- Active Services: 225,000
- Population: approx: 710,000
- Potable Water Produced: 107,000 AF
- Non Potable Production: 13,500 AF
- Potable Per Capita Water Use: 135
  – Down from a max of 170 in 2002
- Water Resource Goal: Convert Fully from Groundwater to CAP and Store Excess CAP Underground

Residential Demand Over 75% of Potable Del
Little or no Manufacturing

Potable Water Deliveries in Acre Feet by Customer Type
Calendar Year 2011

- Single Family Residential: 53,200 55%
- Multi-Family & Duplex Triplex: 19,900 21%
- Non-Residential: Potable: 23,000 24%
When including non-potable, non-residential demand increases to 33%

Potable and Non Potable Water Deliveries in Acre Feet by Customer Type: Calendar Year 2011

- Non-Residential: Non-Potable 13,400 12%
- Non-Residential: Potable 23,000 21%
- Multi-Family & Duplex Triplex 19,900 18%
- Single Family Residential 53,200 49%

Falling Total Potable Demand and No Growth: Potable Demand in 2011 < Demand in 1995

Total Potable Production, Service Growth and Past Forecast 1995 to 2011

- Potable Production
- Potable Services
- Where we thought we would be

When including non-potable, non-residential demand increases to 33%
Lots of Excess Pumping Capacity

Pumping Capacity and Maximum 30 Day Demand

Demand Falling Faster in Summer than in Winter

Single Family Usage Per Service: Feb and June 1985 to 2011

- Feb
- Jun

$y = -0.2683x + 19.773$

$y = -0.0459x + 9.6833$
New Construction Using Less Water: Difference Greatest in Summer

Lot Sizes Are Getting Smaller

Parcel Size by Year of Construction

Lot Sizes Are Getting Smaller
Homes are Larger Across All Lot Sizes: Less Area for Landscaping

Living Area by Parcel Size by Year Constructed

Garages are Getting Larger

Garage Size (Bays) by Year of Construction
Fewer Swimming Pools

Smaller Lots Reduce Probability of Pool: Also reduce likelihood of pool added later
All New Homes All Rely on AC for Cooling

Presence of Air Conditioning by Year of Construction
Pima County

<table>
<thead>
<tr>
<th>Type of Cooling</th>
<th>Before 2000</th>
<th>2000 and Later</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Evaporative Cooler</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

An Aggressive Block Rate Structure Made Possible by Selling Water Below Cost: Net Results?

Single Family Increasing Block Rate Structure:

- Total Commodity Charge
- Average Unit Cost/Ccf
- Cost of Service/Ccf
- Price/Ccf in Block

Average Usage:

- $1.60
- $6.05
- $8.67
- $11.65

Total Commodity Charge

Total Monthly Use in Ccf

Costs per Ccf
Low Rates for Low Users: Coming to an End?

Single Family Total Commodity Charges for Selected Volumes

Considerable Downward Pressure on Demand Coming From Sewer Charges

Residential Sewer Commodity Charges and Service Charge 2000 through 2011

Commodity Charge  Service Charge
Non Water Charges Are Now the Largest Part of the “Water” Bill

Water Use and Water and Sewer Charges for Average Single Family Usage

So Much Water Conservation, So Little Need for It?

• Rebate
  – Toilets
  – Urinals
  – Single Family Graywater
  – Commercial and MF Irrigation Systems
  – Rainwater Harvesting
• Require gray water stub out in new residential and water harvesting in new commercial
• Extensive Education & Public Information

• Under current demand and resource planning assumptions little/no benefit/cost justification –
  – Drought Hedge Only Remaining Water Resource Rationale
Research Questions?

- What will the new normal look like? How low can demand go?
- Can we build forecasts based on recent housing trends?
- How much influence can urban planners have over the development footprint? Can we achieve higher densities where land is plentiful and relatively cheap?
- What will the housing market demand/support?
  - High density single family residential; more multifamily
- What effect might changes in household formation rates have on growth and demand
- Will continued trends toward minimalist landscapes (under-watered or under-landscaped) exacerbate heat island effects?
- Are there quality of life issues which will constrain reductions in demand (too hot, no pools, no grass, no oasis, no southwest)
- Given excess capacity and surplus water resource, why invest in reducing demand NOW?