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The Alliance for Water Efficiency Conservation Tracking Tool: A Case Study

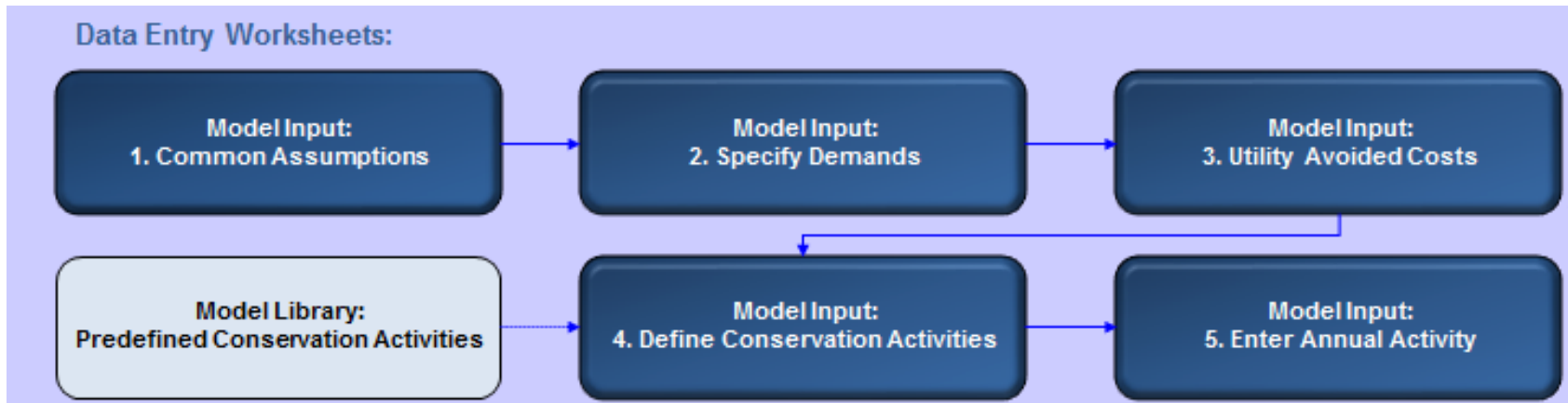
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Background

- 2006 task force identified strategies to reduce peak water use by 1% per year for 10 years
- 2007 task force charged with identifying additional measures to reduce average water use
- City Manager directed to review strategies and produce a conservation plan to reach 140 GPCD by 2020
- Alliance for Water Efficiency Conservation Tracking Tool chosen to analyze effects of selected strategies

Tool Inputs



- Common Assumptions
- Demands
- Utility Avoided Costs
- Definitions of Activities
- Annual Activity

Common Assumptions

- Rainfall and Reference ET
- Peak season definition
 - Affects peak demand numbers
 - Not analogous to peak day
- Demographic information
 - Number of toilets per household (nearest city San Antonio)
- Rate information
 - Complicated with tiered and seasonal rates

ENTER COMMON ASSUMPTIONS:

Analysis Start Year	2008
Service Area Population	853,844
Service Area Population in 1990	545,421
Peak-Season Start Date ('month/day')	1-May
Peak-Season End Date ('month/day')	30-Sep
Nominal Interest Rate	5.00%
Inflation Rate	2.50%
Persons Per Household - SF	2.76
Persons Per Household - MF	1.85
Full Bathrooms Per Household - SF	1.67
Half Bathrooms Per Household - SF	0.29

Demands

- Multiple demand projections
 - Financial consumption/revenue forecasts
 - Peak demand forecasts for capacity
- Choosing start year
 - Tried multiple scenarios to validate prior efforts
 - Ultimately chose the first hot year after watering restrictions

WATER CLASS DEMAND SHARES:

Customer Class	Share (%)	Accounts
Single Family	36.9%	186,857
Multi Family	17.4%	5,809
Commercial	23.8%	15,722
Industrial	5.4%	7
Wholesale	6.8%	18
Municipal	0.1%	1
Water Loss	9.6%	1
Total	100.0%	208,415

Utility Avoided Costs

- Water and Waste Water Supply Variable O&M Costs
 - Includes water costs, energy use, chemicals
 - Other Variable O&M captures additional avoided costs
 - Requires input from Finance and System Planning Divisions
- Avoidable System Expansion Costs
 - New capacity projected date
 - Costs of system expansion
 - City of Austin constructing new Water Treatment Plant

Activities

- Different savings assumptions in library activities
 - Did not always match reports presented in the past

- Building new activities
 - Not all activities fit into “widget-counting” format
 - Workarounds to report in different units (MGD, days active)

- Limited number of strategies
 - Important to retain savings estimates by class
 - Combined strategies in some cases (showerheads/aerators)

Define Conservation Activities

Activity Name:

Affected Customer Class:

Unit Water Savings |
 Utility Costs |
 Participant Costs |
 Participant Non Water Benefits |
 Plumbing Code

Unit Water Savings (Gal/Yr):

Annual Rate of Savings Decay (%/Year):

Peak Period Savings (% of Annual): Peak days = 42% of days in a year.

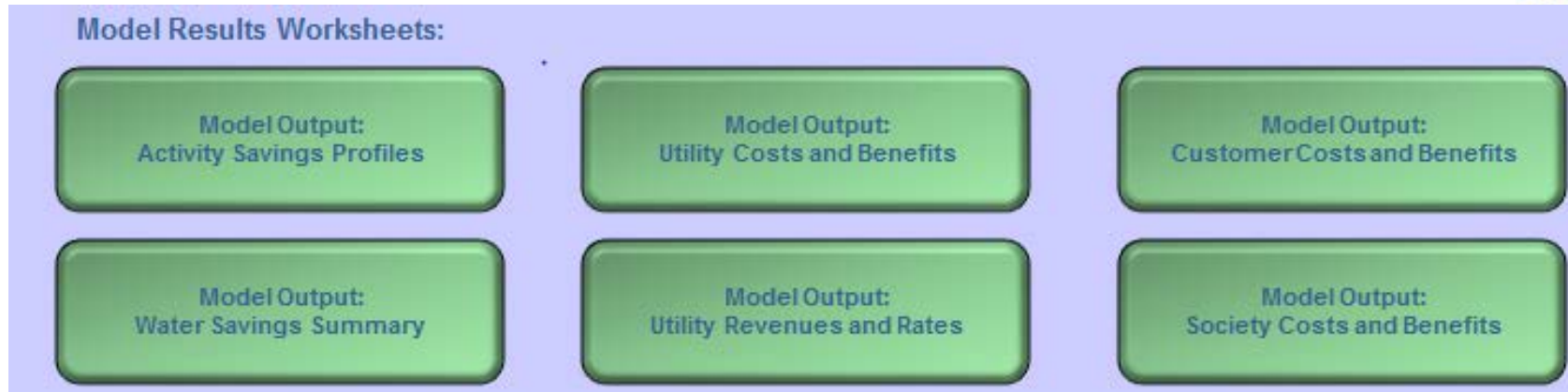
Useful Life (Years):

Participant Freeriders (% of Participants):

Annual Activity

- Annual participation of activities selected
 - Actuals from start date to current year
 - Projected participation used after current year
- Tracking of program participation important for projections
 - Long program history and recent planning documents help projections
- Not all activities have whole participation rates
 - Codes, Ordinances and Reclaimed Water use are examples of partial participation rates

Tool Outputs



- Water Savings Summary
- Utility Revenues and Rates
- Activity Savings Profile
- Utility Costs and Benefits
- Customer Costs and Benefits
- Society Costs and Benefits

Water Savings Summary

- GPCD projections
 - Allows for future target GPCD's
- Total Water Savings
 - Shows potential savings by volume and percentage of established base line
- Savings by Customer Class
 - Can be used to identify underserved sectors

Per Capita Demands	Units	2008
Baseline Demands	GPD	182.8
Baseline - Code Savings	GPD	182.8
Baseline - Code Savings - Program Savings	GPD	178.1
Service Area Water Savings		
Units	2008	
Code Water Savings	MG	0.0
Program Water Savings	MG	1,477.2
Total Water Savings	MG	1,477.2
% of Baseline Demands	%	2.6%
Class Water Savings		
Units	2008	
Single Family	MG	472.4
Multi Family	MG	122.5
Commercial	MG	491.9
Industrial	MG	4.2

Utility Costs and Benefits

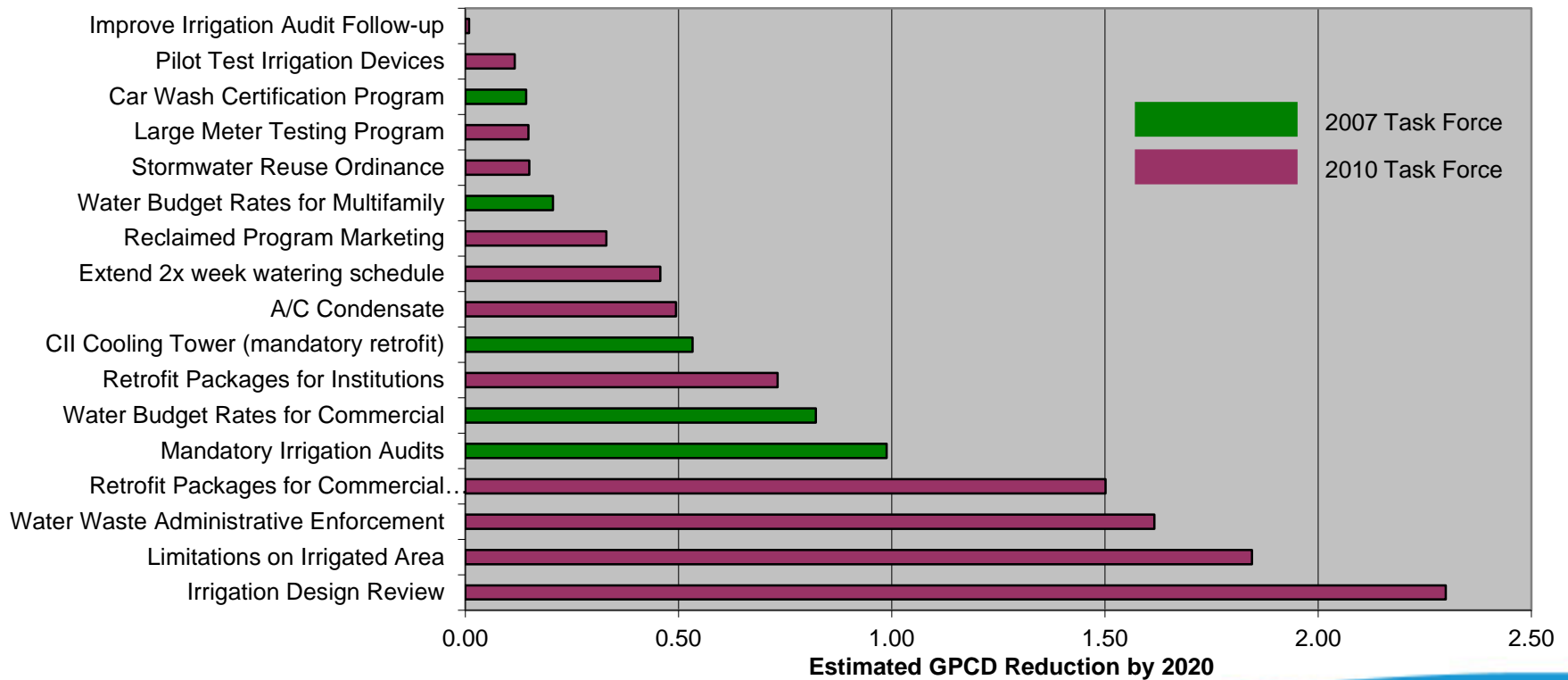
- Cost/Benefit ratio calculated as present value (PV) of benefits divided by PV of costs
 - Benefits include avoided water, wastewater variable O&M costs related to treatment, transmission, distribution, etc.
 - Costs are direct operational costs of conservation programs
 - Includes cost of incentives, rebates and personnel
 - General overhead, CIP and Public Information Costs where not included
- Cost/Benefit represented as a ratio
 - Most strategies had positive cost/benefit ratios
 - Some strategies with negative cost/benefit included for input due to non-quantifiable educational, behavioral modification or policy benefit.

Features We Didn't Use

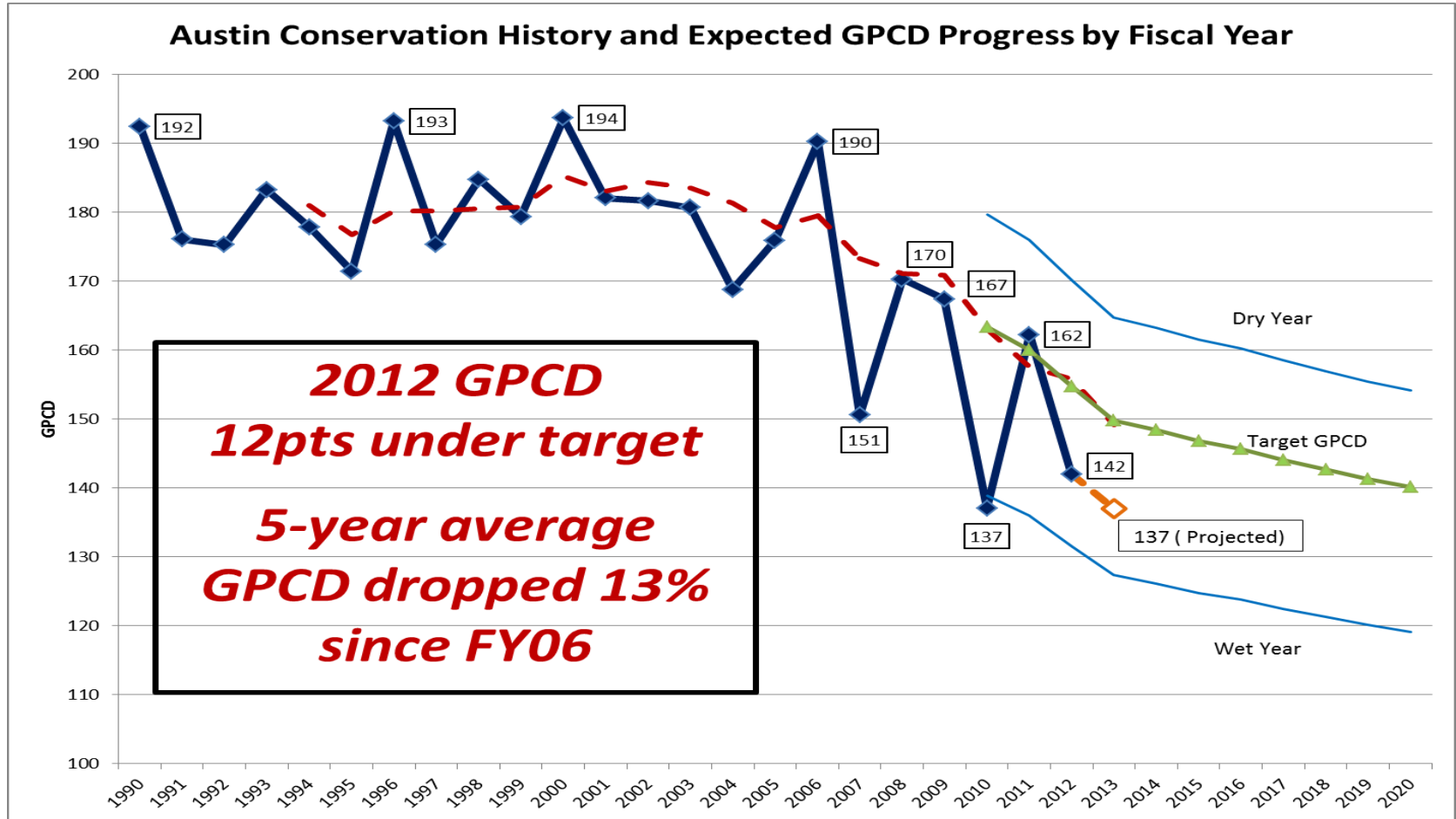
- Peak day estimates
 - Peak season vs. peak day demand
- Treatment capacity delay savings
 - Next plant in progress, varying savings for each unit of expansion
- Society and participant cost/benefits
 - Limited data on customer costs, environmental impacts
- Utility Revenue and Rates
 - Savings by class applied to internal Finance projections

GPCD Impacts of Proposed Strategies

Relative Impact of Proposed Strategies



GPCD Reduction Progress



Benefits of the AWE Tracking Tool

- Built in savings assumptions
- AWE reputation
- No reinventing the wheel
- Intuitive ease of use
- Standardized methodologies



Alliance
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Notable changes to AWE Conservation Tracking Tool from Version 1.2 to 2.0

- The Common Assumptions worksheet now contains a data entry point for the year in which to denominate Costs & Benefits.
- Tracking Tool graphics and charts have been enhanced. One specific enhancement is the ability to select the number of years to display in graphs.
- The Common Assumptions worksheet now includes a lookup table to help users estimate the number of full and half bathrooms per household.
- The Tracking Tool now contains a Greenhouse Gas (GHG) Emission Module that estimates the reduction in GHG emissions due to plumbing/energy codes and conservation program activity.
- The default parameters for the Library of Conservation Activities have undergone significant changes. The document detailing the changes is posted on the AWE Water Conservation Tracking Tool page.

Ongoing Work

- Revise and update inputs & assumptions
- Revisit savings assumptions
- Transfer data into Version 2.0 of AWE Tracking Tool
- Review need for additional modifications to strategies to achieve 140 GPCD goal



Questions?

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