

Lower Santa Cruz River Basin Study Demand Scenarios

These scenarios have been formulated to envision a range of conditions in the LSCR Basin (Tucson Active Management Area) given a set of driving forces.
The scenarios are being developed to provide specific input to:

CAP's Service Area Model (CAP-SAM), the surface hydrologic model (Sacramento-Soil Moisture Accounting Model) and the groundwater model (Tucson AMA Modflow Model).

Driving Forces	Slow Compact Growth	Slow Outward Growth	"Official Projections" (Medium, Mixed Density Growth)	Rapid Outward Growth	Rapid Outward Growth, No Replenishment of GW used by mines	Comments
Demand Scenario Summary	Low growth series: condensed growth pattern, no additional mines, no overdraft in Green Valley	Medium growth series: outward growth pattern, new mine development, replenish Green Valley	Medium growth series	High growth series: outward growth pattern, new mine development, replenish Green Valley	High growth series: outward growth pattern, mining growth, no replenishment in Green Valley	Growth series from Arizona Department of Administration and growth pattern from PAG. Standard CAP-SAM assumptions
Municipal Demand: Population Growth Rate	Low Series	Medium Series	Medium	High Series	High Series	Arizona Department of Administration Population Series Projections https://population.az.gov/population-projections
Municipal Demand: Infill vs. Outward Growth	In-Fill/Redevelopment	Slow Outward	Baseline	Rapid Outward	Rapid Outward	Assumes outward growth will be dependent on groundwater needing replenishment outside area of hydrologic impact; and in-fill growth will use renewable water sources served directly
Municipal Demand: Gallons Per Household Unit Per Day	Decline faster than expected	Decline as expected	Decline as expected	No change in current GPHUD	No change in current GPHUD	Reflects current water conservation trends expressed in gallons per housing unit (GPHU) demand
Municipal Demand: Additional recharge	Year 2020	Year 2030	per current CAP-SAM assumptions	Year 2030	Never	Plan is to recharge 4,758 AFY CAP water at Project Renew's site in Green Valley area, funded by Rosemont Mine owner. Therefore, linked to date of Rosemont Mine operation
Municipal Demand: Develop Ag Land or Undeveloped Land	Low GPHUD development tends to replace high water use ag land.	CAP-SAM Baseline	Baseline	Higher GPHUD development occurs on undeveloped land before replacing agriculture	Higher GPHUD development occurs on undeveloped land before replacing agriculture	CAP-SAM allows adjustment of preference for development on ag or undeveloped land; model will use current FICO build-out estimates
Agricultural Demand: Consumptive Use (CU) Crop	Some ag areas convert to low CU crops	No change in CU crops	Baseline	Some ag areas convert to higher CU crops	Some ag areas convert to higher CU crops	Ag Sub-team reports that current level of farming will continue with acreage approximately constant unless replaced by development.
Agricultural Demand: Groundwater Savings Projects	Highest savings start 2018	Highest savings start in 2018	per current CAP-SAM assumptions	Half of highest savings start in 2025	No savings	Phases I & II permitted for 11,000 AFY each; Interacts with urbanization of FICO land. (Urbanization of FICO land will displace Groundwater Savings Facility.) Tied to year of putting CAP agricultural pool water to use, provided it is available.
Industrial Demand: Manufacturing	Slow economic growth and/or greatly improved water use efficiency	Moderate economic growth within existing water service areas, expected improvements in efficiency	Baseline	Rapid economic growth that depends on groundwater, minimal improvements in efficiency	Rapid economic growth that depends on groundwater, minimal improvements in efficiency	Assumes outward growth will be dependent on groundwater replenished outside area of hydrologic impact; in-fill growth will use renewable water sources. Manufacturing assumed to grow in proportion to population in each service area.
Industrial Demand: Mining	No new mines	New mine in 2020-2030	Baseline	New mine in 2020-2030, Existing mines expand	New mine in 2020, Existing mines expand	Upper Santa Cruz Providers and Users Group, subject to impacts to shortages of Tohono O'odham CAP water allocation leased to ASARCO. 2013 Freeport NIA allocation application. Rosemont EIS, life of mine is 24.5 to 30 years. Start year as defined in application to ADWR for CAP Non-Indian Agricultural Water Allocation. Includes 30% expansion in two highest risk scenarios: Sierrita mine expansion plan may mean additional groundwater pumping, potential for increased intensity at existing mines.
Environment's Demand: Riparian Evapotranspiration	Changes with climate and availability of surface water and shallow groundwater	Changes with climate and availability of surface water and shallow groundwater	Baseline	Changes with climate and availability of surface water and shallow groundwater	Changes with climate and availability of surface water and shallow groundwater	8,000 AFY estimate from ADWR Tucson Active Management Area Model Report #24, page 14. Will be adjusted according to selected climate scenarios.