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Solve it! Modeling your Conservation Master Plan

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Solutions for Life™

Drivers of Water Conservation in CA

- Drought preparedness
- Climate change
- Fiscal responsibility
- Limited state resources
- Compliance with CUWCC's Urban MOU
  - Required for grant funding
- State legislation
  - SB 7 - 20% by 2020

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CUWCC's Urban Memorandum of Understanding

- **BMPs changed July 1, 2009**
  - **Foundational**
  - **Programmatic**
- **Flex Track option**
  - **Applies to (quantifiable) Programmatic BMPs**
  - **Residential, CII, & Landscape use categories**

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BMP Optimizer Tool

- Used to identify applicable water use efficiency measures for conservation master plans
- Based on MS Excel's "Solver" feature:
  - Identifies most cost-effective mix of WUE measures
  - Minimizes costs while meeting water savings goals
  - Uses utility-specific costs and opportunities
- Requires a comprehensive list of applicable conservation measures
  - Cost data
  - Water saving rate data

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Huntington Beach Water Conservation Master Plan Case Study

- **Developed a 5-year conservation master plan, including:**
  - **Water savings target (otherwise not known)**
    - **Based on theoretical savings from "Standard" Programmatic BMP approach**
  - **Planned conservation measure mix**
  - **Program budget range**

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Populating the Model

Example Measures	City's Previous Savings (AFY)	Required Savings for Standard Approach (AFY)	Measure's Water Savings Rate** (AFY)	Cost of Savings ($/AFY)
On-Site Residential Survey	21.7	404.5	0.036	$1,917
High Efficiency Washer Rebate *	102.0	86.0	0.020	$0*
High bill contact	0.1	NA	0.001	$8,001
New Local Construction Standards	0.0	NA	0.214	$53
Industrial Surveys/Audits	90.0	NA	16.159	$1,015
Muni Irrigation – System Controllers and Water Budget	0.0	NA	0.596	$1,389

*** Existing Regional Rebate Program**

**** Persistence is not used per current CUWCC metrics**

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Setting the Constraints

Example Measures	Minimum Number of Measures	Maximum Number of Measures	Comment
On-Site Residential Survey	935	1,869	Participation range among top 5% of water users.
High Efficiency Washer Rebate	1,562	1,562	Existing regional rebate program
High bill contract	630	630	Standard practice
New Local Construction Standards	0	3,240	Consider indirect costs (cost of new development)
Industrial Surveys/Audits	0	20	No efficiencies of scale
Muni Irrigation – System Controllers and Water Budget	428	428	Planned initiative (lead by example)

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Setting the Constraints (cont.)

Set goal to required new water savings:

Total Required Savings - Total Previous Savings

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Run the Model

- Tell Solver to “Minimize” the program costs
- Solve It!

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Example Results

Example Measures	Number of Measures Selected	Comment
On-Site Residential Survey	935	Not cost effective, but critical piece of outreach effort
High Efficiency Washer Rebate	1,562	Existing regional rebate program
High bill contract	630	Again, not cost effective, but already a standard practice and a critical piece of the outreach effort
New Local Construction Standards	3,240	Excluded because not politically feasible. Even greater impact if applied to all "new" accounts
Industrial Surveys/Audits	0	No efficiencies of scale
Muni Irrigation – System Controllers and Water Budget	428	Planned initiative (lead by example)

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Flex Track Totals

Example Measures	Cost Estimate	Flex Track Water Savings (AFY)
Existing Rebate Programs	$932	96
High Bill Contact	$7,875	0.5
Residential Surveys	$94,462	42
Municipal Indoor Facilities	$85,688	10
Muni Irrigation Management	$364,300	255
Total	**$615,086**	**403.5**

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Bottom Line

- Recommend a $3.6 million budget over five years
- 2,882 AFY in water savings for *quantifiable measures**
- The cost of saving water = $1,249 per AF
  - Does not include persistence
- The cost of supply = $977 per AF (regional assumption)

* City's total water consumption is approximately 30,000 AFY

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Lessons Learned From HB

- A typical local water district can meet CUWCC goals with a sensible WUE program, particularly when there is a strong regional rebate program.
- Local plumbing requirements can have a tremendous impact, particularly if they can be applied to existing development.
- The limited number of affordable and practical conservation measures at same district will make the 20%x2020 goals challenging
- Need to make the tough decisions or find another source of conservation…. Reuse?

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Questions?

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