Year

Reclaimed Water - 5%



Groundwater - 3%

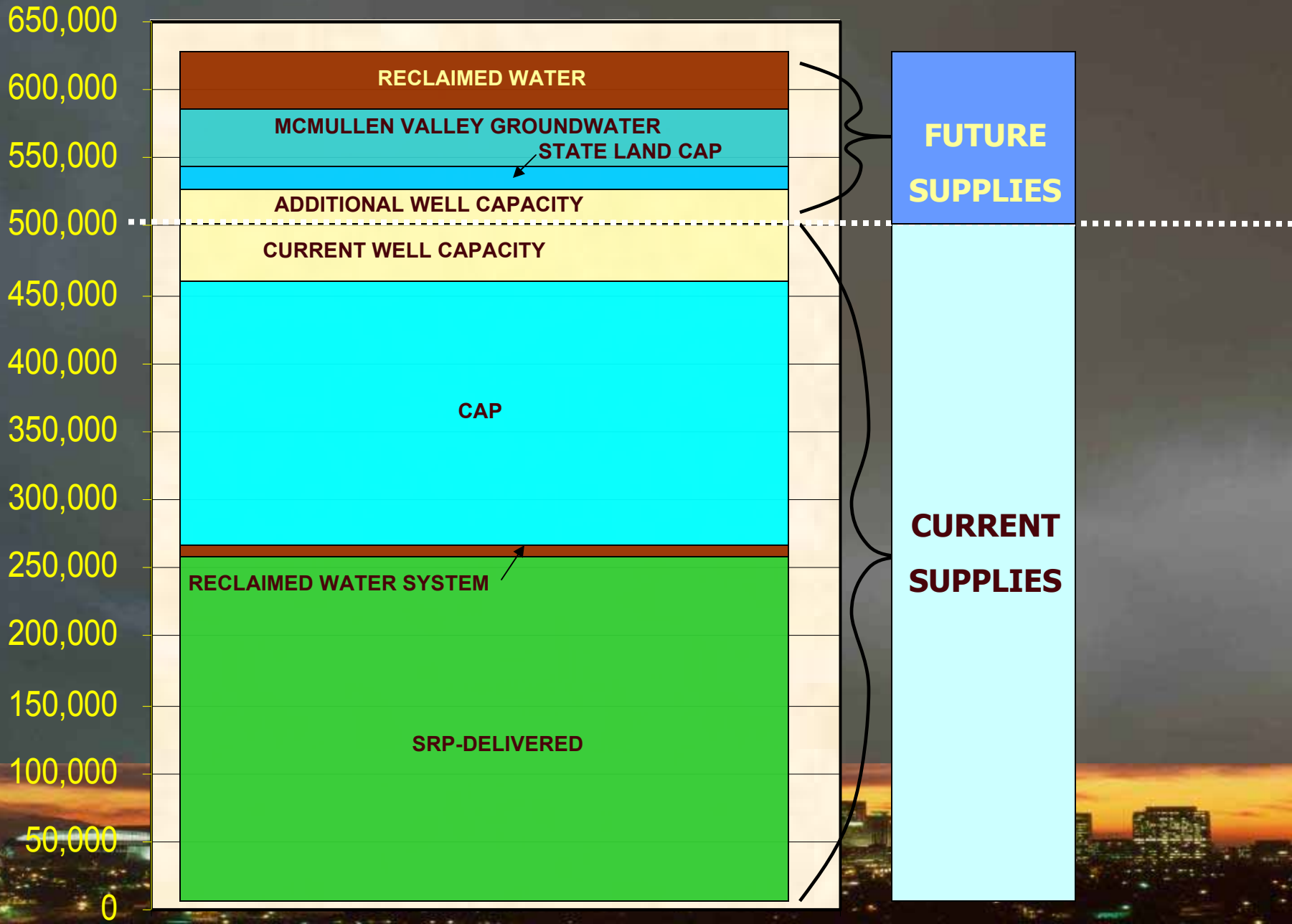


**Salt/Verde River
Surface Water - 49%**

Colorado River - 43%



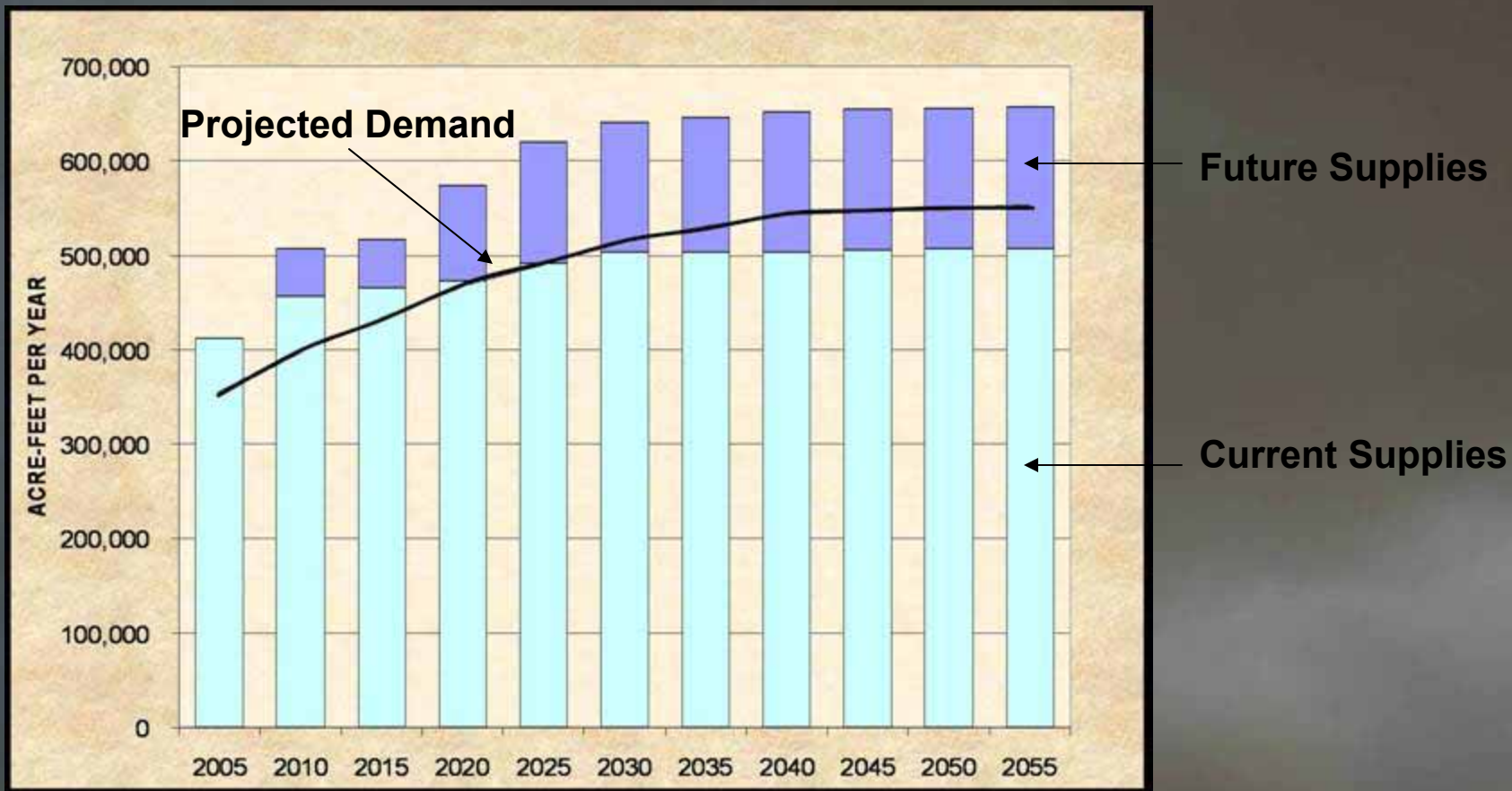
Current and Future Supplies



Water Demand and Supply Availability 2005-2055

Normal Conditions

(From 2005 Water Resources Plan)

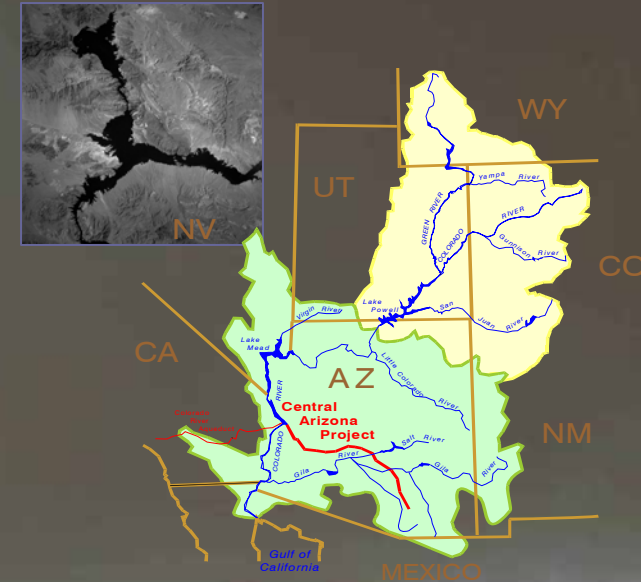


Current and future supplies: Meet a higher standard of supply availability to mitigate future drought and climate change impacts



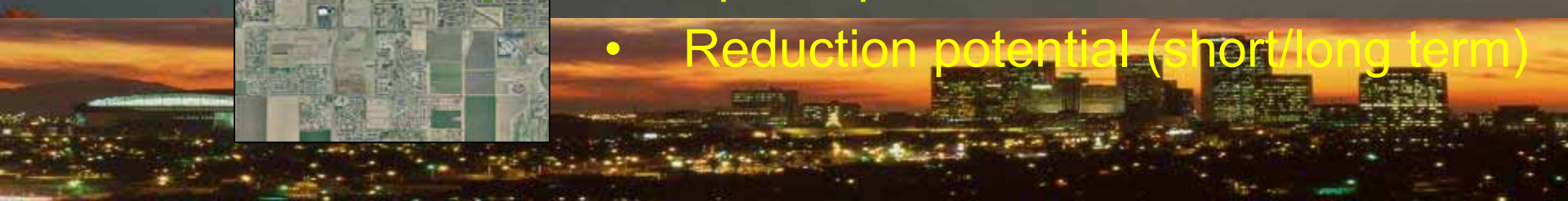
Supply Uncertainties

- Length of reduced inflows
- Upper basin development
- Institutional decisions
- Allocation of shortage
- Climate Change Impacts



Demand Uncertainties

- Rate of growth
- Density
- Spatial patterns
- Reduction potential (short/long term)



“Known Unknown” - Climate Variability

- **Few tangible predictions**
 - General agreement with warming trend
 - Less agreement regarding impacts on precipitation and stream flow patterns
 - Range of impacts can be quite broad
- **Phoenix research partnership with universities, SRP, CAP and others**
 - Downscale GCM data to generate flow scenarios
 - Evaluate operational considerations and impacts (Salt/Verde Rivers and Colorado River)



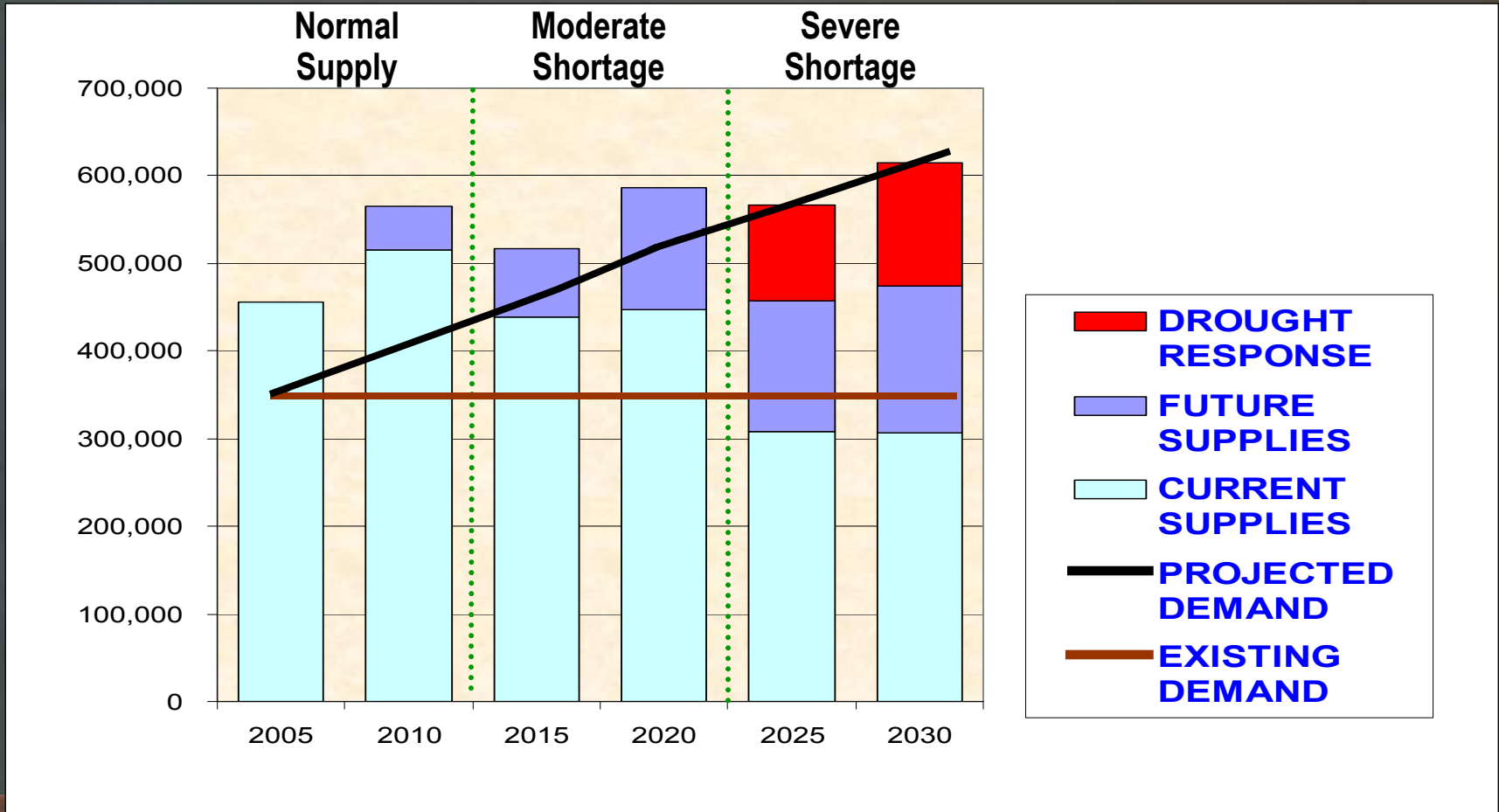
Shortage Scenarios

- **SRP available**
 - 3 AF/acre (normal)
 - 2 AF/acre (moderate)
 - 1 AF/acre (severe)
- **CAP available**
 - Full 1.5 MAF (normal)
 - 1 MAF (moderate)
 - 600,000 AF (severe)



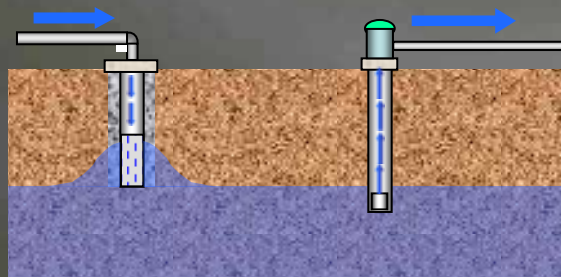
Planning Timeline:

Hypothetical Worsening Shortage to 2030



Water Planning Strategies

- **Groundwater standby capacity**
 - Groundwater modeling
 - Well site selection
 - Importation (McMullen Valley)
 - Recharge (ASR, etc) opportunities
 - Regional leveraging opportunities



Shortage Planning Framework

Old approach: - emphasize response at time of shortage.

New approach: - emphasize adaptation prior to shortage.

	Years prior to shortage	Water Resources Planning Operations	Planning Focus
Adaptation	10 Years	Explore options to deploy safety-net supplies.	<p>Supply Augmentation</p> <p>Demand Curtailment</p>
	5 Years	Raise customer awareness of demand curtailment methods.	
	1 Year	Prepare customers for mandatory demand curtailment intervention.	
Response	Shortage	Implement mandatory demand curtailment measures.	



Infrastructure Sequencing

- Evaluate master planned areas
 - Assess timing of development/infrastructure needs
 - Estimate water demand and wastewater generation



Questions?



City of Phoenix

