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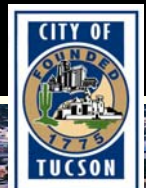
Incorporating Conservation Programming In Long Range Water Planning



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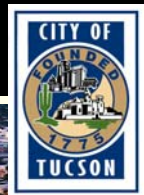


WaterSmart Innovations Conference / October 10, 2008

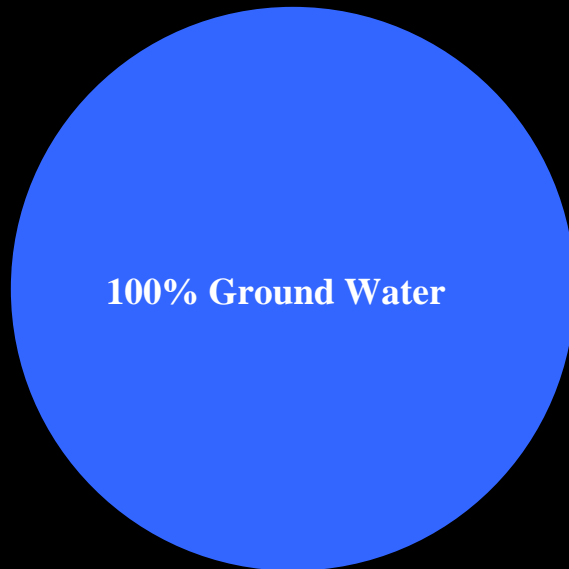


Tucson Water Conservation Program Planning

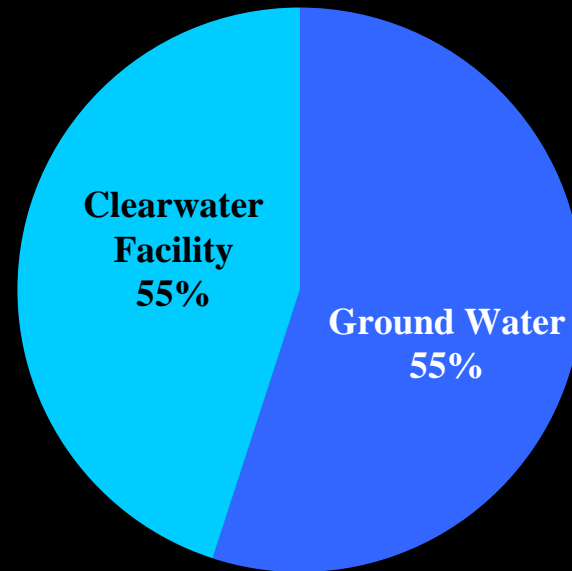
- Overview of Tucson Water
- Conservation Planning Process
- Outcomes
- Lessons Learned



Tucson Water Conservation Program



2000



2004

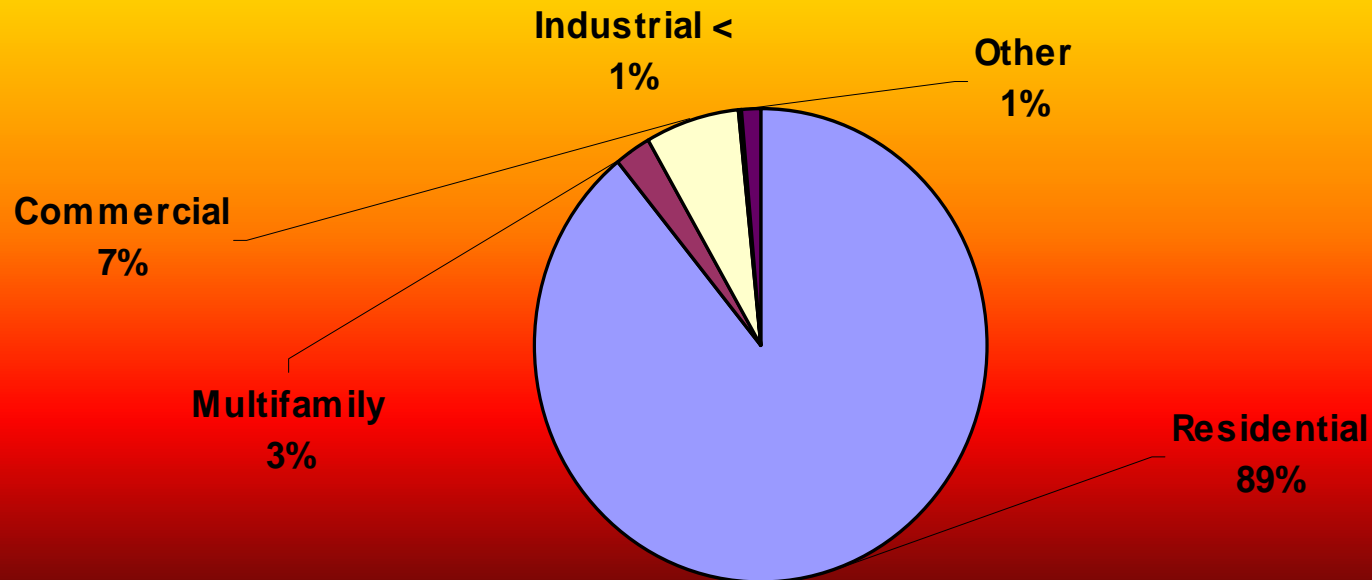


Tucson Water Conservation Program

Water Accounts - By Customer Class

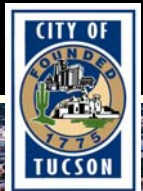
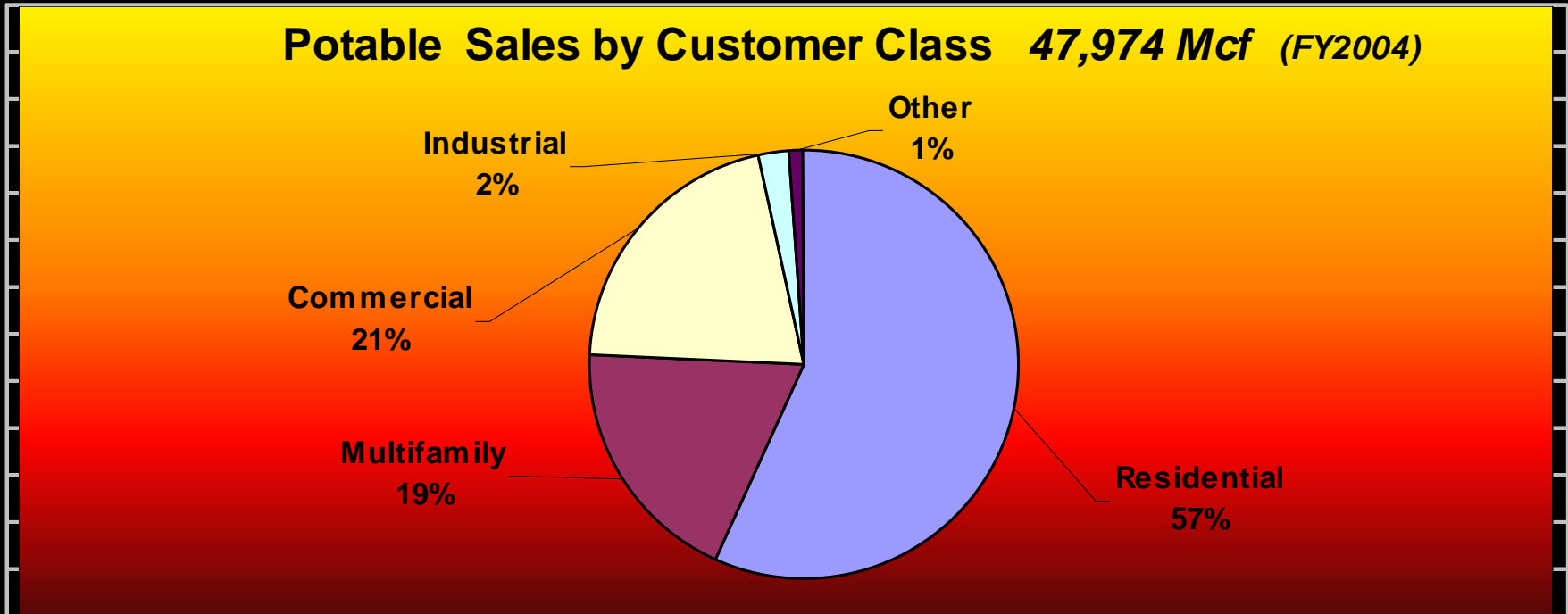
Average # of Potable Accounts

Total 211466 (FY 2004)



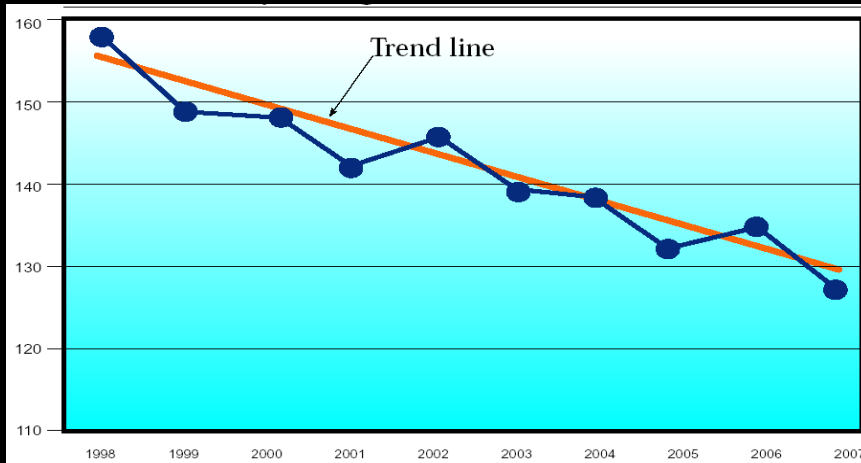
Tucson Water Conservation Program

Water Use - By Customer Class

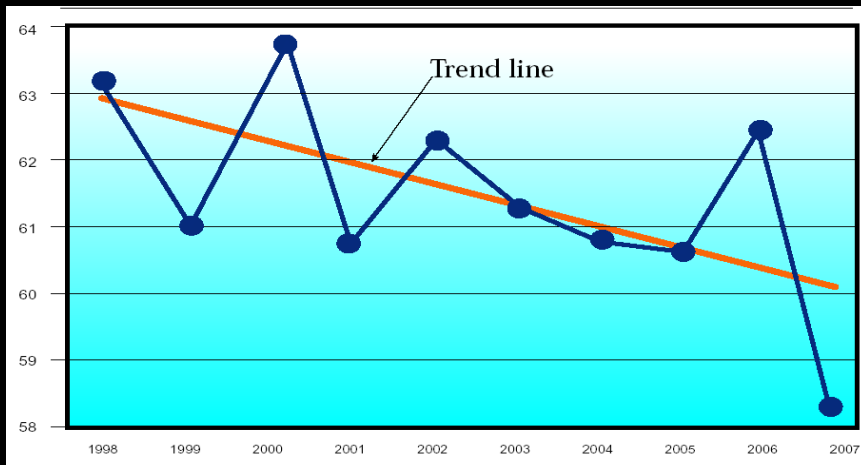


Tucson Water Overview

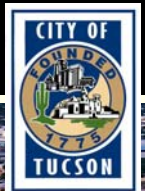
Monthly Water Use 1998-2007



◀ Multi Family / Ccf

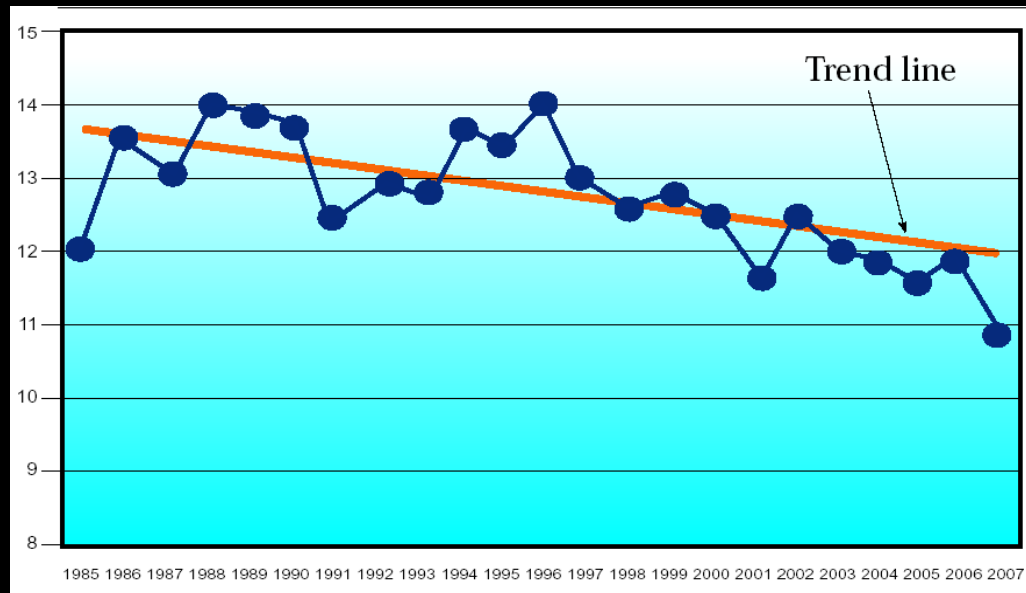


◀ Commercial / Ccf



Tucson Water Overview

Monthly Water Use 1985-2007



Residential / Ccf



So Why Conserve?

Because:

- We live in a desert*
- To preserve/protect the environment*
- To save water for the future*
- Meet peak demand requirements*
- To preserve groundwater*
- To meet regulatory requirements*
- It is the right thing to do!*



Tucson Water Conservation Program

History of Water Conservation

Water

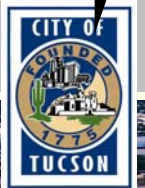
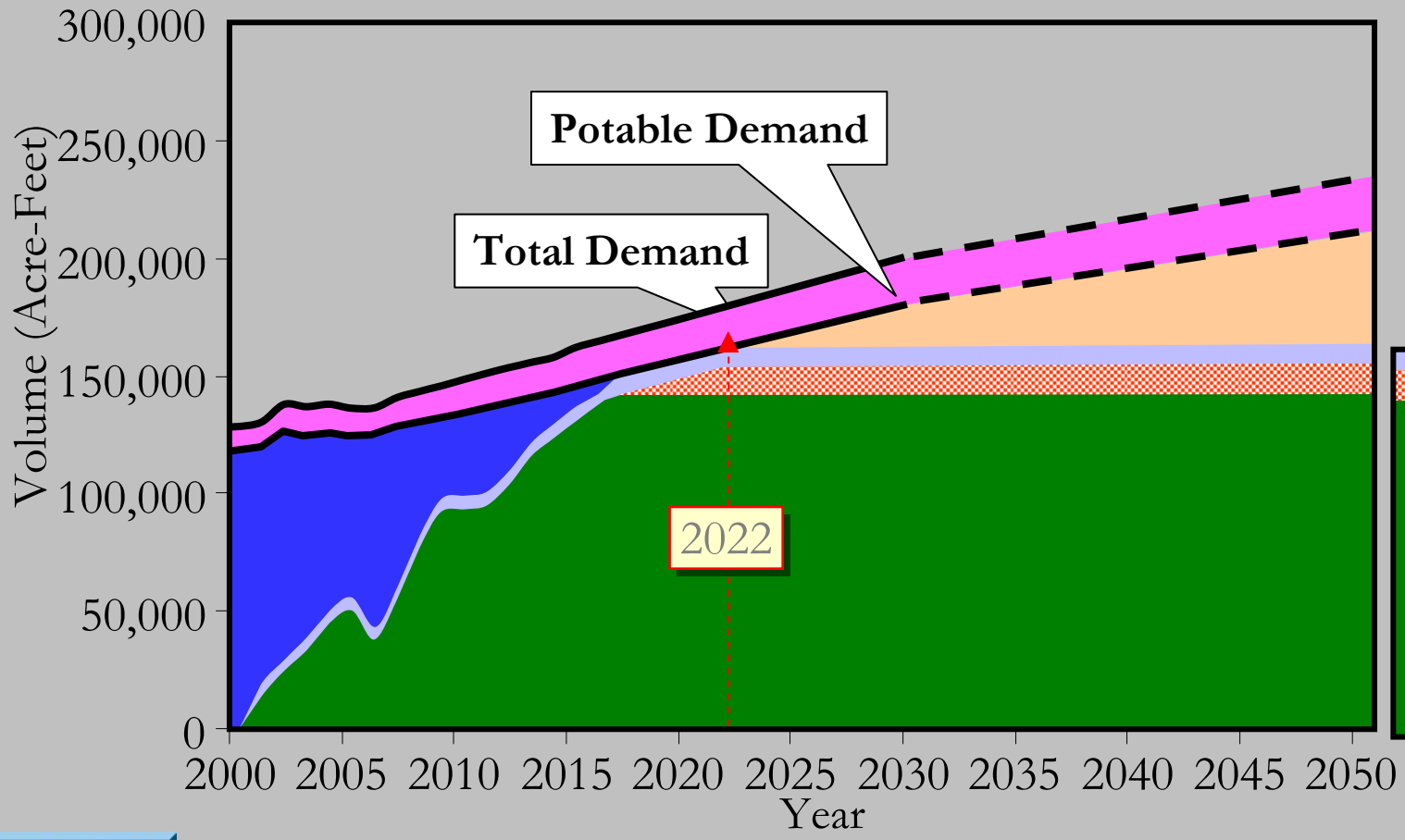
Conservation



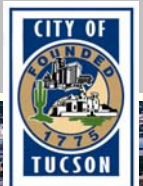
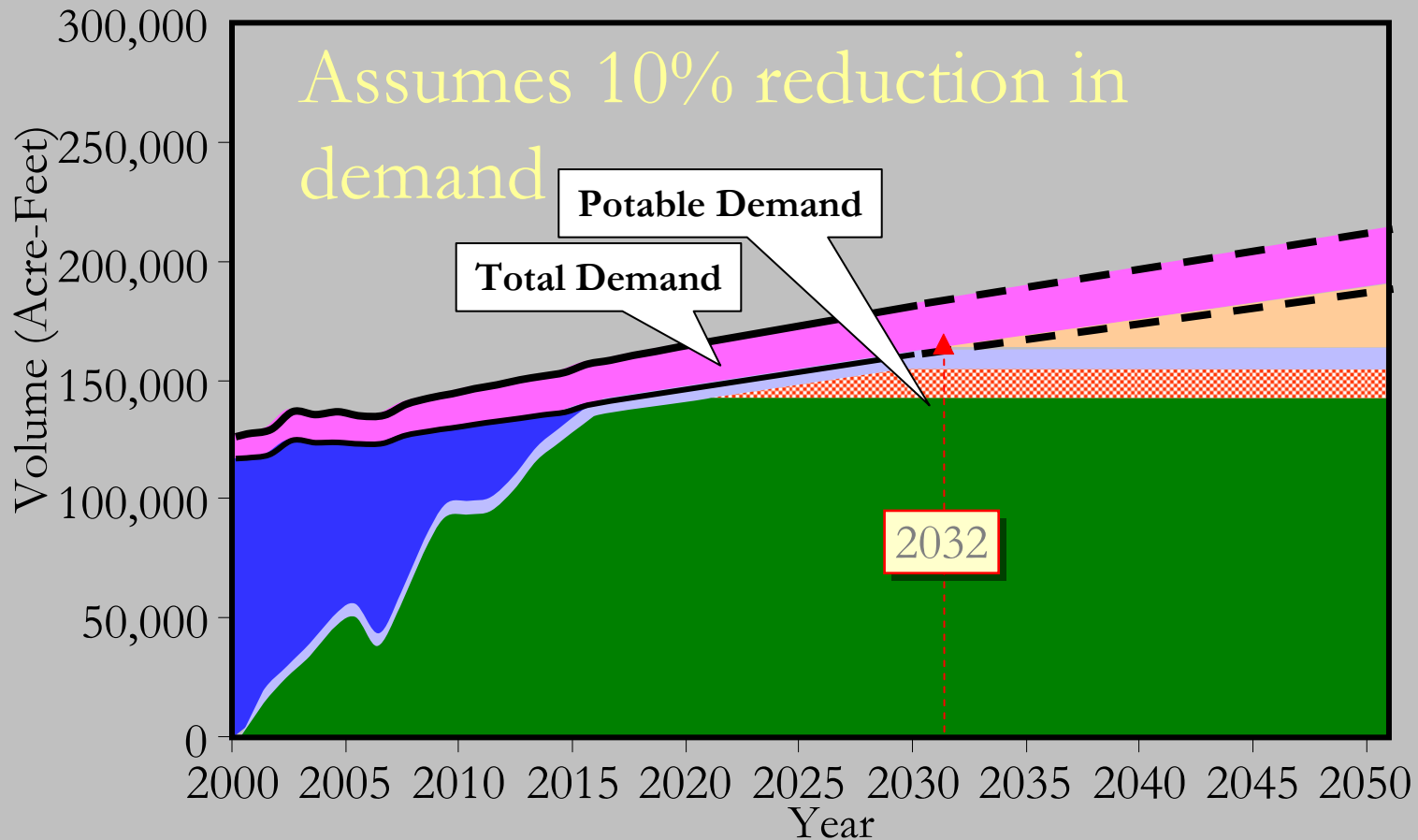
- 1970's: Peak demand concerns
- 1980's: Groundwater Code
- 1990's: Colorado River Water
- 2000's: Long Range Plan



Water Demand Without Additional Conservation



Water Demand With Additional Conservation

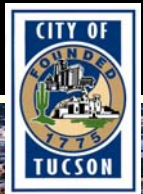


Tucson Water Conservation Planning Program

Importance of Planning:

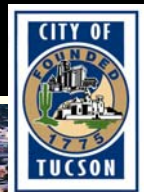


- Integrated Resource Planning (IRP)
- Provides for Public Involvement
- Economic Basis For Decision Making



Tucson Water Conservation Planning Program

Community Conservation Task Force Process

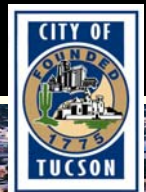


Tucson Water Community Conservation Task Force



CCTF Overview

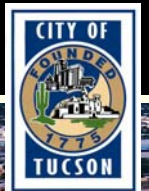
- Mission:
 - Provide Public Input
 - Measurable Savings
- Benefit-Cost Analysis
- CWAC Recommendation
- Mayor and Council Review
- 18 month process



Tucson Water Community Conservation Task Force

CCTF Review:

- Educational Sessions
- Initial Screening: 122 Conservation Measures
- Preliminary Cut: 48 Conservation Measures
- Final Selection: 15 Meeting Cost/Benefit Criteria

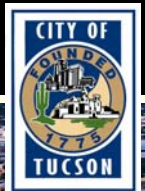


Tucson Water Planning Assumptions



Program Specific Inputs:

- Program Savings Inputs
- Program Cost Inputs
- Program Participation Rates



Tucson Water Planning Assumptions

Tucson Water Avoided Costs:

- Short Run Avoided Costs (2008-2015)
 - Pumping / Energy Costs
 - Booster
 - Chemical
- Long Run Avoided Costs (2015-2050)
 - CAP Resources and Infrastructure
 - Uncertainty beyond 2015



Tucson Water Benefit-Cost Analysis



Perspectives:

- Utility Benefits & Costs

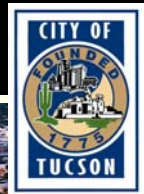
> 1.0

- Total Resource Cost (TRC)

> 0.65

- Participant Benefits & Costs

> 1.0



Tucson Water Economic Analysis

Benefit-Cost Results Existing Single Family

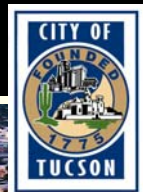
PROGRAM	UTILITY	TRC	PARTICIPANT
ULF Retrofit on Resale	5.99	0.55	2.76
Targeted ULF Rebate	1.23	0.67	6.73
Greywater Incentive	1.17	0.4	1.88
Hot Water Recir ROR	0.77	0.03	0.15
ULFT CBO	0.78	0.78	N/A
ULFT Rebate	0.72	0.45	5.35
HET Rebate	0.52	0.39	7.25
Water Harvest Incentive	0.36	0.12	0.59
Hot Water Recirc Rebate	0.14	0.03	0.18



Tucson Water Economic Analysis

Benefit-Cost Results Existing Multi-Family

Irrig. System ROR	30.35	2.3	7.42
Hot Water Recirc ROR	18.24	0.07	0.28
ULFT ROR	12.07	1.11	4.73
Irrig Syst Upgrade Rebate	7.49	2.88	13.92
Clotheswasher Rebate	3.27	0.52	4.28
HET Rebate	1.83	0.85	6.09
ULFT Community -Based	1.72	1.72	N/A
ULFT Rebate	1.46	0.9	9.16
Submetering Rebate	1.41	0.4	2.55
ULF Vendor Driven	1.26	1.26	N/A
Mist System Restrictions	1.24	0.13	0.24
Hot Water Recirc Rebate	0.2	0.07	0.42

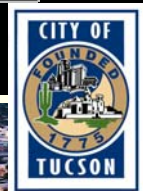


Tucson Water Economic Analysis

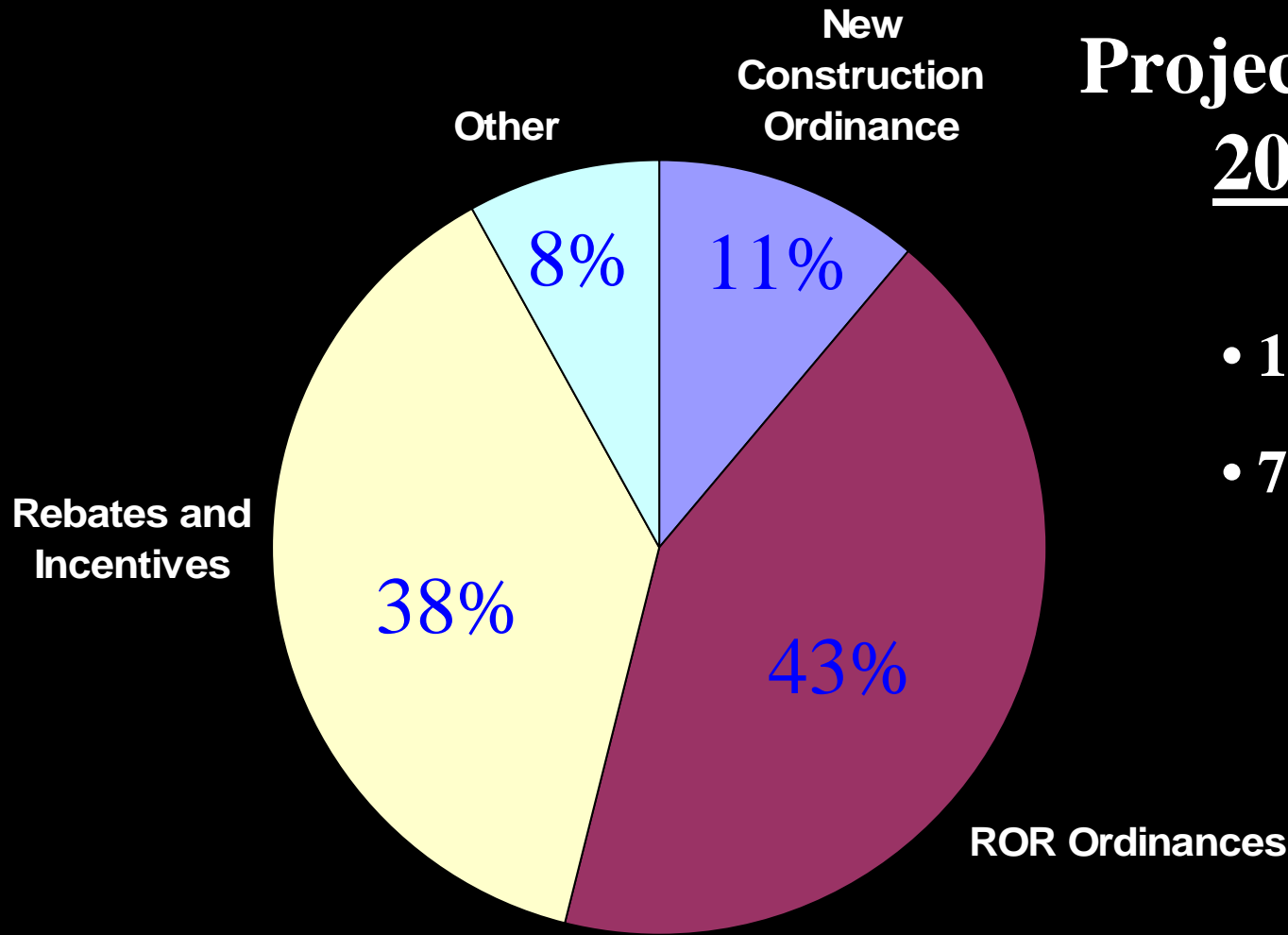
Benefit-Cost Results

Existing Commercial/Industrial

PROGRAM	UTILITY	TRC	PARTICIPANT
Car Wash Operating Standard	14.06	0.74	3.44
Irrig System ROR	12.32	2.66	13.77
Submetering Incentive	3.52	0.72	3.84
Water Harvest ROR	2.96	0.69	3.27
ULFT Rebate Targeted	1.95	0.67	5.59
Pre-Rinse Direct Install	1.38	1.38	N/A
ULFT Rebate Untargeted	1.33	0.49	4.24
Urinal Rebate	0.71	0.24	3.3
Vendor Driven Toilet/Urinal	0.52	0.52	N/A
Valve Replacement	0.39	0.18	2.19
Hot Water Recirc Rebate	0.17	0.07	0.61
Cooling Tower Retrofit	0.65	0.65	N/A



Tucson Water Economic Analysis

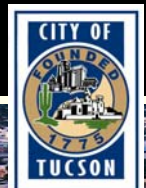


Projected Savings 2007-2015

- 12,737 AF
- 7.53% Reduction



Program	Savings	Costs	Costs	Staff
	2015 (AF)	2007 (\$000)	2015 (\$000)	Reqmts (FTE)
Single Family				
Targeted ULFT Rebate	1,078	\$678	\$228	0.05
Multi-Family				
Irrigation System Retrofit on Resale Ordinance	2,243	\$32	\$36	0.2
ULFT Retrofit on Resale Ordinance	1,401	\$49	\$41	0.05
Irrigation System Upgrade Rebate	2,179	\$114	\$114	0.2
High-Efficiency Toilet Rebate	716	\$213	\$213	0.05
ULFT Community-Based Distribution	579	\$249	\$126	0.05
ULFT Vendor-Driven Delivery	447	\$258	\$131	0.075
Submetering Ordinance (New Const)	547	\$15	\$15	0.2
Water Harvesting & Grey Water Ordinance	641	\$19	\$19	0.2
Irrigation System Design Ordinance	685	\$19	\$19	0.2
CII				
Irrigation System Retrofit on Resale Ordinance	953	\$38	\$38	0.2
Interior & Exterior Submetering Incentive	137	\$32	\$32	0.1
Passive Water Harvesting Retrofit on Resale Ordinance	144	\$38	\$38	0.2
ULFT Rebate: Targeted	296	\$117	\$64	0.2
Pre-Rinse Spray Valve Rebate	132	\$17	\$23	0.1
TOTAL	12,177	\$1,887	\$1,137	2.075
	Percent of Demand	7.20%		



Tucson Water Outcomes

<u>Project</u>	<u>Savings (AF)</u>	<u>Cost (\$)</u>
Res. ULF Rebate	81	157,457
<i>(Res. HET Rebate</i>	<i>70</i>	<i>157,457)</i>
M/F HET Rebate	16	42,872
C/I Irrig. Upgrade	229	114,471
C/I ULF Rebate	4	23,121
<i>(C/I HET Rebate</i>	<i>??</i>	<i>23,121)</i>
Low Income HET Replacement	??	100,000
Pre-Rinse Spray Valve	18	17,079
TOTAL	418+	455,000



Tucson Water Lessons Learned

- Conservation versus Efficiency
- Short Term versus Long Term Financial Impacts
- Economic Potential versus Conservation Potential
- Reduction Target Connected to Water Management Goal

