I. Introduction and Meeting Logistics
II. Overview of Industrial Conservation Programs
III. Overview of Historical Industrial Data
IV. Discussion of Future Analyses
V. Future Meetings
VI. Closing Remarks
Meetings are open to anyone who would like to participate.

* We are looking for feedback and to learn from participants’ expertise.
* We are expecting an open, collaborative, solution-driven process, including opportunity to challenge ideas in a transparent manner.
A.R.S. § 45-563 (A)

“The director shall develop a management plan for each initial active management area for each of five management periods... and shall adopt the plans only after public hearings... The plans shall include a continuing mandatory conservation program... designed to achieve reductions in withdrawals of groundwater.”

Management Plans Work Group

ADWR-led stakeholder forum for the development of the 5th Management Plans

* Goals:
  * Assess existing conservation programs
  * Update existing management strategies
  * Develop new management strategies
Overview of Industrial Conservation Programs
“The director shall develop a management plan for each initial active management area for each of five management periods... and shall adopt the plans only after public hearings... The plans shall include a continuing mandatory conservation program... designed to achieve reductions in withdrawals of groundwater.”
## Statutory Requirements - Summary

<table>
<thead>
<tr>
<th>A.R.S. § 45-564 et seq.</th>
<th>1MP</th>
<th>2MP</th>
<th>3MP</th>
<th>4MP</th>
<th>5MP</th>
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<tr>
<td>Calculate Water Duty</td>
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<td>Municipal GPCD Reduction</td>
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<td>Municipal Lost &amp; Unaccounted for Water</td>
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<td>General Industrial Conservation</td>
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<td>Conservation for Untreated Providers</td>
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<td>Conservation for Small Providers</td>
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<td>Municipal Non-Per Capita Conservation</td>
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<td>Incentives for Augmentation/Recharge</td>
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<td>Assessment of Water Quality</td>
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<td>Program for Conservation Assistance</td>
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<td>Historical Natural Recharge</td>
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<td>May Reduce Highest 25% of Water Duties</td>
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<td>Agricultural Historic Cropping Program</td>
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<td>Agricultural BMP Program</td>
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<td>Option for Alternative Agricultural Programs</td>
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<td>May Establish Cropped Acreage Program</td>
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<td>May Include Program for GFR Purchase &amp; Retirement</td>
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<td>Recommendations to AWBA/for well locations</td>
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ADWR’s definition of Industrial Use:

* A non-agricultural use of water NOT supplied by a city, town, or private water company.

* Example: Golf course or a mining facility with their own wells and groundwater rights or permits.
A.R.S. § 45-566(A)(2)

“For industrial uses, including industrial uses within the exterior boundaries of the service area of a city, town, private water company or irrigation district, the program in each plan shall require the use of or establish conservation requirements based on the use of the latest commercially available conservation technology consistent with reasonable economic return.”
A.R.S. § 45-563(A): “…The plans shall include a continuing mandatory conservation program for all persons withdrawing, distributing or receiving groundwater designed to achieve reductions in withdrawals of groundwater.”

* Programs for Three Sectors:
  * Agricultural (Chapter 4)
    * Base Program
    * Historic Cropping Program
    * Best Management Practices Program (BMP)
  * Municipal (Chapter 5)
    * GPCD Program
    * Non-Per Capita Program (NPCCP)
  * Industrial (Chapter 6)
    * General Requirements
    * Specific Subsector Programs

* Conservation Programs include:
  * Regulatory requirements related to water use
  * Reporting requirements
  * Conservation targets
  * Flexibility provisions
  * Compliance provisions
Avoid waste, make diligent efforts to reuse and recycle water

Avoid single pass cooling or heating unless water is reused

Use low flow plumbing fixtures

Use low water use plants where feasible, use efficient irrigation systems
Industrial Subsectors

* Turf-Related Facilities (≥ 10 acres)
* Sand & Gravel Facilities (>100 AF)
* Metal Mining Facilities (>500 AF)
* Large Scale Power Plants (>25 Megawatts)
* Large Scale Cooling Facilities (≥ 1,000 tons)
* Dairy Operations (monthly avg ≥ 100 lactating cows/day)
* Cattle Feedlots Operations (monthly avg ≥ 100 cattle/day)
* New Large Landscape Users (> 10,000 sq ft of water-intensive landscape)
* New Large Industrial Users (> 100 acre-feet/year)
* Water Volumes and Sources
* Additional reporting requirements by sub-sector
  * Example: Large Scale Power Plants report cycles of concentration for cooling water
* New requirements
  * Turf-related Facilities
    * Turfed acreage
    * Water surface acres
    * Low Water Use Landscaped acres
Use by Source – All AMAs
Use by Subsector – All AMAs

Acre-Feet x 100,000

- Turf
- Mining Facilities
- Power Generation Facilities
- Non Facility Use
- Dairy Facilities
- Sand and Gravel Facilities
- Cattle Feedlots
Discussion of Future Analyses
Management Plans Work Group

* Work Group
  * The MPWG is an ADWR-led stakeholder forum for the development of the Fifth Management Plans

* Goals:
  * Assess existing conservation programs
  * Update existing management strategies
  * Develop new management strategies
As a part of the 4MP, ADWR will periodically publish an analysis of each AMA’s progress toward its goal.

* Expand scope of report required under A.R.S. § 45-563.01 to include analysis of:
  * Effectiveness of Conservation Programs in all 3 sectors
  * Progress toward the goal in each of the 5 AMAs

* Transparency
  * Communicating success or need for improvement
  * Tracking and ensuring progress of each AMA toward its goal
  * Sharing underlying data and methodology
Analysis of Conservation Programs

* Ways to look at the data we have?
  * Per capita use for power production?
  * Turf application rates?
  * Does this need to be more qualitative?

* Do we need additional data?
  * Currently non-reported data from associations
  * How do we incorporate economic considerations?

* Considerations of data quality
Future Meetings

* Frequency?
  * Series of meetings focusing on each subsector?
* Next Dates?
* Topics?

* Subgroups
  * Safe-Yield Technical: 1pm on September 23, 2019
* Next MPWG meeting: 2pm on December 4, 2019
Questions?

managementplans@azwater.gov

Management Plans Work Group:
new.azwater.gov/5MP

Full Text of Management Plans:
new.azwater.gov/ama/management-plans
Backups
Turf Related Facilities
(≥ 10 acres)

* Facility with 10 or more acres of water intensive landscaping
* Allotment Based Program (Based on the age and size of the facility)
* Incentives to use effluent for landscape watering
* Prepare long-range conservation plans.
## Turf Application Rate (AF/ac)

<table>
<thead>
<tr>
<th>Location</th>
<th>3MP</th>
<th>Proposed</th>
<th>Effective</th>
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<tbody>
<tr>
<td>Prescott</td>
<td>4.9</td>
<td>4.6</td>
<td>5MP</td>
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<tr>
<td>Phoenix</td>
<td>4.9</td>
<td>4.6</td>
<td>4MP</td>
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<tr>
<td>Pinal</td>
<td>4.8</td>
<td>4.5</td>
<td>4MP</td>
</tr>
<tr>
<td>Tucson</td>
<td>4.6</td>
<td>4.3</td>
<td>5MP</td>
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<tr>
<td>Santa Cruz</td>
<td>4.6</td>
<td>4.3</td>
<td>4MP</td>
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</tbody>
</table>

## Limit on Turfed Acreage

<table>
<thead>
<tr>
<th>3MPs &amp; Adopted 4MPs</th>
<th>Proposed for Remaining 4MPs</th>
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<tr>
<td></td>
<td>Applies to new or expanding parks, schools, HOAs, and other turf-related facilities*</td>
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<td>Applies to Regulation Post-1985 golf courses</td>
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</tbody>
</table>

*Applies to any turf-related facility that is not a cemetery.*
Sand and Gravel Operations
( > 100 acre-feet/year)

* Must construct disposal ponds or install clarifiers to collect and reuse water runoff;
* Must implement measures to reduce water used for dust control and equipment cleaning;
* Must prepare and implement long-range water conservation plans.
Metal Mining Operations
(> 500 acre-feet/year)

* Minimize amount of water used in tailings transport (48%-50% or greater solids).
* Maximize tailings water reuse & minimize evaporation
* Minimize water use for dust control
* Prepare long-range conservation plans.
Large Scale Power Plants
(>25 megawatts)

* Must achieve a specified number of “cycles of concentration,” a measure of the degree to which cooling water is recycled, before “blowing down” used water.

* Pre-1985 facilities must achieve 7 or more cycles, and post-1984 facilities 15 or more cycles.
Large Scale Cooling Towers
(≥ 1,000 tons)

* Similar to the power plant requirement, LSCT must meet either a specified concentration of:
  * silica (120 mg/L) or
  * total hardness (1,200 mg/L)
before “blowing down” used water and adding clean or “make-up” water.
Dairy Operations
(monthly avg ≥ 100 lactating cows/day)

* Maximum allotments are based on water use needs per cow in the base program.
  * 105 GAD for lactating animals and 20 GAD for non-lactating animals

* The Third Management Plan also offers a BMP program for dairies to allow greater flexibility in water use per cow while still maintaining a high level of water efficient technology.
Cattle Feedlot Operations
(monthly avg ≥ 100 cattle/day)

* Maximum annual allotments are based on water use needs per head of cattle.
* Operations receive 30 GAD per head of cattle for drinking, dust control requirements and other uses (feed prep).
New Large Landscape User
(> 10,000 sq ft of water-intensive landscape)

* Is a non-residential facility that has a water-intensive landscaped area in excess of 10,000 sq ft that was planted after January 1, 1990.

* If NOT a hotel, must limit water intensive landscape to 20% of the area in excess of 10,000 sq feet.

* Effluent and wastewater incentives exist
New Large Industrial User
(> 100 acre-feet/year)

* Is an industrial user that begins using more than 100 AF of water/year for industrial purposes after Jan 1, 2000.

* Shall submit to the ADWR a plan to improve the efficiency of water use by the facility.