Cost-effectiveness Calculations for Water Savings Measures and Program in the IOU Energy Efficiency Portfolios:

Added Considerations for "Embedded" Energy Savings and Delivering a Program in Partnership with a Water Agency

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Cost Effectiveness of Water Use Reduction Measures Which Result in Savings of Embedded Energy in Water Use

A procedure was developed in A.07-01-024 (the Water-Energy Pilot Program) and adopted in D.07-12-050 for use to estimate TRC and PAC values for the range of measures and programs offered in the IOU pilots.

Location: ftp://deeresources.com/pub/Water-Energy/

Calculator: WaterEnergy-CEcalculator-v4B_XLS.zip

Documentation: WaterEnergy-CEcalculator-v4.pdf

Calculation tool was patterned around the EE calculator (to calculate TRC/PAC) with additions related to partnerships with water agencies and using water savings

- Uses IOU avoided costs for benefits.
- Allocates costs between IOU and water agency benefits.
- Uses water agency energy use to convert water savings to energy savings.

Technical versus Policy Considerations

- Technical
  - Energy use to capture, convey, treat and deliver water
  - Water use reductions from installation of measures
  - Attribution of savings to players
  - Costs of programs and measures
- Policy
  - What perspective to utilize in cost-effectiveness calculations
  - What energy use reductions to include in each perspective
  - What costs and benefits to include in each perspective

The Current Calculation Tool

- What it is now
  - IOU embedded energy and cost effectiveness calculation
  - Details of water end use efficiency improvements
  - Details of fresh and waste water embedded energy
  - Scenario analysis to explore CE results from variations of the above
- What it is currently not
  - Does not include forecast of changes in embedded energy over time
  - Does not include direct energy savings (done elsewhere)
    - End use efficiency improvements (water heating, etc.)
    - Water system efficiency improvements (pumping, etc.)
  - Water agency cost-effectiveness calculator (IOU/ratepayer focus)
    - Water system avoided costs (benefits)
    - Water system costs (program and admin)

Water Energy Measure Calculator Overview

Measure Water-savings Information
(*Measure Definition Tab*)

Measure - Sector / Description / Reference

Water Savings Category:

- **Fresh** Water or
- **Total** (includes Waste Water)

Savings – Water savings in gallons per day:

An annual profile translates a reference value to a daily gallons saved

Savings by climate zone if necessary

Life – number of years for savings calculation

Measure-specific Program Information
(*Measure Definition Tab*)

Rebate Program	Direct Install Program
Measure Cost ($/unit)	Measure Cost ($/unit)
Net-To-Gross	Net-To-Gross
Rebate ($/unit)	Participant Cost ($/unit)
Admin Cost ($/unit)	Admin Cost ($/unit)
Partner Paid ($/unit)	Partner Paid ($/unit)

IOU & Water Agency Information
(Agency-Info Tab)

IOU – PG&E, SCE, SDG&E or SoCalGas

Climate Zone - for avoided cost calculations

Water Agency Embedded Energy:
(Average energy use per million gallons)

- Fresh water & Wastewater
- Electricity & Gas
- Hourly energy use profiles

Green house gas emissions information

IOU General and Agency Specific information

Measure Analysis

Annual Energy Saved
Annual Avoided Cost ($/yr)
Lifetime Avoided Cost ($)
Cost of Energy Saved
Measure TRC Benefit/Cost Ratio

Program Analysis

Water Energy Measure Calculator Overview

Measure Analysis

Program Information

(Program Analysis Tab)

Measures include in Program:

- Water Agency
- Number of Rebate units
- Number of Direct Install Units

Non-Measure Related Costs:

- IOU Administrative Costs
- Partner Payments to IOU

Program Analysis

IOU Program Budget:

- Non-Measure Related Costs
- Measure Related Costs

Other TRC Cost Components

IOU Program TRC Benefit/Cost Ratio

Greenhouse Gas Emissions

Multiple Program Summary

Up to 5 programs can be analyzed, saved, compared and summarized.

Water Energy Measure Calculator Issues

- Currently, only IOU energy saved is considered – are there perspectives that should also be calculated using other elements of water system energy use?
- Currently there is limited data on water agency energy use such that often average water agency use has been utilized – is it necessary to utilize more agency/location specific data and is the very high cost of obtaining this data justified?
- Should the energy use for intra-marginal (last source used) or extra-marginal (next source to be used) water source be used rather than the current average energy use for existing water agency mix of sources? Should the calculation include short and long term energy uses to take both these perspectives into account?