



5th Management Plans Work Group
Safe-Yield Technical Subgroup Meeting

February 4, 2020

Agenda

- I. Welcome
- II. Detailed Discussion of Individual Safe-Yield Components
- III. Closing Remarks

Timeline

4MP

Phoenix
AMA
Adoption

Pinal AMA
Adoption

Santa Cruz
AMA
Adoption

2019

2021

2022

2023

MPWG

Drafting
Plans

Adopting
Plans

5MP



MANAGEMENT PLANS WORK GROUP

A.R.S. § 45-563 (A)

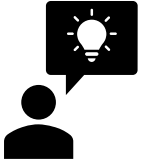
“The director shall develop a management plan for each initial active management area for each of five management periods... and shall adopt the plans only after public hearings... The plans shall include a continuing mandatory conservation program... designed to achieve reductions in withdrawals of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

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

5MP Safe-Yield Technical Subgroup



Goals

- * Consensus on methodology and definitions
 - * Assessing each component
 - * Identifying a general approach for assessing long-term status
 - * Consistency across AMAs
- * Clear communication of status of each AMA

Strategy

- * Annual Calculation
 - * Consensus on treatment of components
 - * Consensus on annual calculation
- * Long-Term Analysis
 - * Approach(es) for “Long-Term” Analysis
 - * Assessing “Progress toward goal”
- * Best Practices for Communicating Status

Safe-Yield Data and Calculation



Management Goals (A.R.S. § 45-562)

Safe-yield:

“A groundwater management goal which attempts to achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an active management area and the annual amount of natural and artificial recharge in the active management area.”

(A.R.S. § 45-561(12))

Prescott, Phoenix, and Tucson AMAs:

Safe-yield by the year 2025

Pinal AMA:

To allow development of non-irrigation uses and to preserve existing agricultural economies in the AMA for as long as feasible, consistent with the necessity to preserve future water supplies for non-irrigation uses.

Santa Cruz AMA:

To maintain a safe-yield condition in the AMA and to prevent local water tables from experiencing long term declines



Annual Calculation – Data Sources

Inflows

- * Natural
 - * Groundwater Inflow
 - * Streambed Recharge
 - * Mountain-front Recharge
- * Artificial
 - * Incidental Recharge
 - * Agricultural
 - * Municipal
 - * Industrial
 - * Canal Seepage
 - * Cut to the Aquifer
 - * CAGRDR Replenishment

Outflows

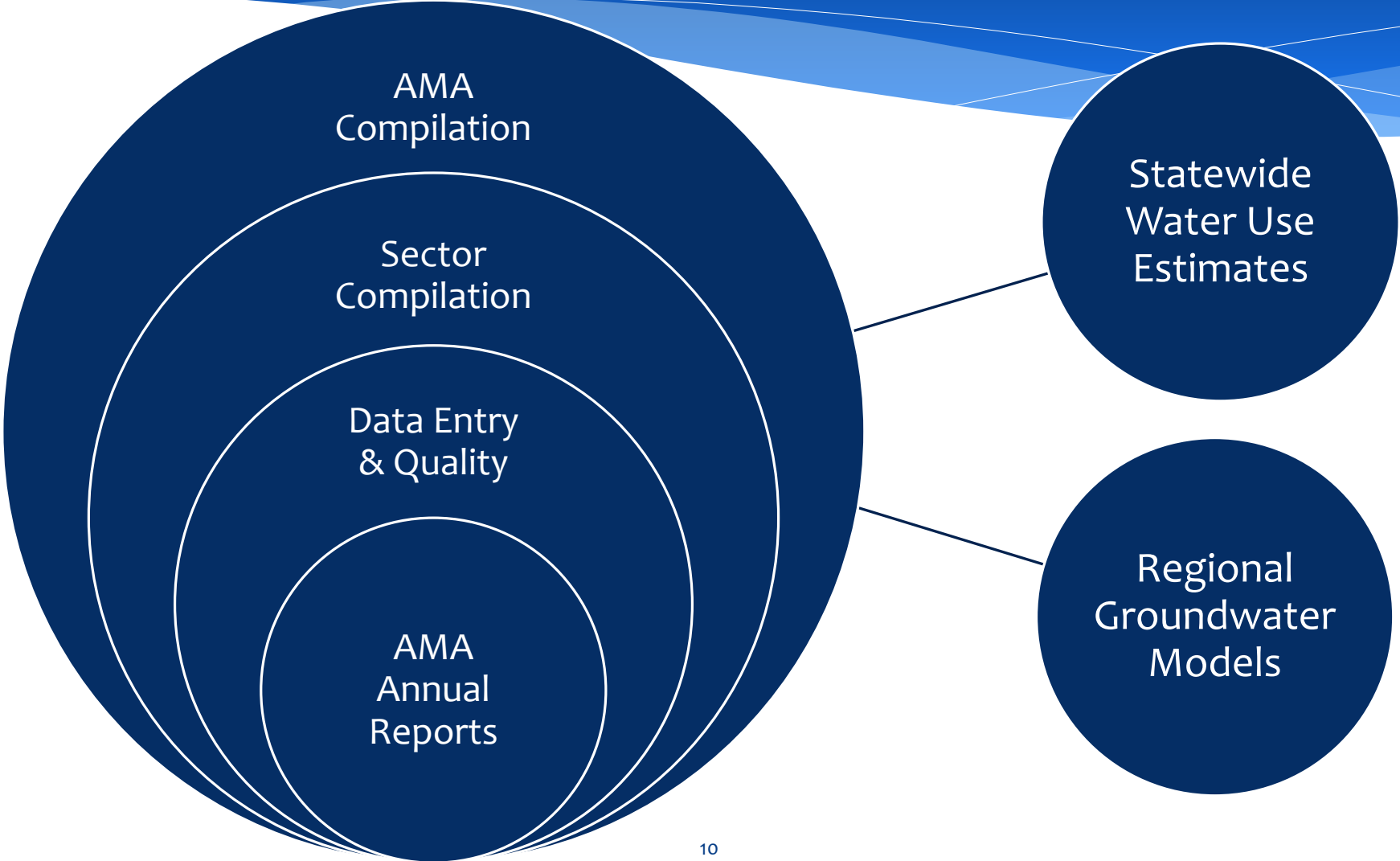
- * Natural
 - * Groundwater Outflow
 - * Riparian Demand
- * Artificial
 - * Sector Demands
 - * Agricultural
 - * Municipal
 - * Industrial
 - * Indian
 - * Remediated Groundwater
 - * Poor Quality Groundwater

Items highlighted in blue are outputs of ADWR's regional groundwater models.

Items highlighted in gray are compiled from AMA Annual Reports.



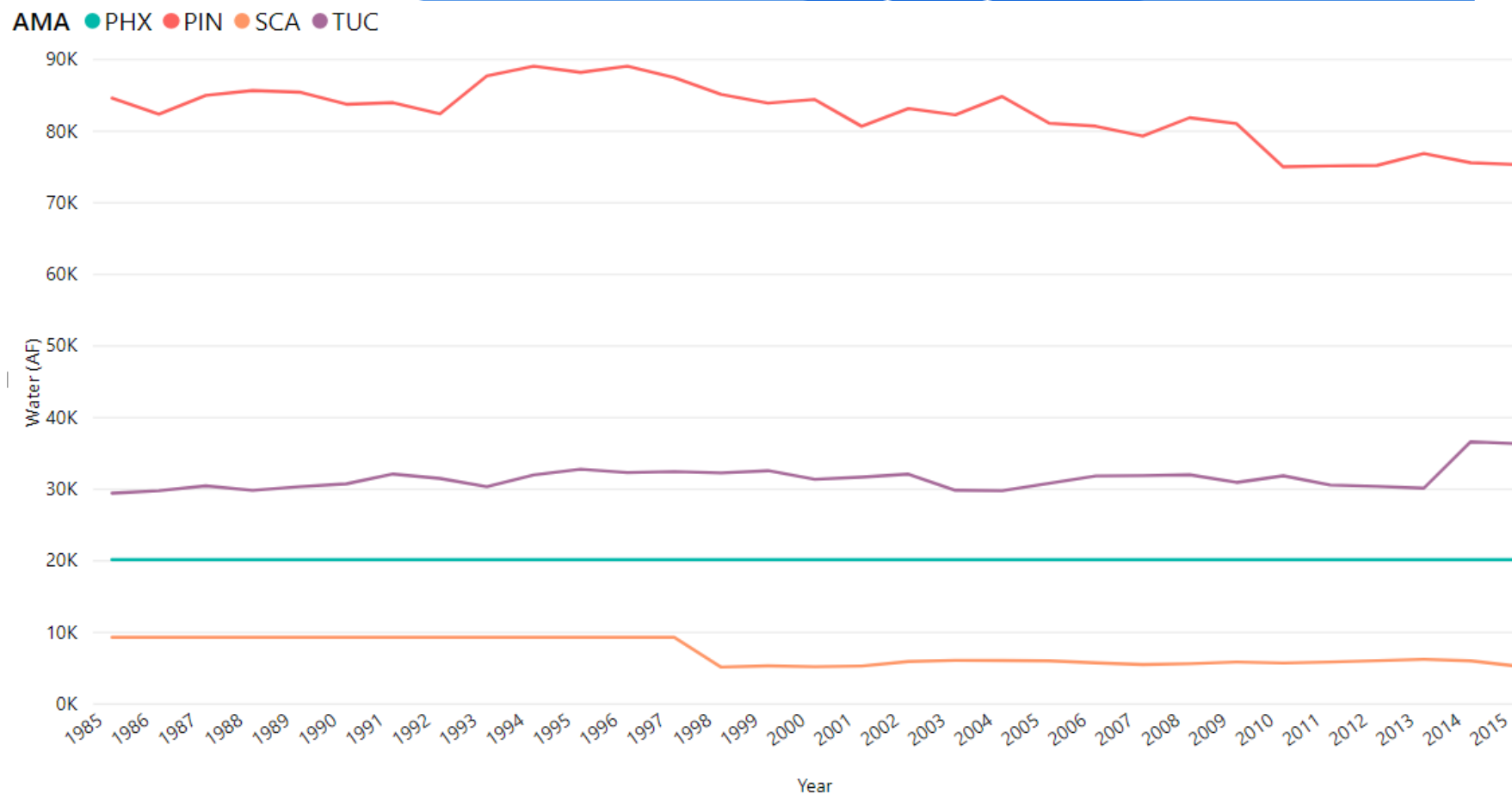
ADWR Data



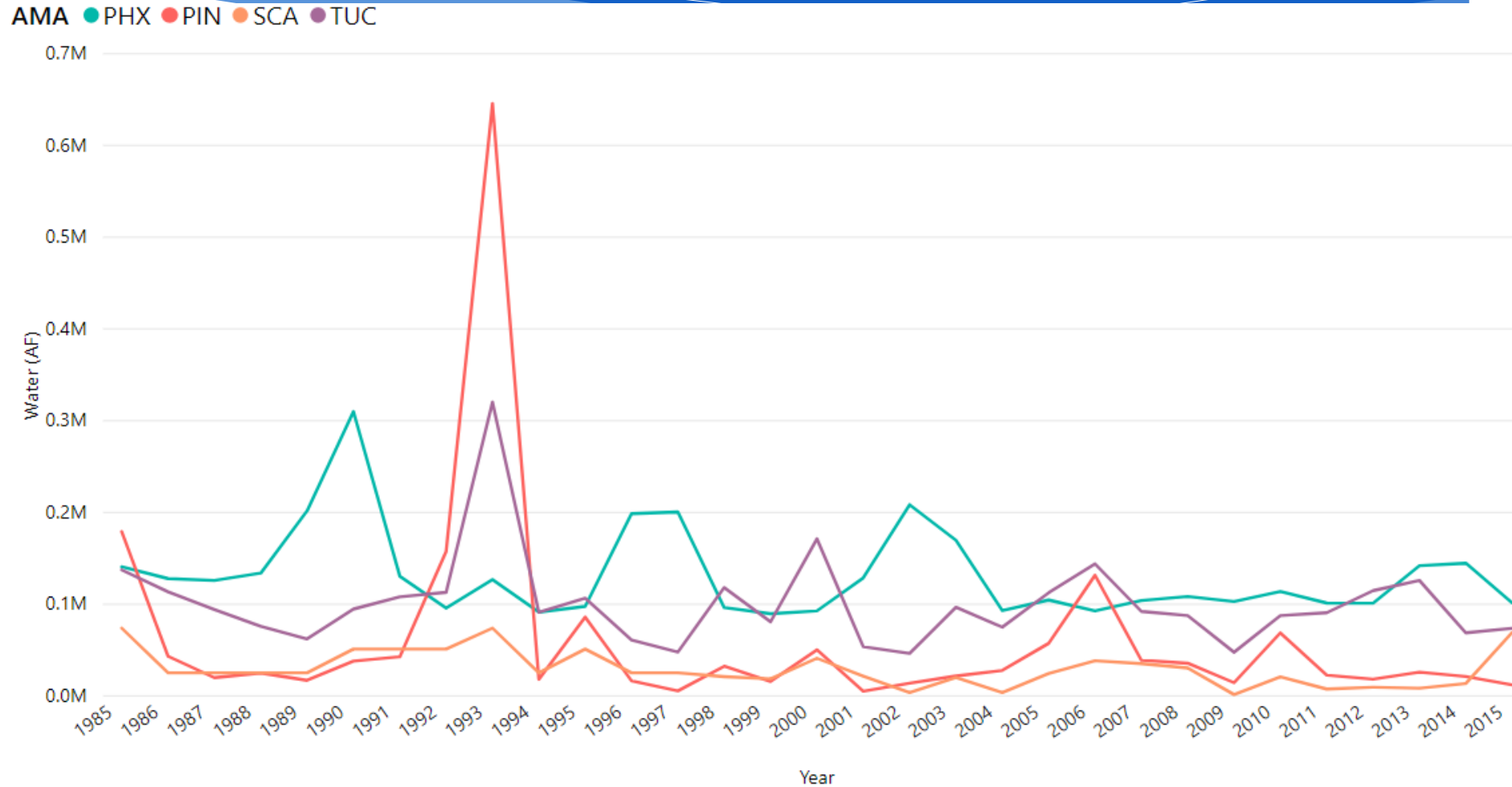
Safe-Yield Components: Inflows

Groundwater Inflow

- * Inflow
- * Natural component
- * Output of ADWR's regional groundwater models



Streambed Recharge

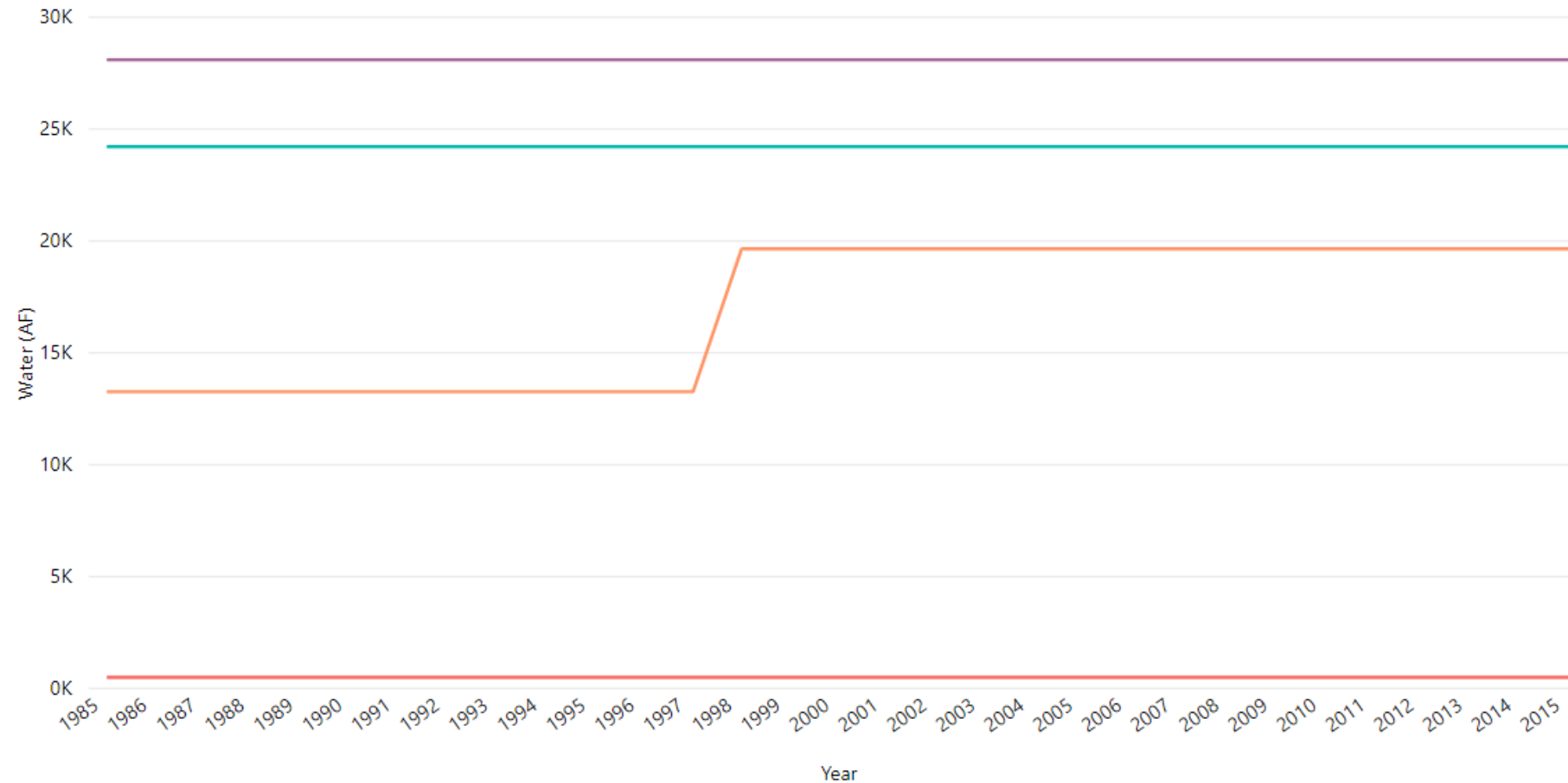


- * Inflow
- * Natural component
- * Output of ADWR's regional groundwater models

- * Variable year to year
- * Method of lagging differs between AMAs

Mountain-front Recharge

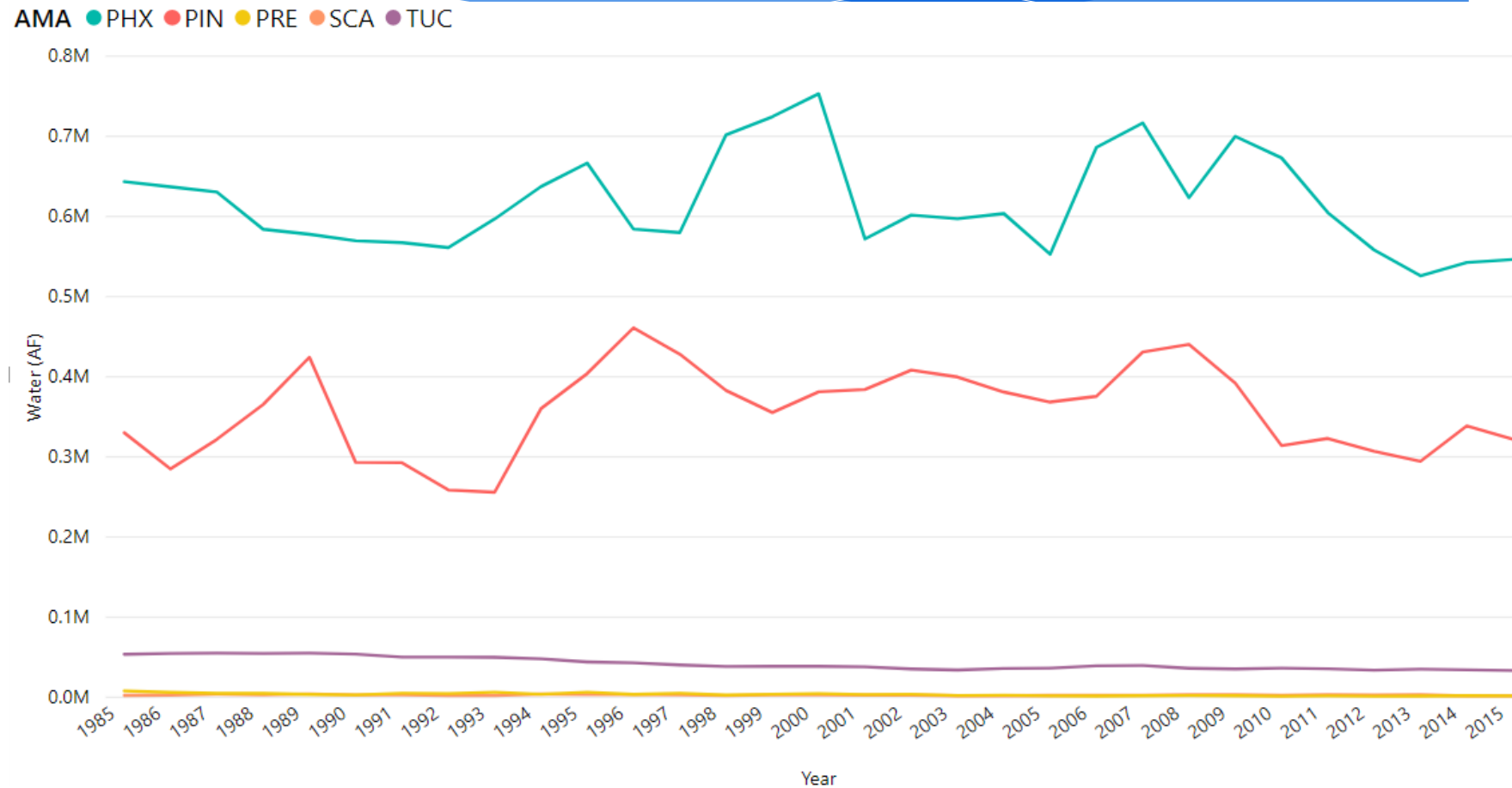
AMA PHX PIN SCA TUC



- * Inflow
- * Natural component
- * Output of ADWR's regional groundwater models
- * Typically constant year-to-year

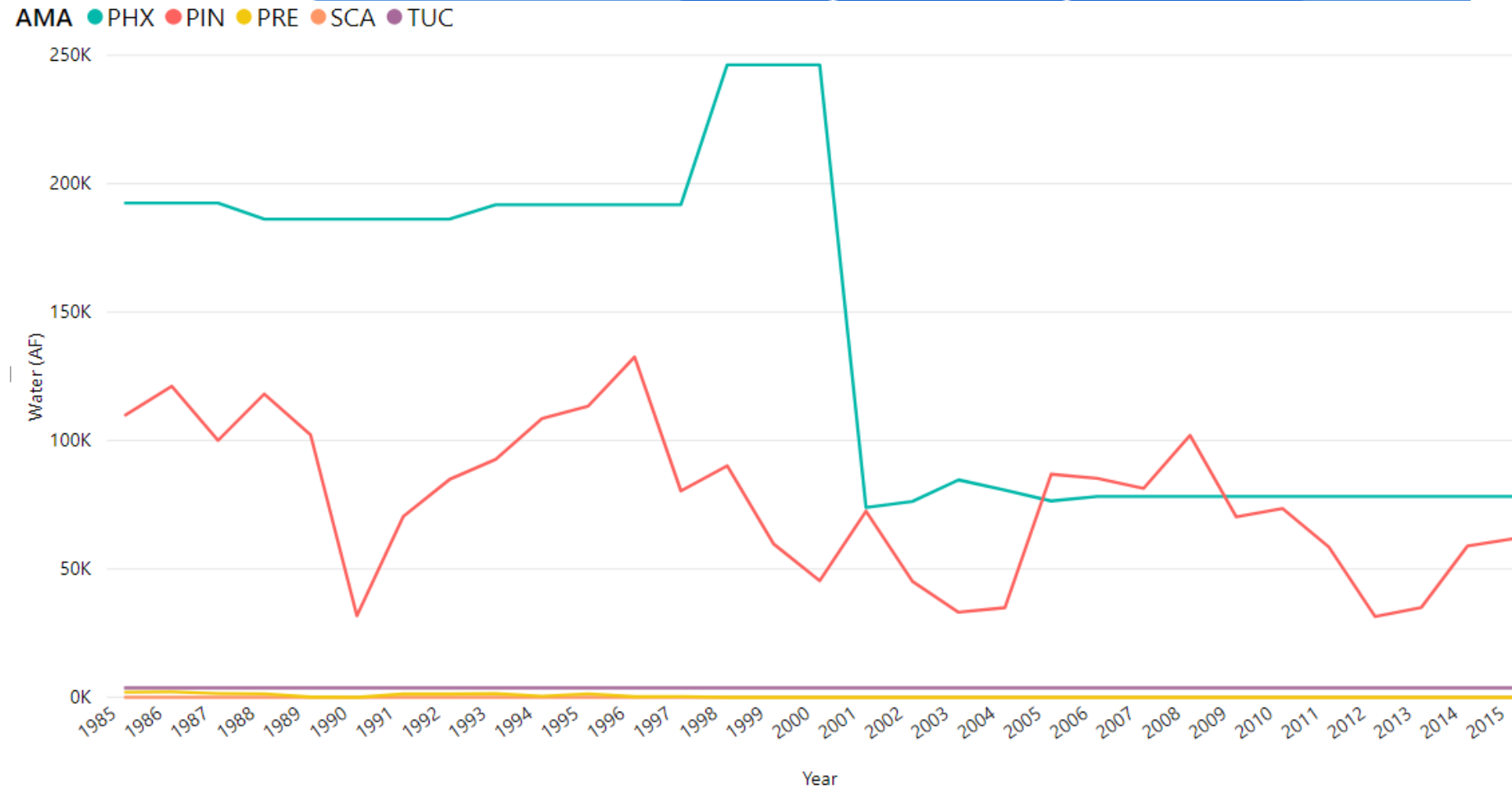
Incidental Recharge

- * Inflow
- * Artificial
- * Estimated for Agricultural, Municipal, & Industrial sectors
 - * Agricultural Incidental Recharge is an output of ADWR's regional groundwater models
 - Method of lagging may differ between AMAs
 - * Municipal & Industrial Incidental Recharge are calculated as a percent of total sector demands
 - * Demands are compiled from AMA Annual Reports
 - Not lagged



Canal Seepage

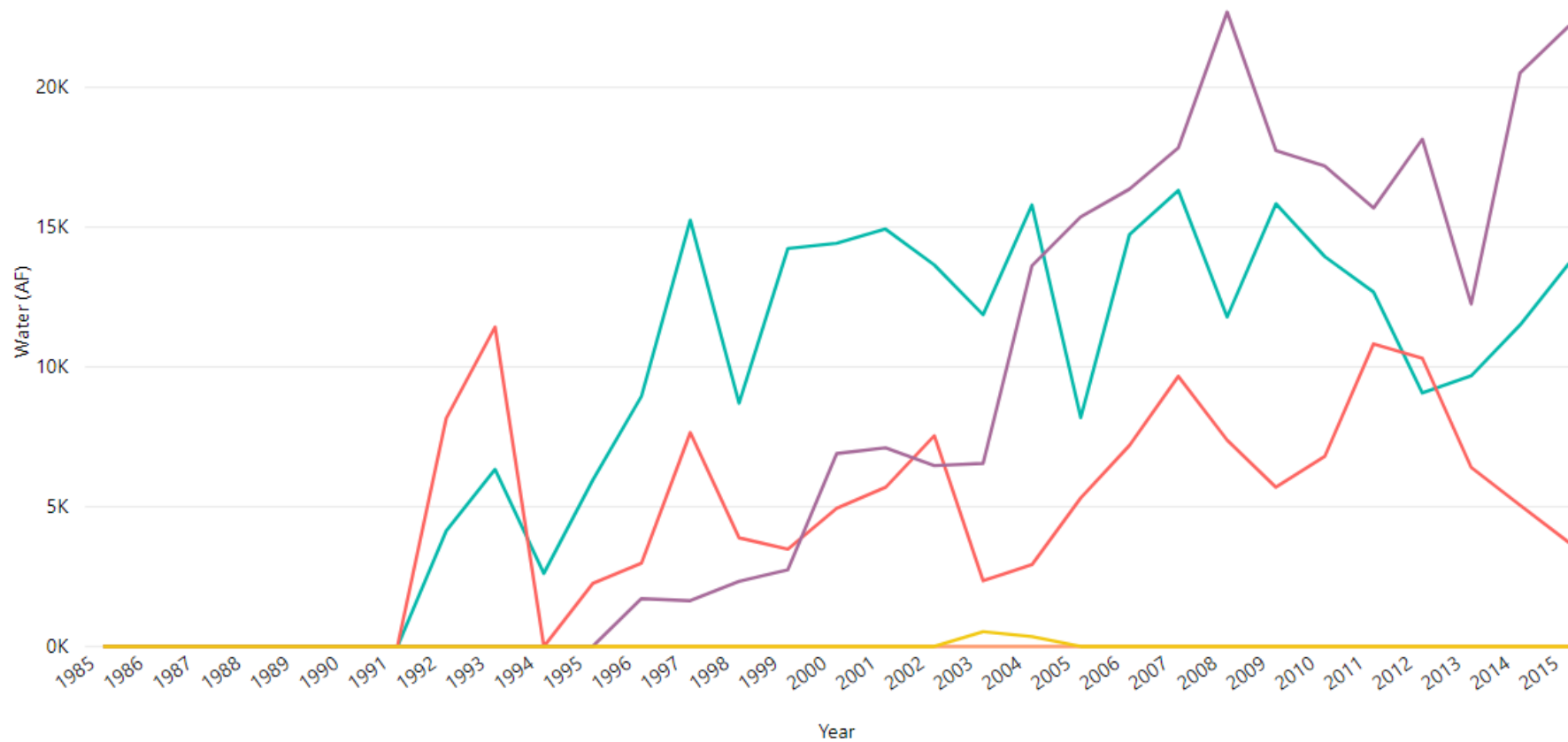
- * Inflow
- * Artificial
- * Output of ADWR's regional groundwater models



Cut to the Aquifer

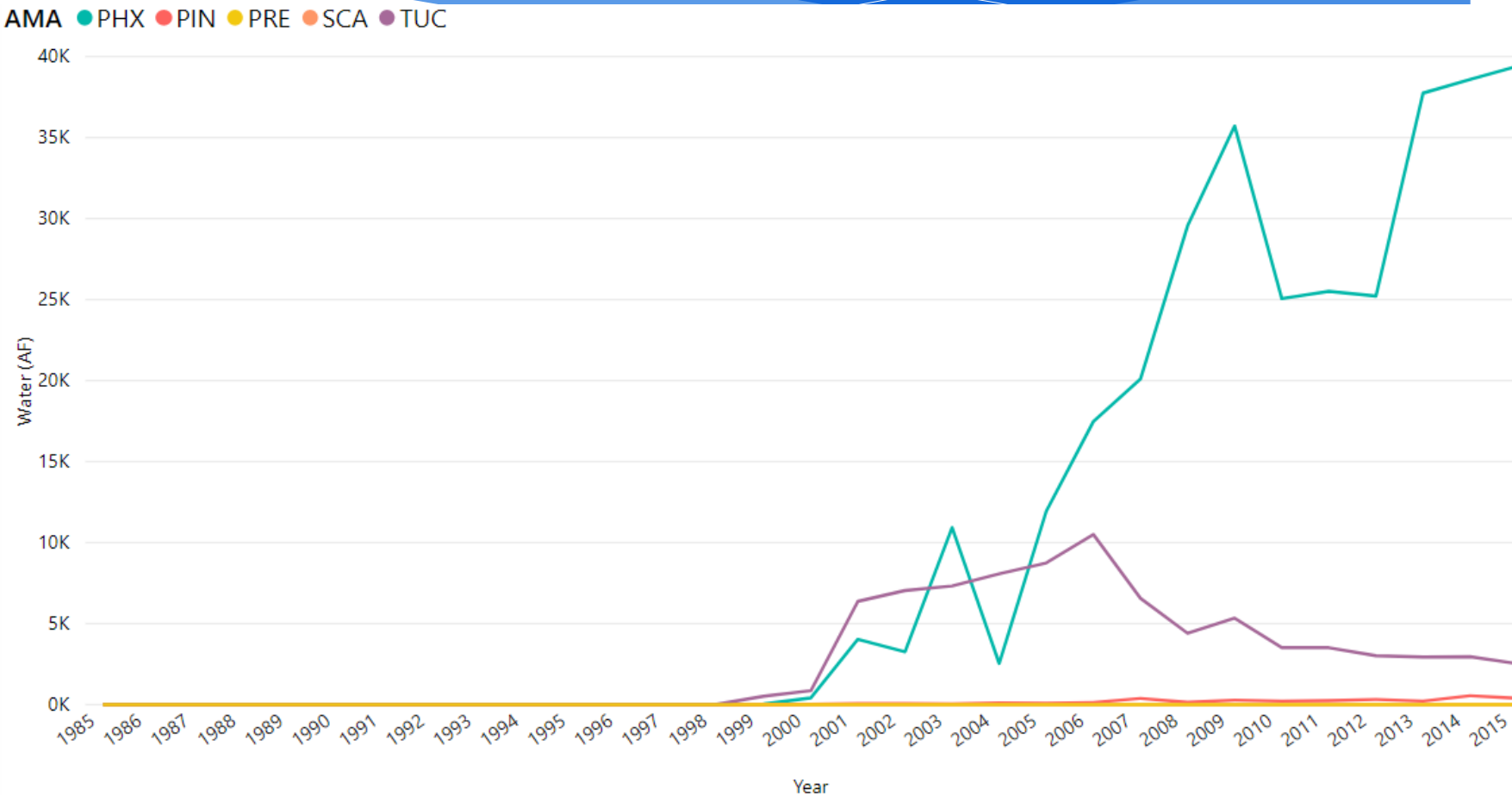
AMA PHX PIN PRE SCA TUC

- * Inflow
- * Artificial
- * Compiled from AMA/Recharge Annual Reports
- * Percent cut varies by facility type and water type
- * Not lagged



CAGRD Replenishment

- * Inflow
- * Artificial
- * Replenishment of groundwater pumping that has already occurred
 - * Obligation is incurred when a municipal provider uses groundwater in excess of groundwater allowance balance
 - Inflow is counted in the year the obligation is incurred

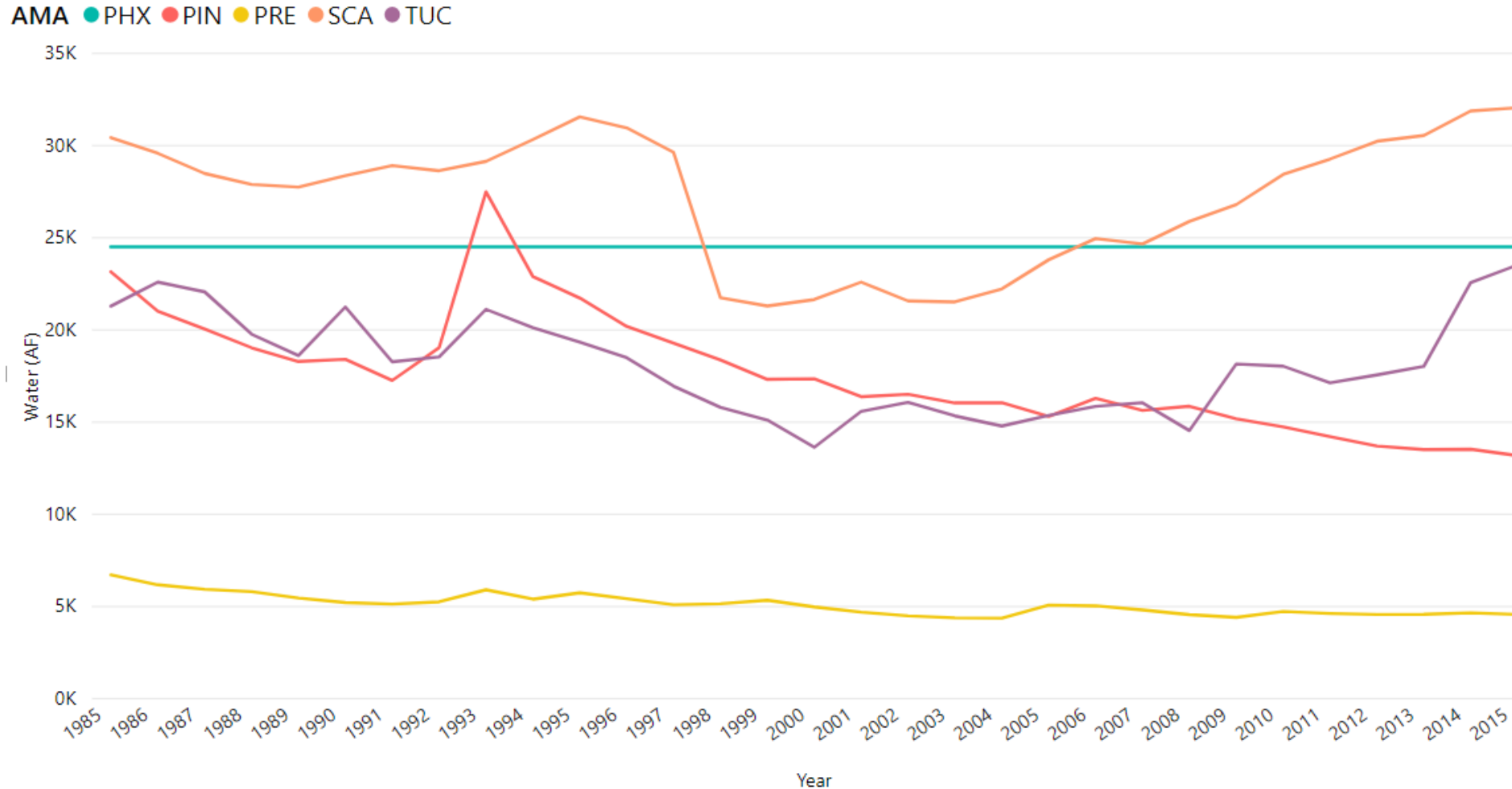


CAGRD = Central Arizona Groundwater Replenishment District

Safe-Yield Components: Outflows



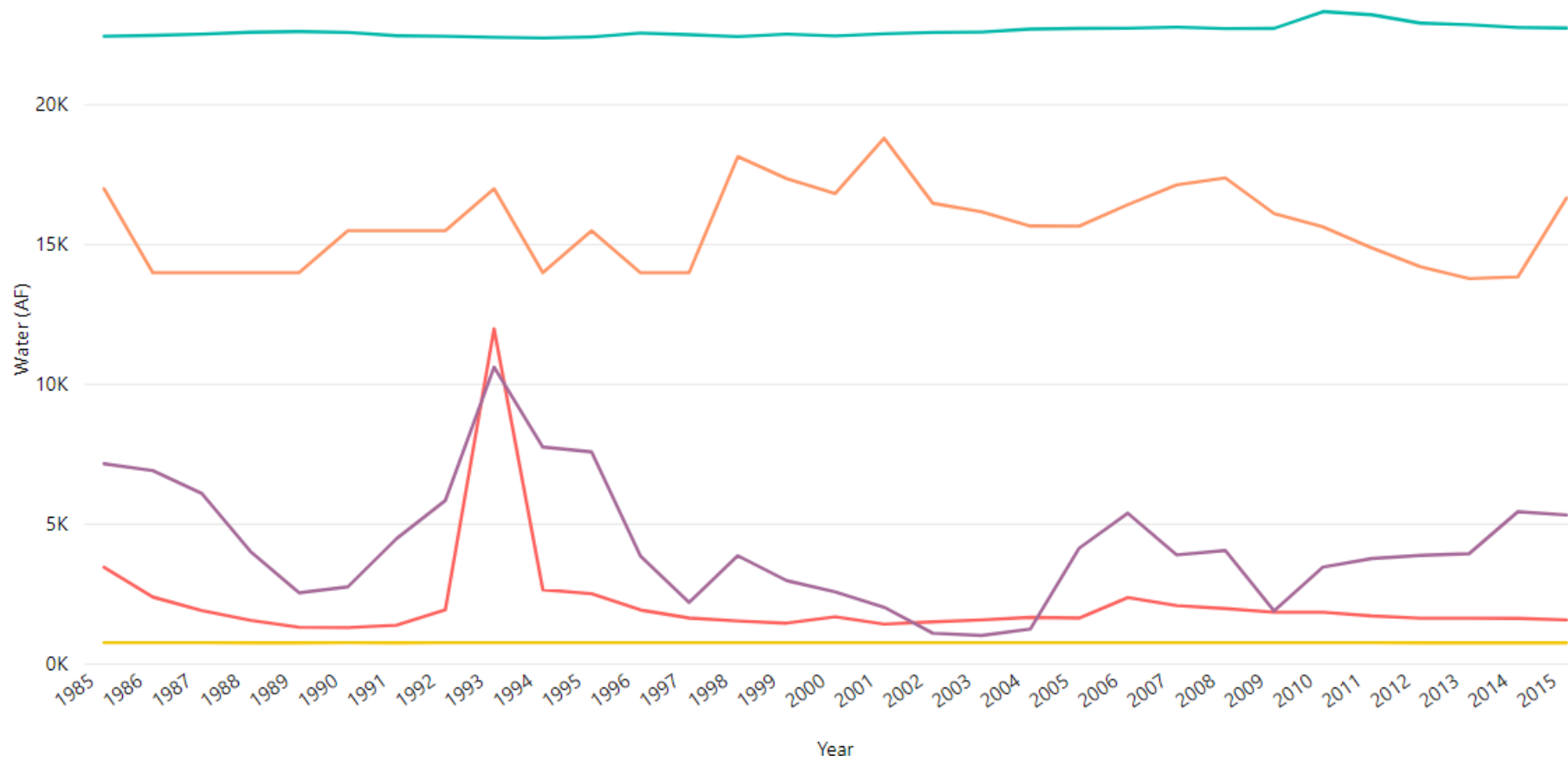
Groundwater Outflow



- * Outflow
- * Natural
- * Output of ADWR's regional groundwater models

Riparian Demand

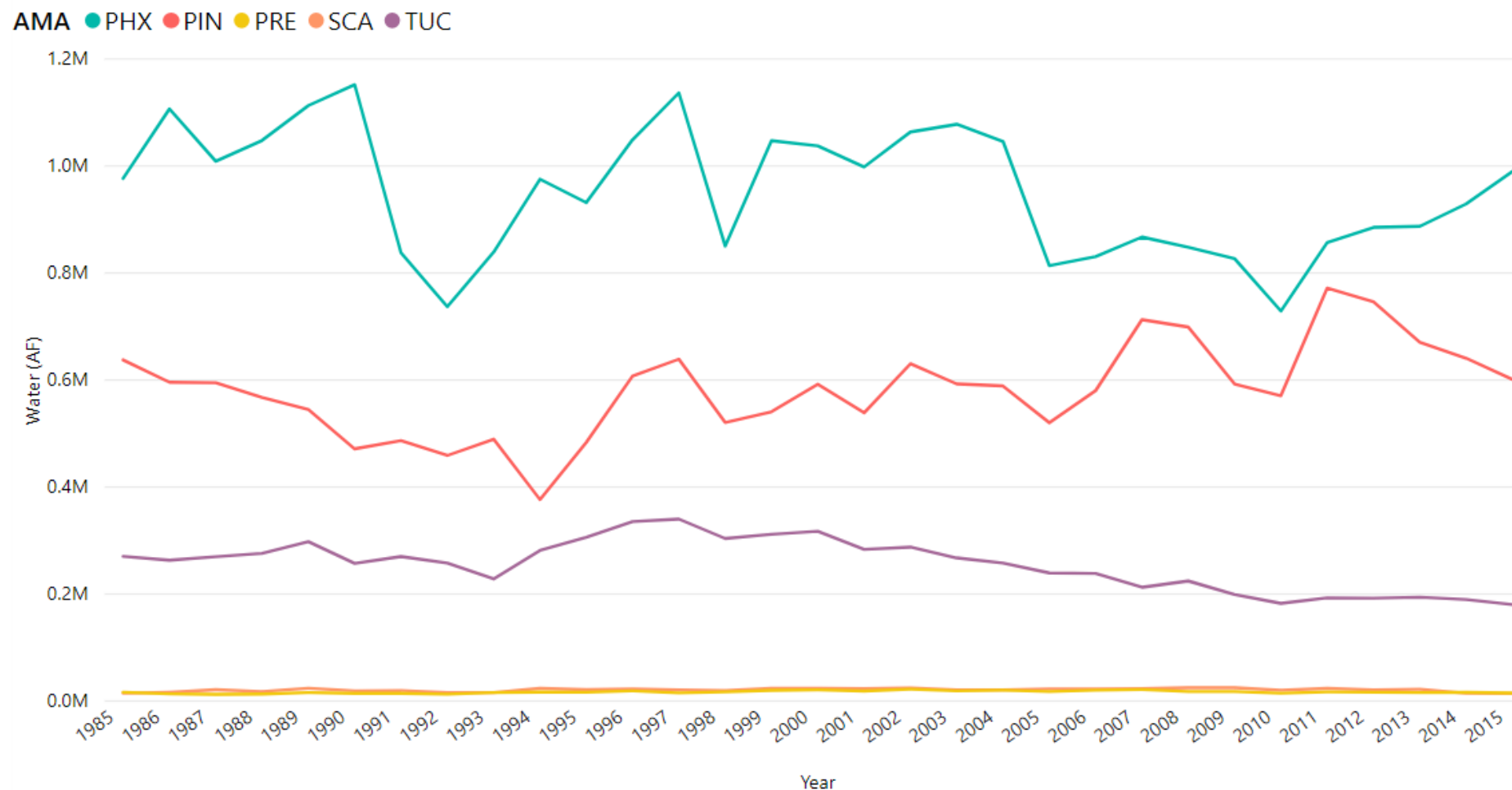
AMA PHX PIN PRE SCA TUC



- * Outflow
- * Natural
- * Output of ADWR's regional groundwater models

Sector Demands

- * Outflow
- * Artificial
- * Compiled for Agricultural, Municipal, Industrial, & Indian sectors
- * Agricultural, Municipal, & Industrial demands are compiled from AMA Annual Reports
- * Indian demands are estimated
- Paper groundwater pumping only



Remediated Groundwater

- * Outflow
 - * Artificial
 - * Compiled from AMA Annual Reports
- Allowable groundwater pumping, may be legally required. Typically exempt from conservation requirements

Poor Quality Groundwater

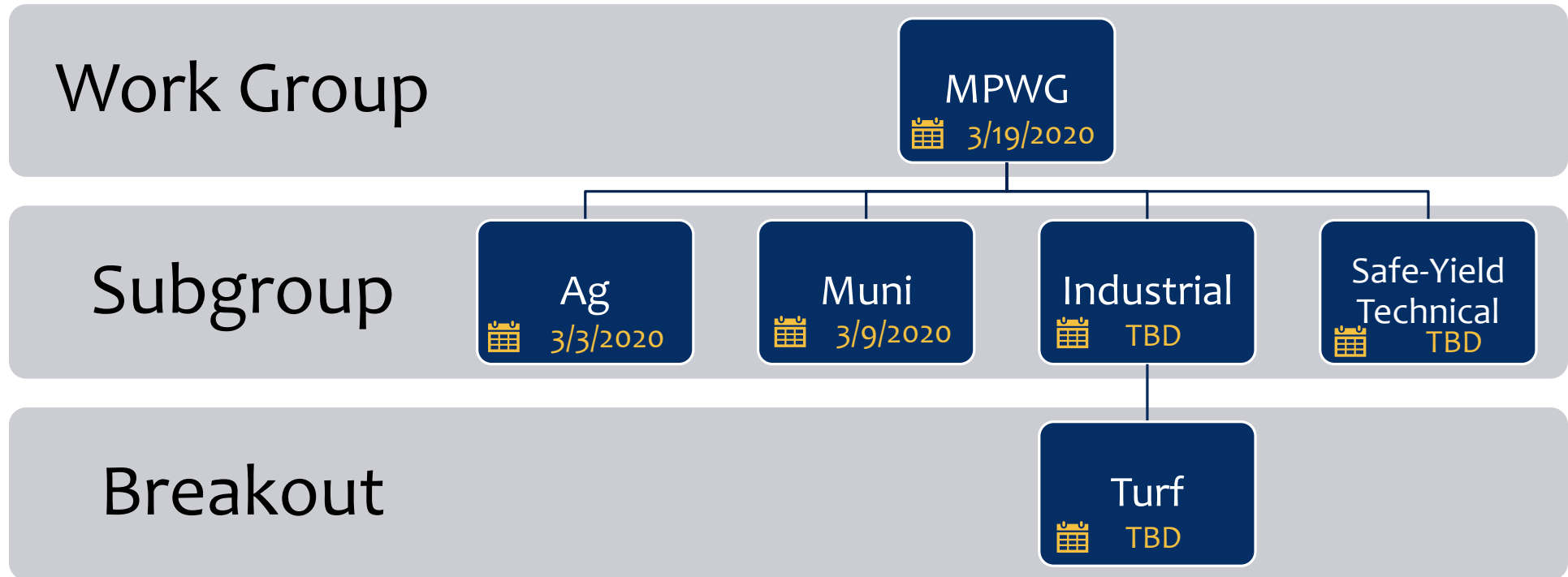
- * Outflow
 - * Artificial
 - * Compiled from AMA Annual Reports
- Allowable groundwater pumping, may be exempt from certain conservation requirements

Data Availability

- * Reported data is compiled and updated on an annual basis.
- * Data from ADWR's models lags behind the reported data.
- * Supply & Demand data is published in spreadsheet form and as a Supply/Demand dashboard at <https://new.azwater.gov/ama/ama-data>.
 - * Source data from the dashboard can also be downloaded from this site.
- * In progress:
 - * Reformatting data
 - * Safe-yield Dashboard



MPWG Subgroups



Questions?

managementplans@azwater.gov

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

Full Text of Management Plans:
new.azwater.gov/ama/management-plans