



CALIFORNIA ENERGY COMMISSION

Senate Select Committee on Climate Change and AB 32 Implementation

Water Energy Technology Program November 13, 2015

A large, dynamic splash of water in shades of blue and white, with many droplets and bubbles, spans the width of the slide and serves as a background for the lower half of the text.

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Governor Acts to Address Severe California Drought



- Directed the first statewide mandatory water reductions.
(Exec. Order B-29-15)
- **Directed the Energy Commission to implement a water energy technology (WET) program as part of its work to address the drought.**
- Other drought-related work at the Energy Commission:
 - Water appliance rebate program.
 - Expedited application processing for alternate water supply for power plant operation.
 - Standards to improve water appliances efficiency.



WET Program Overview

Purpose: Accelerate deployment of innovative water and energy saving technologies

- Innovative technologies must meet the following:
 - Provide significant *greenhouse gas emission reductions* with technologies that *reduce on-site energy & water use*.
 - Demonstrate actual operation *beyond the R&D stage* and be commercially available.
 - *Documented readiness* for rapid, large-scale deployment.

Program is awaiting funding from the Legislature.



WET Program Proposed Funding

Phase 1: Agriculture: \$10M

- Rebates: High Efficiency Irrigation System
- Grants: Irrigation and Agriculture Operations Improvements



Phase 2: Industrial, Commercial & Residential: \$16M

- Grants: Innovative waterless or reduced water using systems

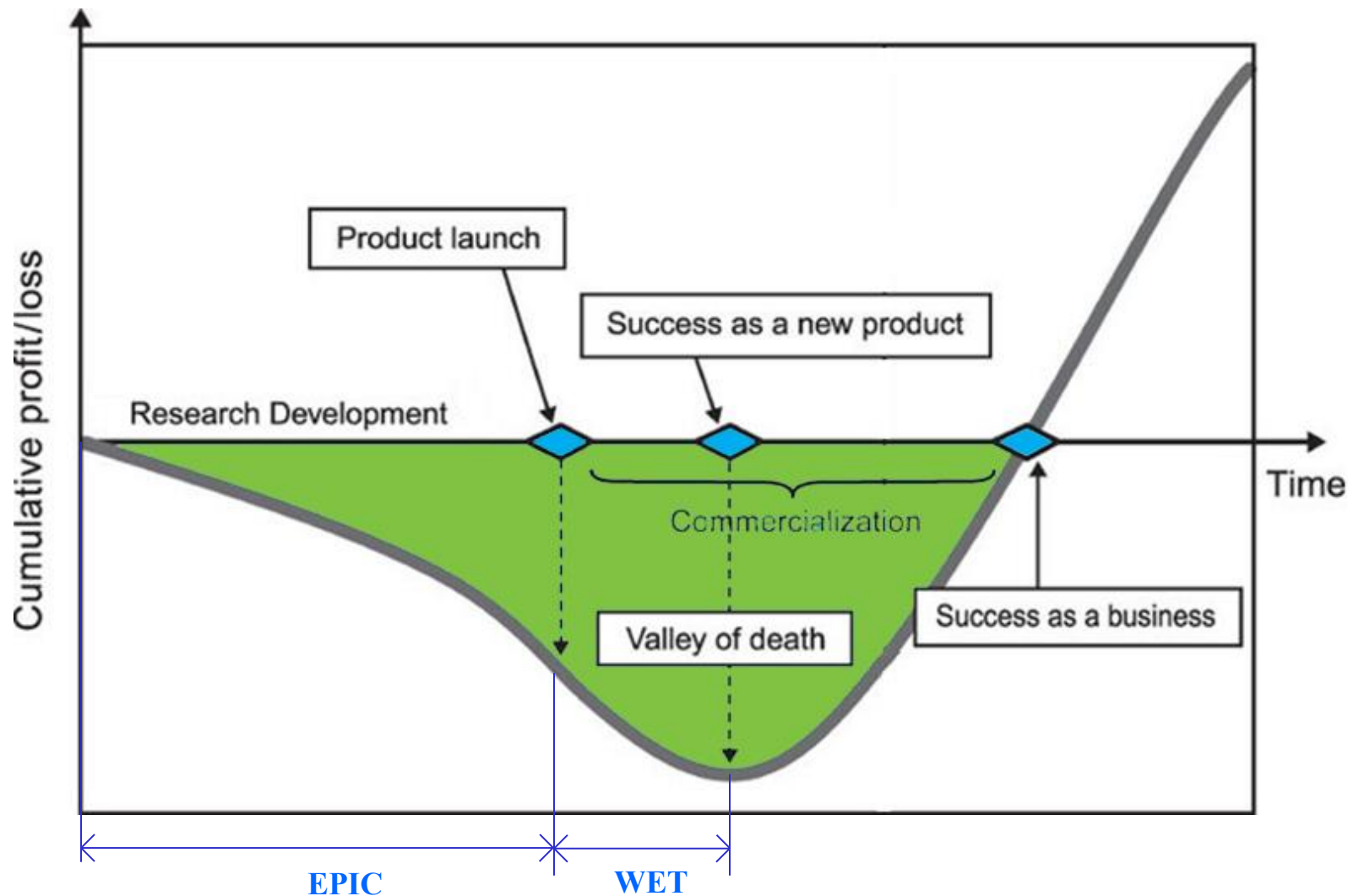
Phase 3: Desalination: \$3M

- Grants: Improvements to existing plants that result in energy reduction and increased water production





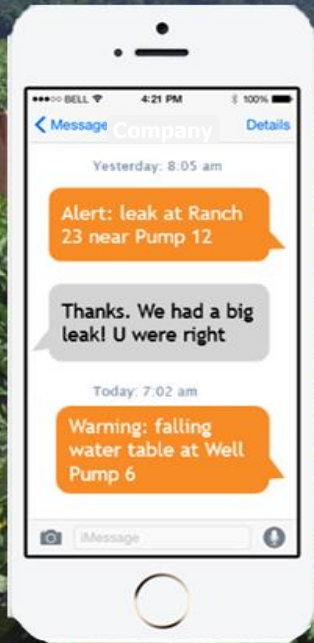
WET Assists Commercialization





Illustrative Technologies of Precision Agriculture

*Connects utility account,
on-site pumps and the
"internet of things."*





Illustrative Technologies for Commercial Use



Laundry System uses closed loop CO₂ for washing garments and eliminates use of water.

Advanced Wok improves heat transfer, reduces energy & eliminates water used to cool the surface.





Illustrative Technology for Industrial Use

Infrared Tomato Peeling



- Eliminates lye
- Reduces energy and water usage.



Forward Osmosis-Based System Produces High Quality Water

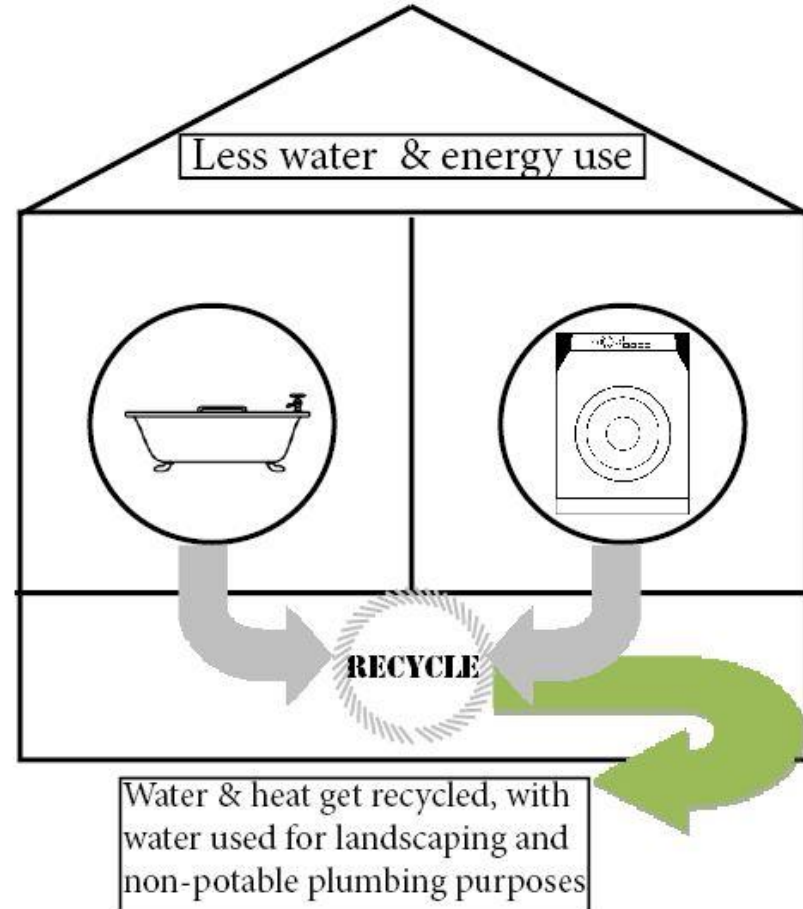
- Concentrates hard-to-treat industrial wastewater and generates high quality water for onsite reuse.
- Reduces treatment costs and energy use compared to current processes.
- Estimated 30-60% energy savings due to reduced need for purification and pumping.
- Test sites include a **soap company, a winery and a frozen food company.**





Illustrative Technologies for Residential Use

- Minimizing water heating by extracting heat from wastewater from the home.
- Treated wastewater is then recycled for landscaping and non-potable plumbing use.





Illustrative Advancements in Groundwater Desalination

- New electrodialysis technology to reduce cost and energy.
- Goal is zero liquid discharge from desalination plants.



- Concentrate is treated to recover its water.
- No liquid waste from a desalination plant.
- Salts can be recovered and used rather than landfilled.



WET Program: Tentative Schedule

Item	Date
WET and WaterSaver Idea Exchange dockets and webpages	Launched April 2015
Program development	May – Aug 2015
Public workshops for program input: Fresno, Chico, Lynwood, Pomona	June – Aug 2015
Draft agriculture rebate program guidelines released	June 2015
Agriculture rebate program guidelines approved, contingent on legislative approval of funding	July 2015
Release WET program grant funding opportunity for agriculture	*
Release WET program grant funding opportunity for commercial, residential, and industrial sectors	*
Release WET program grant funding opportunity for renewable power desalination	*

* Suspended until funding is available.



WET Program Information

- WET Program website:
www.energy.ca.gov/wet/
- Idea Exchange:
http://www.energy.ca.gov/wet/idea_exchange.html
- Opportunities List Serv: www.energy.ca.gov/listservers/



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Thank you.