



# Cornerstones Report

## Market-based Reallocation: Meeting Arizona's Water Sustainability Challenges

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# Presentation Overview

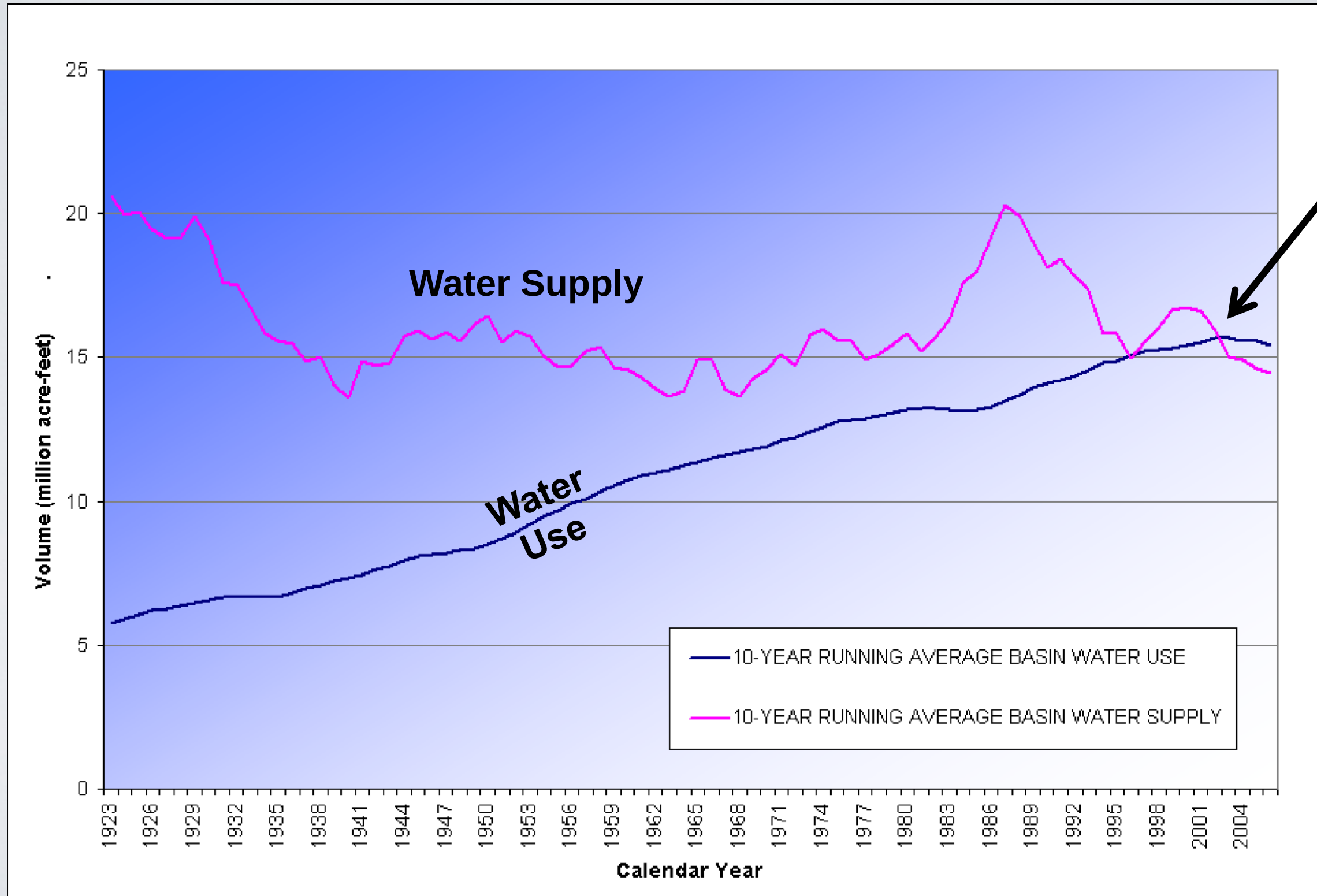
A Drying West

Arizona Context

Market-based Options for Re-allocating Water

Next Steps?

# A Drying West: Colorado River Supply and Demand



# A Drying West



April 1999



January 2009

**Lake Mead has dropped more than 145 feet  
and is currently at less than 40% of capacity**

***Is this the new “normal”?***

# Arizona Context

Groundwater Overdraft

Exempt wells

Supply Reliability

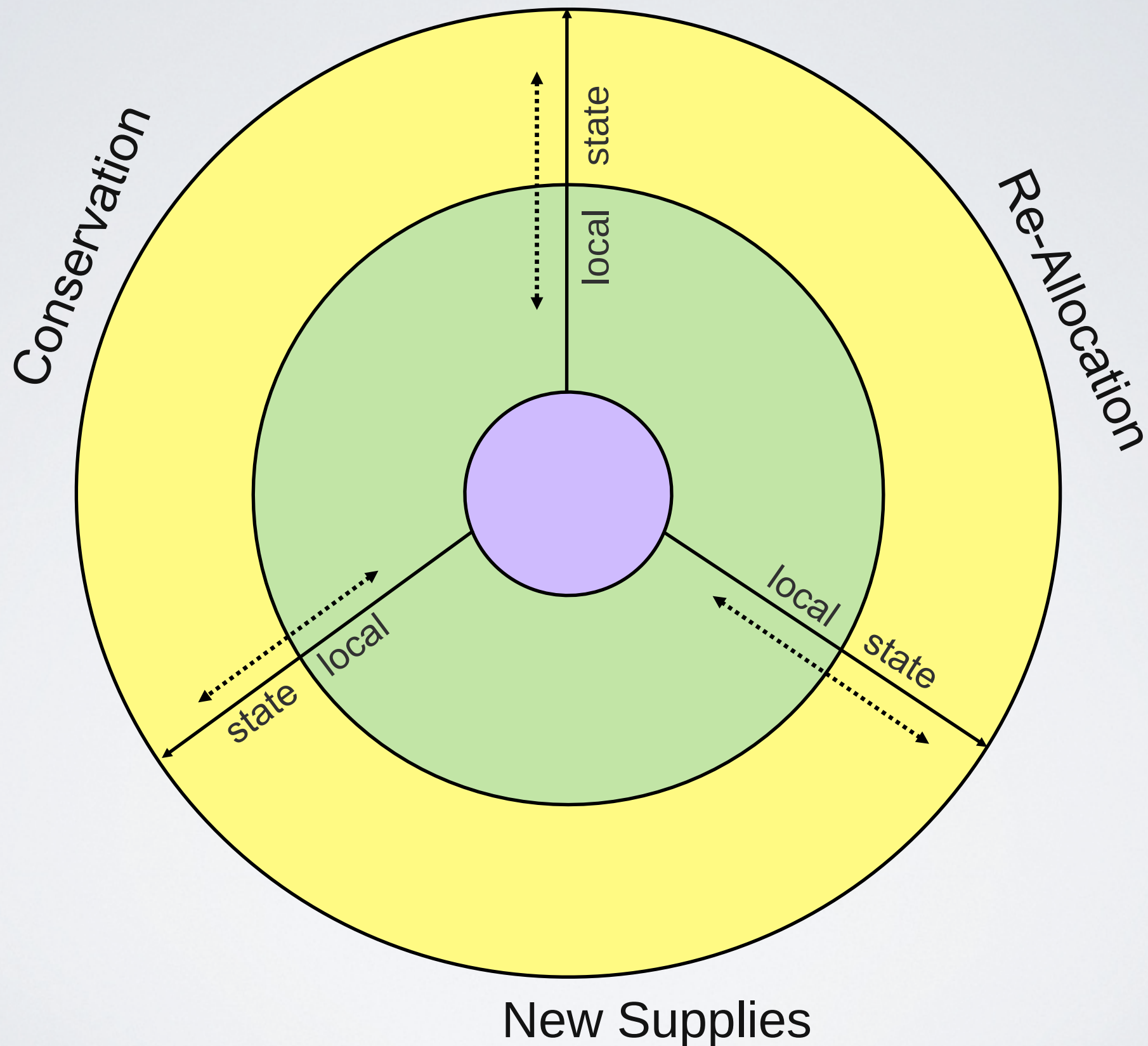
Decline in riparian habitat

Limited Management Funding

Climate Impacts



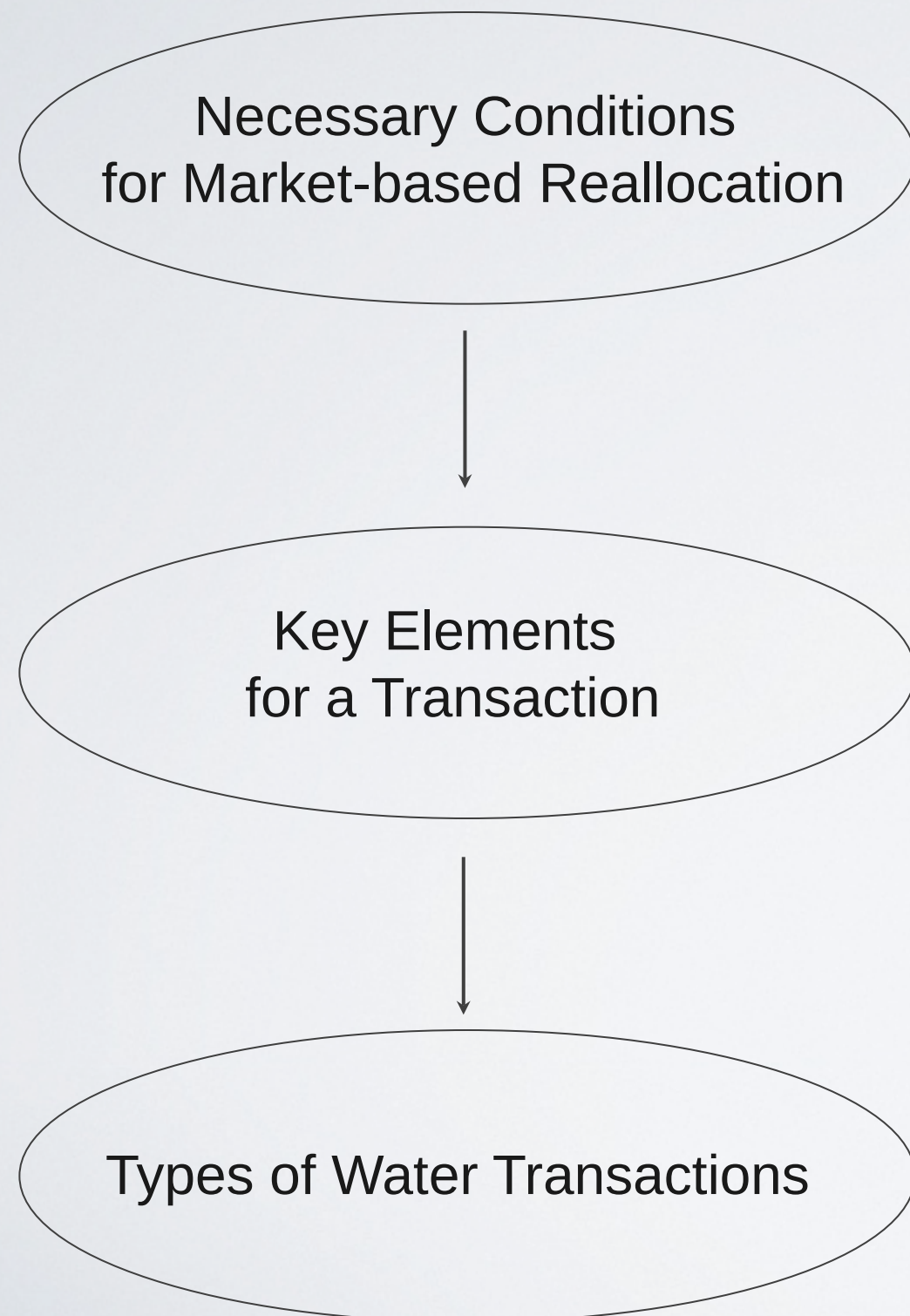
# Sustainable Water Governance in an Era of Scarcity



# Cornerstones Report Overview

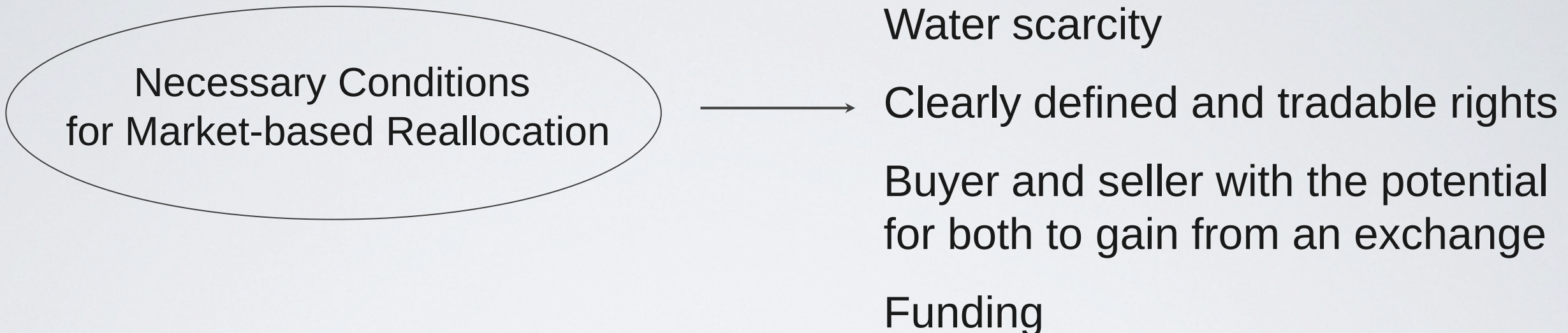
- 
1. Setting the Scene
  2. Market-based Re-allocation Backgr
  3. Arizona's Water Geography
  4. Challenges in Arizona
  5. Lessons from Arizona and the West
  6. Opportunities in Arizona

# Guidelines for Reallocating Water to the Environment Through Market-based Options



# Guidelines for Reallocating Water to the Environment Through Market-based Options

Necessary Conditions  
for Market-based Reallocation



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graph LR; A([Necessary Conditions for Market-based Reallocation]) --> B[Water scarcity]; A --> C[Clearly defined and tradable rights]; A --> D[Buyer and seller with the potential for both to gain from an exchange]; A --> E[Funding];
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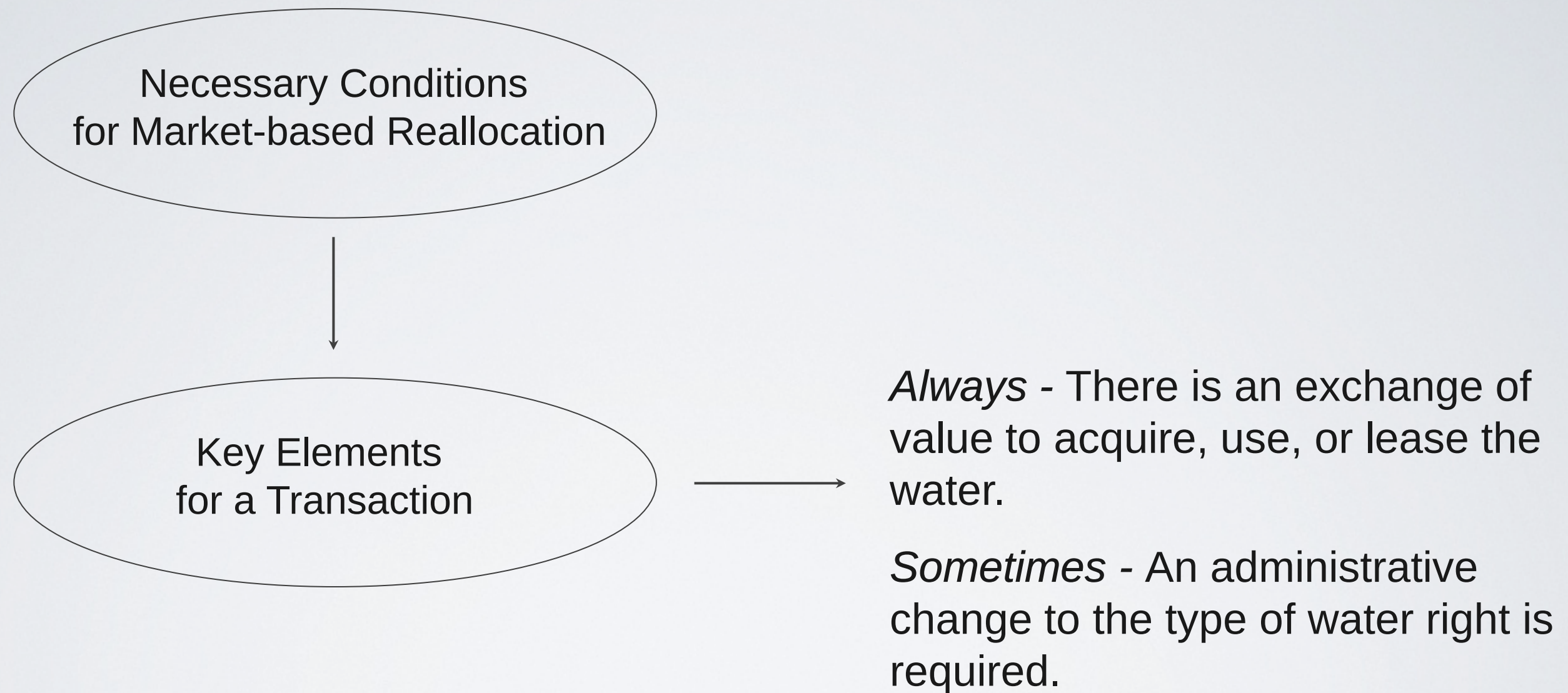
Water scarcity

Clearly defined and tradable rights

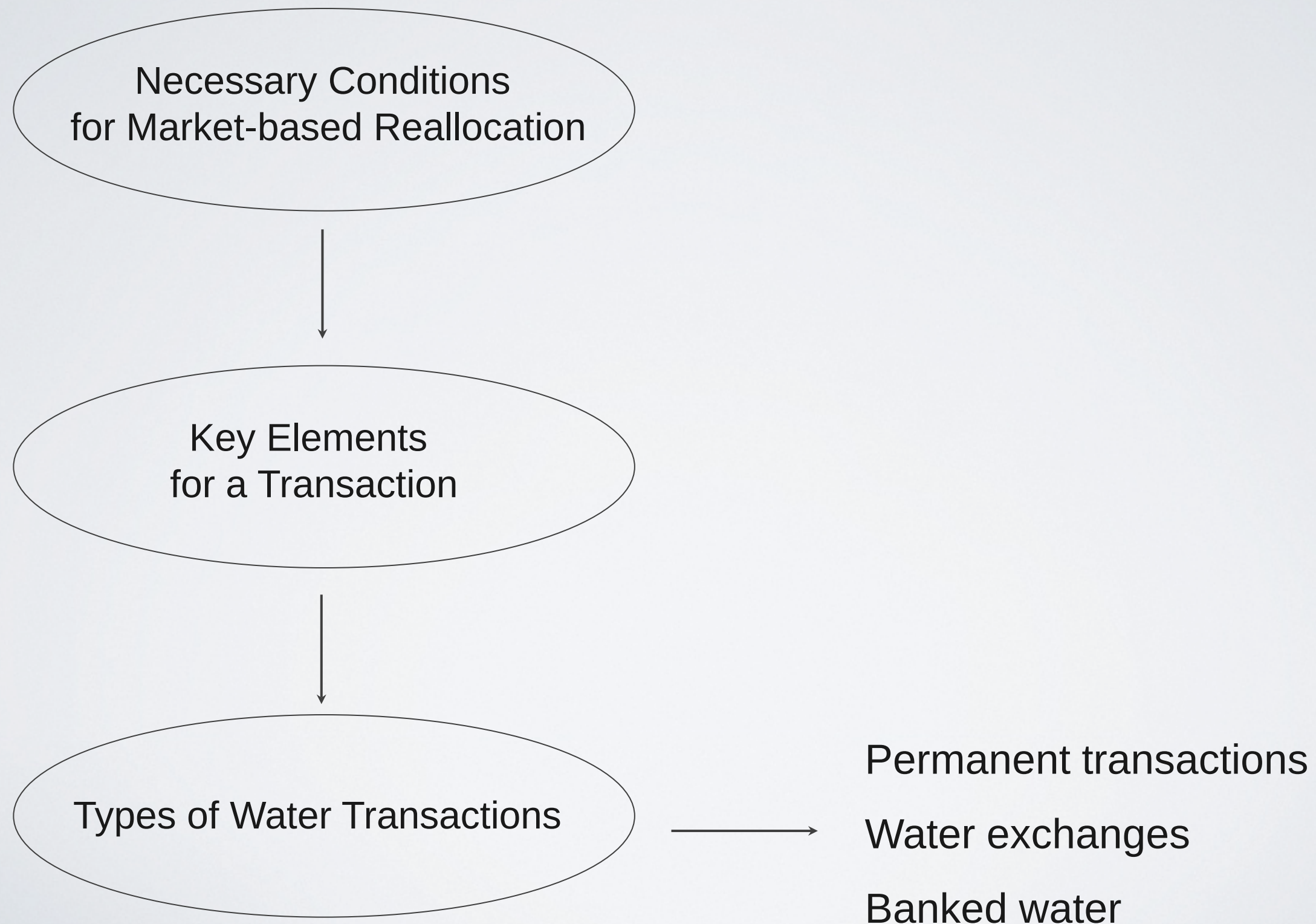
Buyer and seller with the potential  
for both to gain from an exchange

Funding

# Guidelines for Reallocating Water to the Environment Through Market-based Options



# Guidelines for Reallocating Water to the Environment Through Market-based Options



| Enabling Conditions                                                                                                                       | Present in Arizona?                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Appropriation of surface water and groundwater for beneficial uses is well defined, subject to priority, and permits/rights are tradable. | <p>✓ Enabling condition is in place</p> <p>✗ Function is limited due to lack of adjudication and administrative capacity gaps</p>                                                                                       |
| Appropriation of groundwater adequately accounts for impacts on surface water.                                                            | <p>✗ Enabling conditions not in place</p>                                                                                                                                                                               |
| Reclaimed wastewater is permitted and is tradable via contractual agreement.                                                              | <p>✓ Enabling condition is in place</p> <p>✗ Function is limited due to legal uncertainty about effluent versus downstream surface water rights met through effluent discharged into the river channel</p>              |
| Appropriation of groundwater adequately accounts for overdraft in order to ensure long-term sustainable supply.                           | <p>✓ Enabling conditions complete within AMAs</p> <p>✗ Spatial mismatch between withdrawal and recharge</p> <p>✗ Enabling conditions not in place outside AMAs</p> <p>✗ Enabling condition not met for exempt wells</p> |
| Mitigation for groundwater appropriations can be provided through the recharge and recovery of water through ASR.                         | <p>✓ Enabling condition is in place</p> <p>✗ Spatial disconnect between recharge basins and groundwater withdrawals creates localized overdrafts</p>                                                                    |

# Challenges / Opportunities

- Lack of adjudication
- Political commitment to cheap water
- Spatial disconnect in paper v. wet water
- Need for data and solutions for exempt wells
- Separation of groundwater and surface water

# Challenges / Opportunities

- Coordination with planners and NGOs in areas of shared objectives
- Conservation may allow reallocation of existing sources
- Effluent generation as an option for meeting urban and ecological needs





# Thank you!

Questions?

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