

# ARIZONA'S NEXT CENTURY

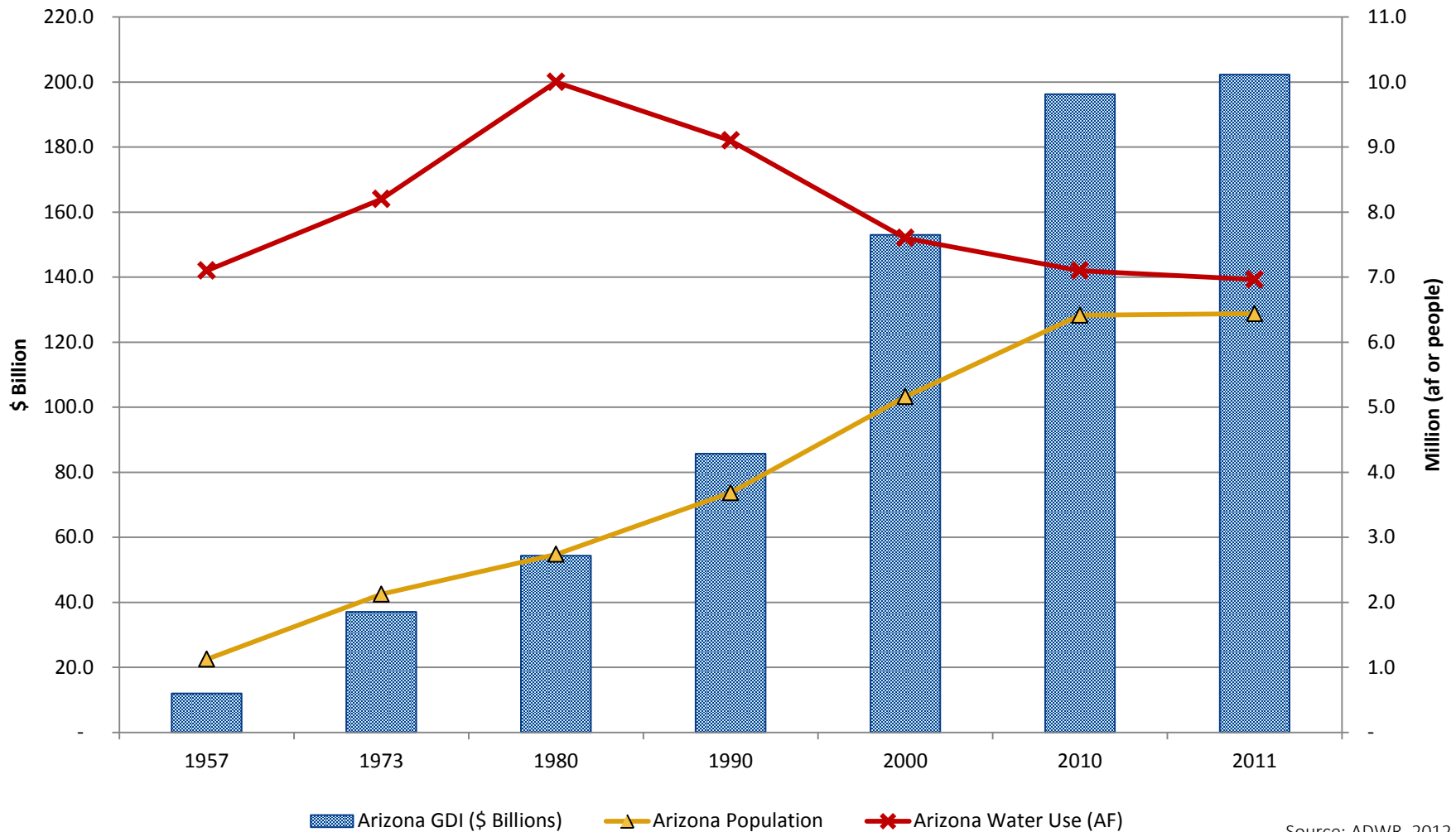
## Strategic Vision for Water Supply Sustainability



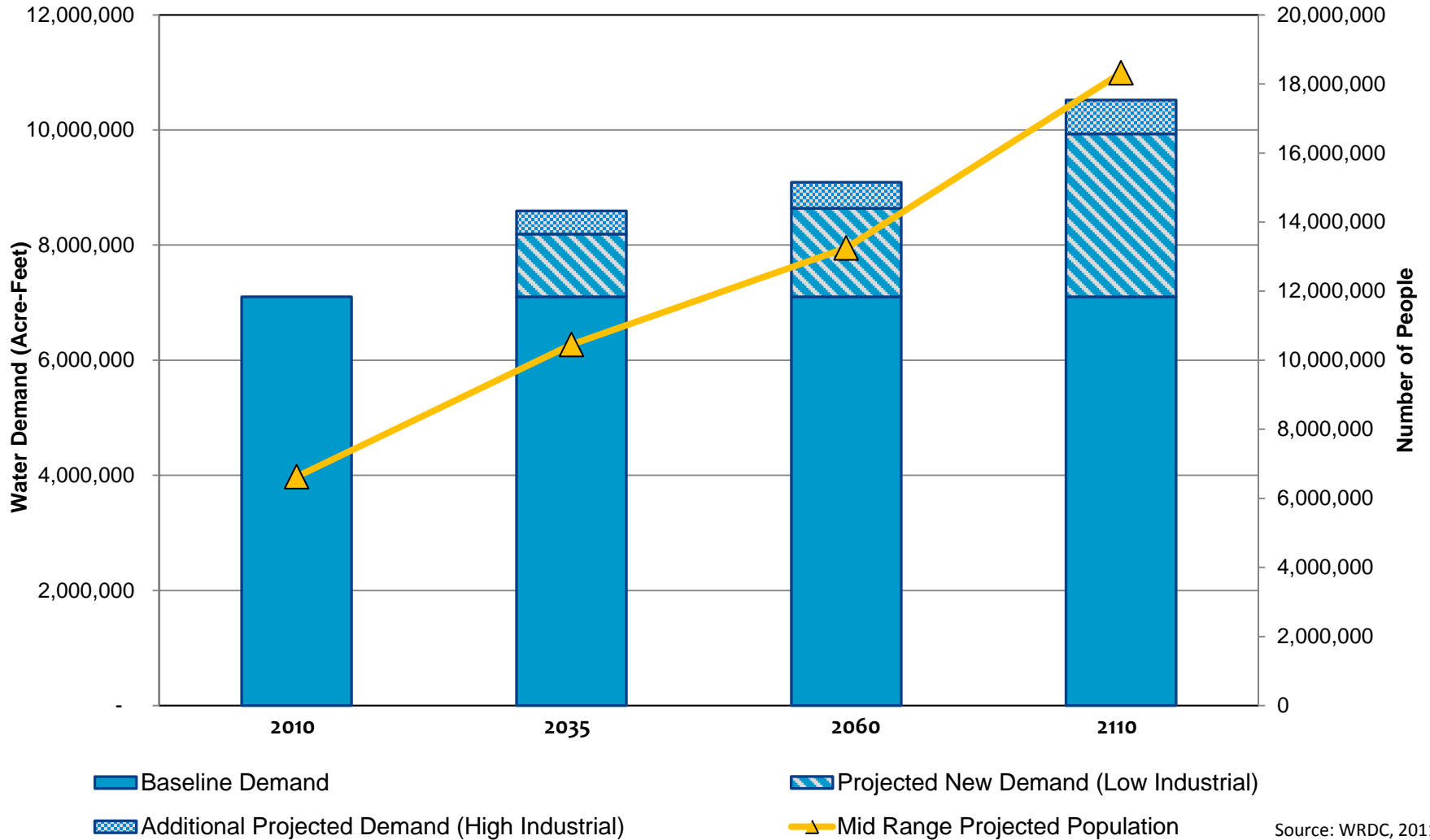
Protecting Arizona's Water Supplies  
*for*  
Its Next Century

# What We Have Accomplished

## Arizona Gross Domestic Income, Population and Water Use (1957-2011)



# What We Have To Address



# What We Are Doing

## Arizona Strategic Vision for Water Supply Sustainability

### **Purpose:**

***To identify viable strategies to guide Arizona in addressing future water needs, providing a stable economy for our future – for all water users.***

- Use existing information (CRBS, WRDC, Az. Water Atlas, Water Level Monitoring, AMA Assessments...)
- Identify Local Options First
- Identify Priority Strategies



# Arizona Strategic Vision

## Building on Historic Accomplishments

- \* **Salt River Project**
- \* **Colorado River Compact & Law of the River**
- \* **Central Arizona Project**
- \* **Resolution of Tribal Water Rights Claims**
- \* **1980 Groundwater Management Act**
  - *National leader in water conservation and water reuse programs within the five Active Management Areas*
- \* **Assured and Adequate Water Supply Program**
- \* **Recharge and Recovery and Arizona Water Banking Authority**
  - *8.5 million acre-feet in storage for future use*

# Arizona Strategic Vision

## Identifying Opportunities and Challenges

### Water Supply Opportunities

- \* Non-Indian Agricultural (NIA) Priority CAP water;
- \* Reclaimed water/water reuse;
- \* Groundwater in storage (potable, poor quality & brackish supplies);
- \* Water supplies developed from revised watershed management practices;
- \* Water supplies developed through weather modification;
- \* Water supplies developed from large-scale or macro rainwater harvesting/stormwater capture; and
- \* Importation or exchange of new water supplies developed outside of Arizona (e.g., ocean desalination)

# Arizona Strategic Vision

## Identifying Opportunities and Challenges

### Challenges

- \* **Complex Physical Water Supply Availability**
- \* **Land Ownership**
  - \* **69% of Lands in Arizona Federally Owned & Managed**
    - \* **Access to Water Supplies and Transmission of Future Water Supplies**
    - \* **Federal Reserve Rights**
    - \* **NEPA/ESA/CWA Compliance**
- \* **General Stream Adjudication**
- \* **Outstanding Tribal Water Rights Claims**
- \* **Complex Water Rights System**

# Arizona Strategic Vision

## Identification & Analysis of Supply/Demand Imbalances

### Water Resources Development Commission (WRDC)

- \* **Established by the Legislature in 2010.**
- \* **Tasked with assessing Arizona's water demand and the supplies available to meet demand for the next 25, 50 and 100 years (2035, 2060 and 2110).**
  - \* Does Arizona need to develop additional water supplies for the future?
  - \* If so, where will the water come from?
  - \* What will it take to get water to end users statewide?
  - \* Where will the funds come from to pay for the water and the infrastructure?



# Arizona Strategic Vision

## Identification & Analysis of Supply/Demand Imbalances (*cont.*)

### WRDC Conclusion

- \* **Total statewide demand will range from a low of 8.1 MAF in 2035 to a high of 10.6 MAF in 2110 (*current demands 6.9 MAF*)**
- \* **Estimated a total statewide difference between supply and demand varies between 900,000 AF and 3.2 MAF**

*WRDC concluded that without proactive and localized water management strategies future water supply and demand imbalances may exist throughout the state, and, therefore, there is a need to acquire additional water supplies and develop infrastructure to access new and existing unused water supplies*

*NOTE: WRDC demands unconstrained by AWS Rules or available supplies*

# Arizona Strategic Vision

## Identification & Analysis of Supply/Demand Imbalances (*cont.*)

### Colorado River Basin Water Supply & Demand Study (Basin Study)

- \* Assess current and future imbalances in water supply and demand for the period 2010 to 2060.
- \* Assess the system reliability and risks to all Basin Resources (water supply, hydropower, water quality, fish and wildlife, flood control, recreation).
- \* Develop and evaluate opportunities/strategies for resolving imbalances.

#### Study Participants

- \* United States Bureau of Reclamation
- \* Seven Colorado River Basin States: Arizona, California, Colorado, Nevada, New Mexico, Utah, Wyoming
- \* Tribal Interests
- \* Other Interested Groups (NGOs, Public Interest)
- \* Public Input at selected phases of the Study



# Arizona Strategic Vision

## Identification & Analysis of Supply/Demand Imbalances (*cont.*)

### Basin Study Conclusion

- \* **Basin Study 2060 Colorado River Basin-Wide Average Imbalance 3.2 MAF**
- \* **Basin Study 2060 Arizona Imbalance is Approximately 242,900 to 1,269,700 acre-feet**



# Arizona Strategic Vision

## Identification of Possible Strategies

- \* **Regional Strategies**
  - Identification & Analysis of “Planning Areas”
- \* **Statewide Priorities**
  - Common Strategies Across the State
- \* **Action Plan**
  - What’s Next??



# Arizona Strategic Vision Regional Strategies



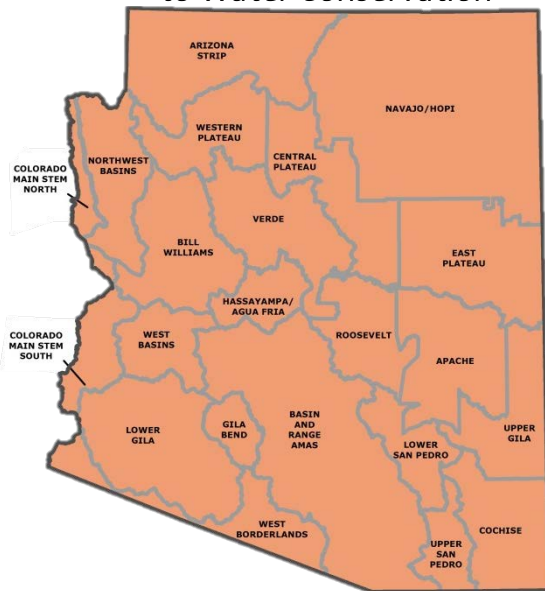
- \* Identification of 22 Planning Areas
- \* Designed around Possible Solutions/Strategies



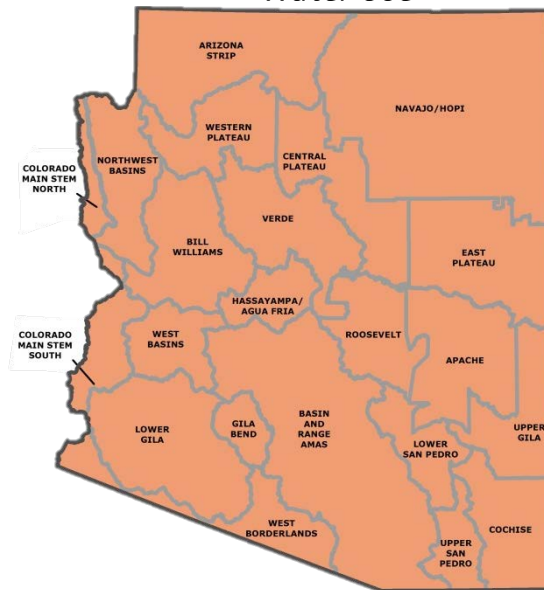
# Arizona Strategic Vision

## Regional Strategies

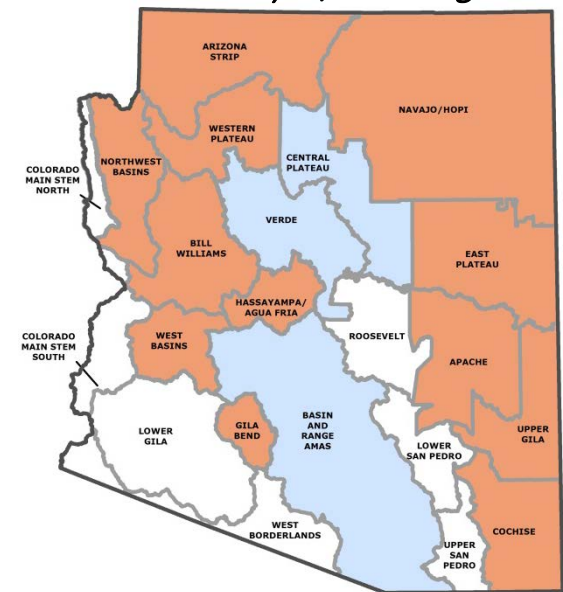
### *Continued Commitment to Water Conservation*



### *Expanded Monitoring & Reporting of Water Use*



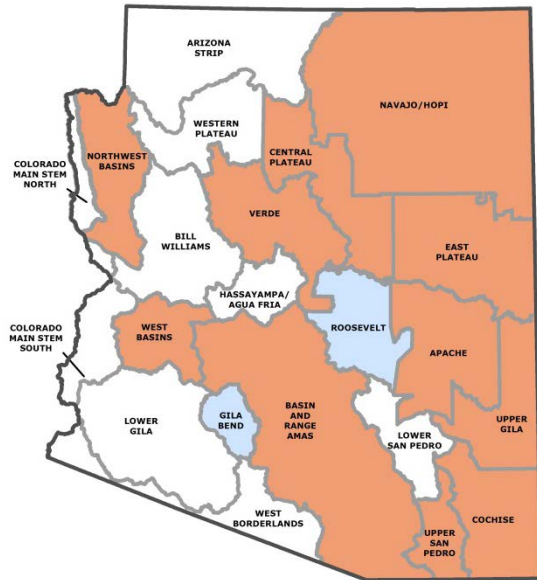
### *Local Water Supply Study Groundwater System Analysis/Modeling*



# Arizona Strategic Vision

## Regional Strategies *(cont.)*

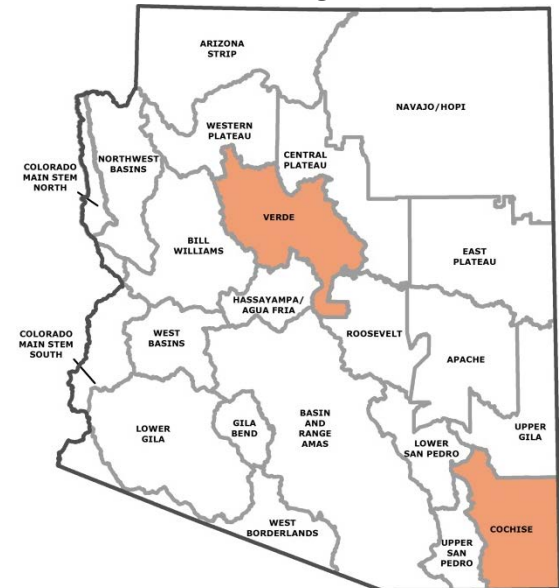
*Increased Direct & Indirect Use of Reclaimed Water*



*Increased Access to Locally Available Potable & Brackish Groundwater and Enhanced Recharge*



*Local Water Management*



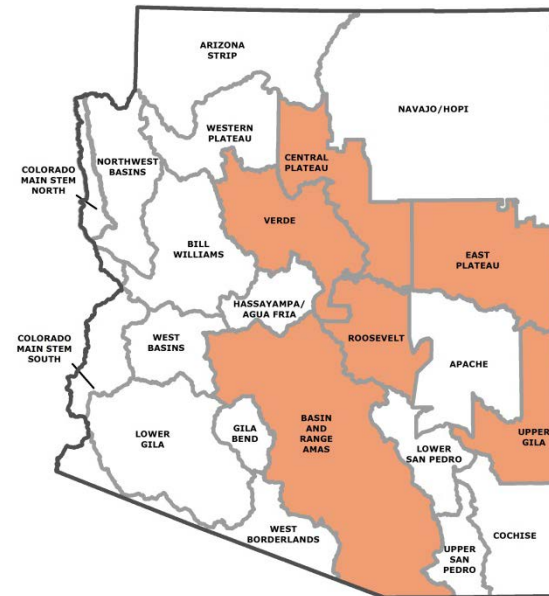
# Arizona Strategic Vision

## Regional Strategies (*cont.*)

### *Forest & Watershed Management*



### *Weather Modification*





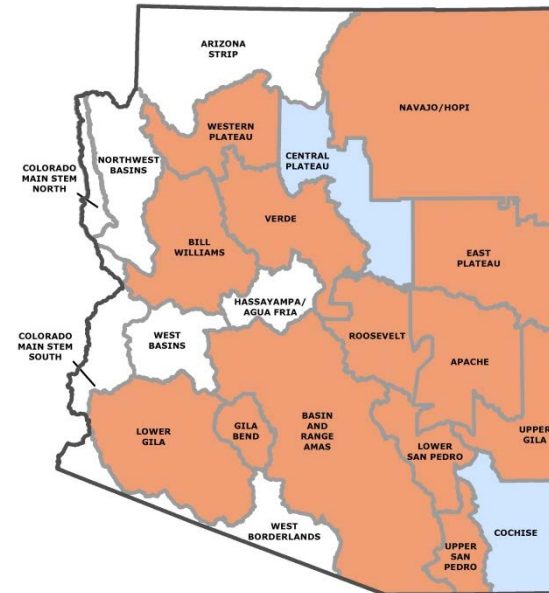
# Arizona Strategic Vision

## Regional Strategies (*cont.*)

*Firming of Low Priority  
Colorado River Supplies*



*Resolution of Federal &  
Non-Federal Water  
Rights Claims*



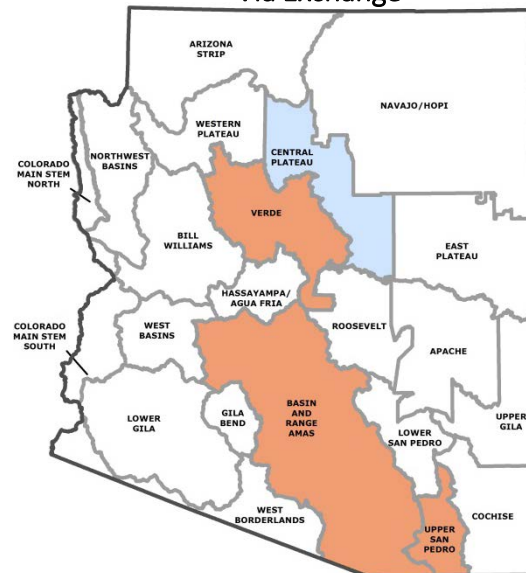
# Arizona Strategic Vision

## Regional Strategies (cont.)

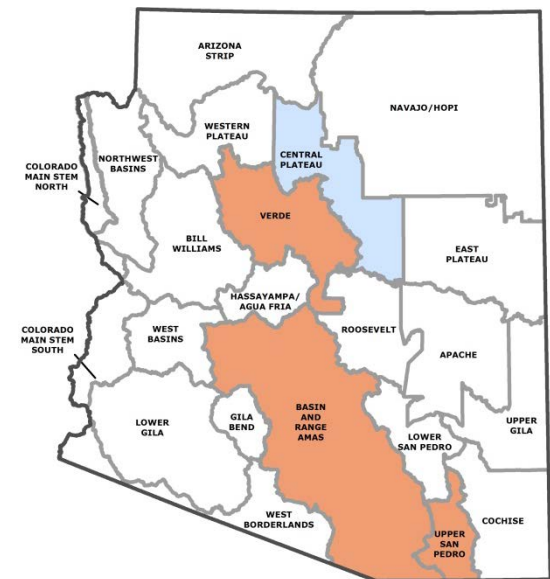
*Importation of  
In-State Surface Water  
or Groundwater*



Importation of  
Desalinated Water  
Via Exchange



Importation of  
Desalinated Water  
Direct Use



# Arizona Strategic Vision

## Strategic Priorities For Moving Arizona Forward

- \* ***Resolution of Federal and Non-Federal Water Rights Claims***
  - General Stream Adjudication
  - Indian Water Rights Settlements
- \* ***Continued Commitment to Water Conservation & Reuse of Reclaimed Water*** – Including Direct Potable Reuse
- \* ***Comprehensive Statewide Data Collection & Analysis*** (Modeling Local Conditions)
- \* ***Identify the Role of In-State Water Transfers***
- \* ***Supply Importation - Desalination***
- \* ***Funding***
  - Business leaders, Community and State leaders
  - Rural Infrastructure

# Arizona Strategic Vision

## Ten Year Action Plan

- \* **Legislate Strategic Vision update every 10 years (Year 1)**
- \* **Begin Discussions on Ocean Desalination (Year 1)**
  - Exchange Options (California & Mexico)
  - Direct Delivery Options (Mexico)
- \* **Resolve ADOT Right-of-Way Issues for Utilities (Year 1)**
- \* **Establish Adjudication Study Committee (Year 1)**
- \* **Begin Discussions on Water Development Financing (Year 2)**
  - Immediate Needs for Water Resources Development Revolving Fund for rural Arizona
  - Long-Term Needs for Large-Scale water importation projects
- \* **Remove statutory limitation (*A.R.S. § 45-801.01(22)*) on the ability to receive long-term storage credits for recharging reclaimed water beyond 2024 (Year 2)**

# Arizona Strategic Vision

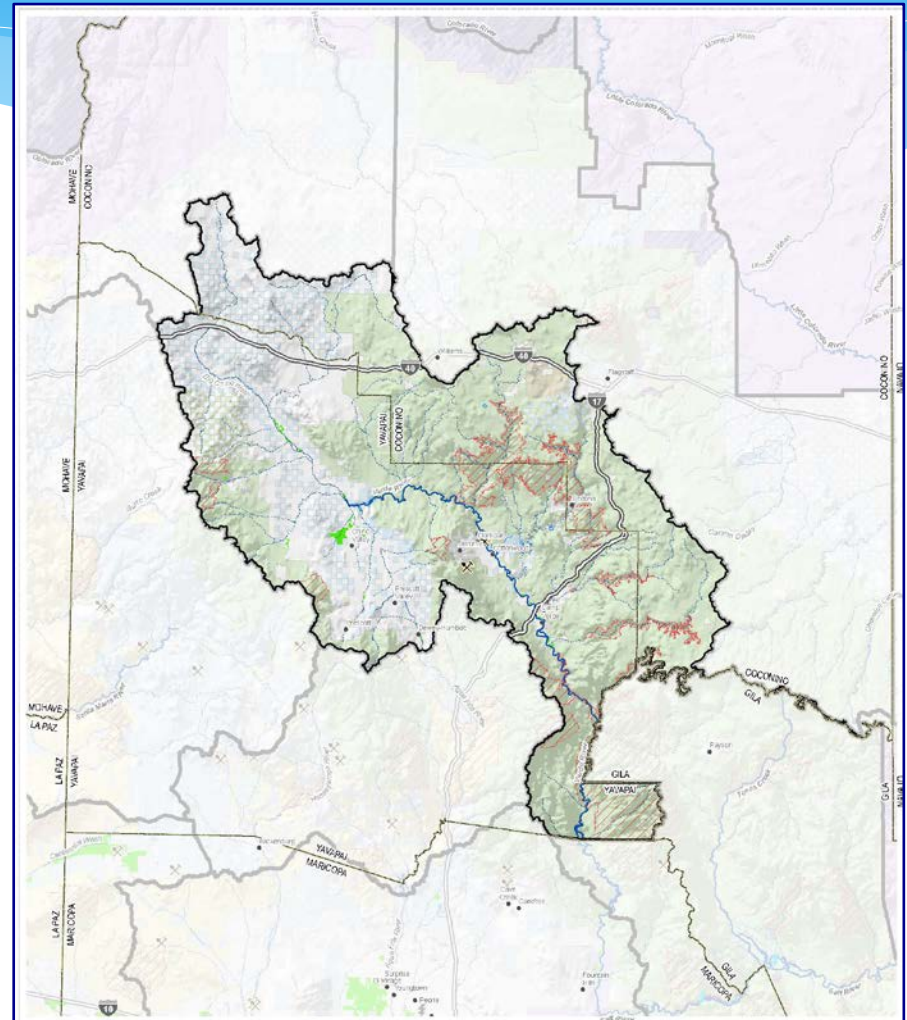
## Ten Year Action Plan (*cont.*)

- \* **Review Legal and Institutional Barriers to Direct Potable Reuse of Reclaimed Water** – develop and implement plan for resolution (Year 3)
- \* **Review and implementation of Adjudication Study Committee Findings** (Year 3)
- \* **Develop and Begin Implementation of Direct Potable Reuse of Reclaimed Water Public Perception Campaign** (Year 4)
- \* **Begin discussions with New Mexico on an Interstate Cooperative Program for Watershed Management/Weather Modification in the Upper Gila Watershed** (Year 4)
- \* **Resolve Remaining Indian Settlements** (Year 1 - 10)
- \* **Resolve General stream Adjudication** (Year 5 - 10)

# Verde Planning Area

Sector	2010	2035	2060
Agriculture	25,362	23,844	23,844
Dairy	0	0	0
Feedlot	0	0	0
Municipal	33,886	54,265	65,909
Other Industrial	567	567	567
Mining	0		
High		4,000	4,000
Low		1,000	1,000
Power Plants	0		
High		22	28
Low		16	19
Rock Production	1,070		
High		4,019	4,883
Low		1,674	2,035
Turf	3,366		
High		4,013	4,217
Low		3,509	4,223
<b>Total (High)</b>	<b>64,251</b>	<b>90,730</b>	<b>103,448</b>
<b>Total (Low)</b>	<b>64,251</b>	<b>84,876</b>	<b>97,597</b>

Projected Water Demands



Land Ownership Map



# Verde Planning Area Supply and Demand

## Characteristics Affecting Projected Water Demands and Supply Availability

- General Stream Adjudication
- Unresolved Indian Water Rights Claims
- Prescott AMA
- Downstream Water Demands
- Wildfire
- Protected Species and Habitat

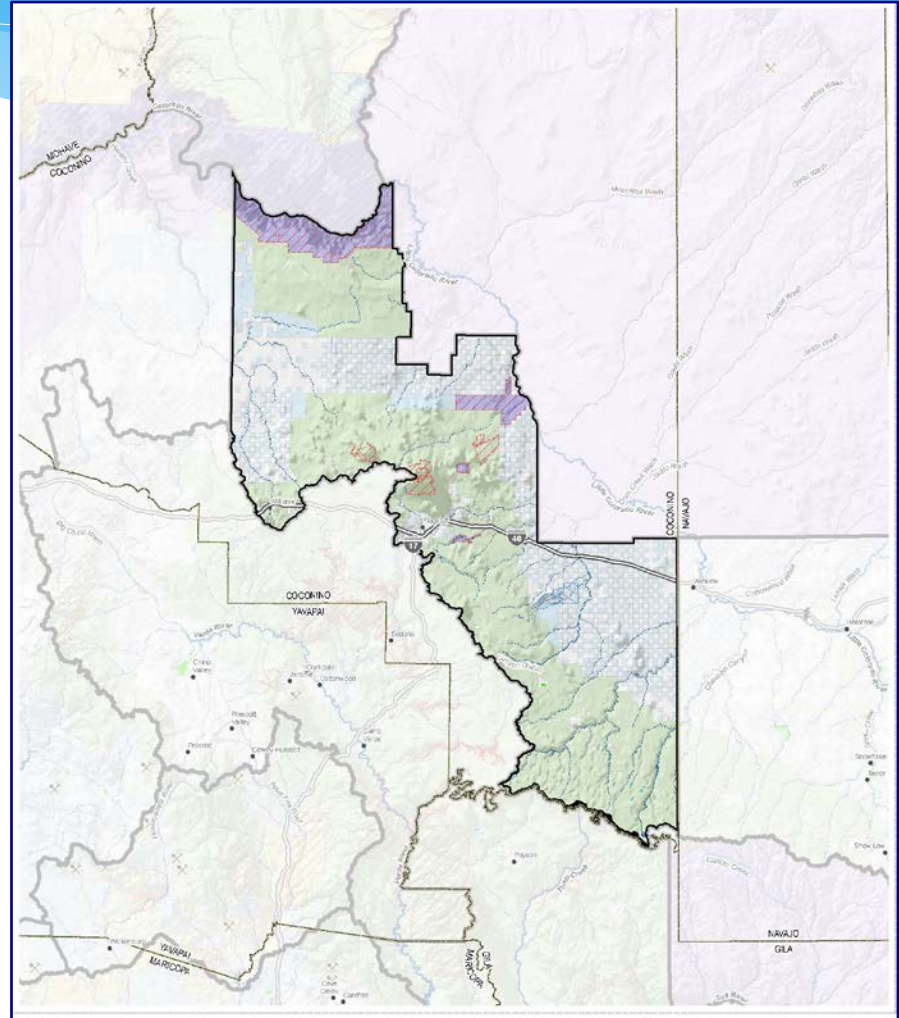
## Strategies for Meeting Future Water Demands

- Resolution of Indian and Non-Indian Water Rights Claims
- Watershed/Forest Management
- Weather Modification
- Reclaimed Water Reuse
- Enhanced Stormwater Recharge
- Water Management
- Importation

# Central Plateau Planning Area

Sector	2010	2035	2060
Agriculture	1,962	1,962	1,962
Dairy	0	0	0
Feedlot	539	539	539
Municipal	12,248	15,734	18,522
Other Industrial	3,076	2,960	2,939
Mining	360		
High		450	450
Low		450	450
Power Plants	0		
High		0	0
Low		0	0
Rock Production	67		
High		1,059	1,259
Low		442	524
Turf	449		
High		454	466
Low		432	467
<b>Total (High)</b>	<b>18,702</b>	<b>23,159</b>	<b>26,137</b>
<b>Total (Low)</b>	<b>18,702</b>	<b>22,519</b>	<b>25,404</b>

Projected Water Demands



Land Ownership Map



# Central Plateau Planning Area Supply and Demand

## **Characteristics Affecting Projected Water Demands and Supply Availability**

- Conservation, Reuse and Water Supply Development
- Ecological Resources

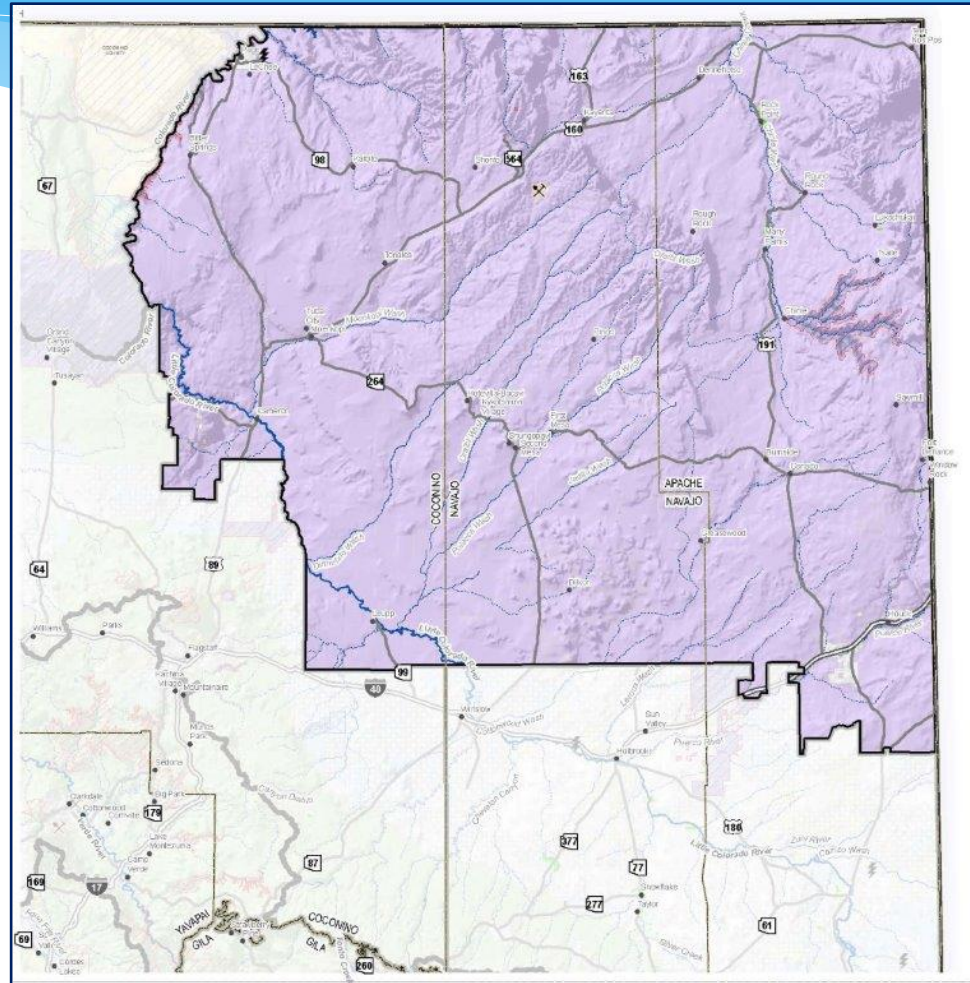
## **Strategies for Meeting Future Water Demands**

- Red Gap Ranch
- Reclaimed Water Reuse
- Weather Modification
- Watershed/Forest Management

# Navajo/Hopi Planning Area

Sector	2010	2035	2060
Agriculture	1,963	1,963	1,963
Dairy	0	0	0
Feedlot	0	0	0
Municipal	19,022	23,093	26,402
Other Industrial	0	0	0
Mining	601		
High		750	750
Low		750	750
Power Plants	23,948		
High		50,000	50,000
Low		40,205	46,425
Rock Production	132		
High		1,818	2,149
Low		756	895
Turf	738		
High		705	703
Low		670	704
<b>Total (High)</b>	<b>46,404</b>	<b>78,328</b>	<b>81,966</b>
<b>Total (Low)</b>	<b>46,404</b>	<b>67,436</b>	<b>77,140</b>

Projected Water Demands



Land Ownership Map

# Navajo/Hopi Planning Area Supply and Demand

## Characteristics Affecting Projected Water Demands and Supply Availability

- Unresolved Indian Water Rights Claims
- General Stream Adjudication
- Infrastructure and Dispersed Population Centers

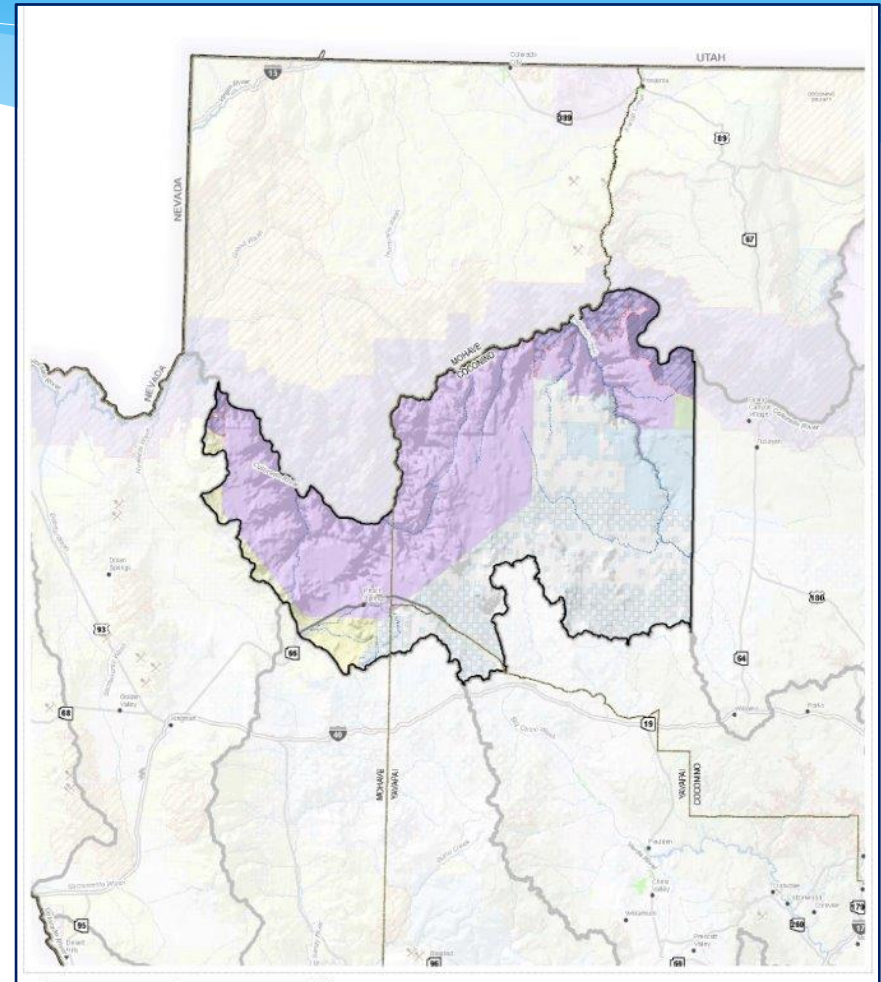
## Strategies for Meeting Future Water Demands

- Resolution of Indian and Non-Indian Water Rights Claims
- Increase Access to Locally Available Groundwater
- Reclaimed Water Reuse
- Expanded Monitoring & Data Collection
- Watershed Management

# Western Plateau Planning Area

Sector	2010	2035	2060
Agriculture	0	0	0
Dairy	0	0	0
Feedlot	0	0	0
Municipal	551	749	914
Other Industrial	0	0	0
Mining	0		
High		300	300
Low		300	300
Power Plants	0		
High		0	0
Low		0	0
Rock Production	1		
High		38	45
Low		16	19
Turf	0		
High		0	0
Low		0	0
<b>Total (High)</b>	<b>552</b>	<b>1,087</b>	<b>1,259</b>
<b>Total (Low)</b>	<b>552</b>	<b>1,065</b>	<b>1,233</b>

Projected Water Demands



Land Ownership Map

# Western Plateau Planning Area Supply and Demand

## Characteristics Affecting Projected Water Demands and Supply Availability

- Unresolved Indian Water Rights Claims
- Land Ownership
- Protected Species and Habitat

## Strategies for Meeting Future Water Demands

- Resolution of Indian and Non-Indian Water Rights Claims
- Groundwater Modeling

# Conclusion

- \* **State of Arizona is not facing an immediate water crisis**
  - \* **Some local areas require more immediate action**
- \* **Growing statewide imbalance between water supplies and demand projected in the next 25 years**
- \* **Lack of an immediate problem increases the potential for inaction, running the risk of procrastinating and not motivating ourselves to plan and invest in our future**
- \* **Arizona's future success is tethered to how well we continue to manage our water resources and develop new water supplies and infrastructure**
- \* **Arizona needs a continuing Strategic Vision for Water Supply Sustainability to guide its economic stability through the next century**

# Questions?

