

Background: Innovate to Innovation (i2i) Water

- 2010 legislative request to assess California's 'innovation ecosystem'
- Round tables with academic, industry & research leaders across state seeking their input on challenges
- Conclusions: State needs to bolster its international competitiveness by enlisting California's S&T community in finding solutions to two of the State's major challenges, education and water – 2011/Phase I
- Development of Water Innovation Road Map – 2012/Phase II
 - ✓ engaging broad segment of S&T community
 - ✓ finding innovative solutions to water issues facing California in coming decades



California's Water Future Project – Ph. III Goals

1. Make specific recommendations -
 - technologies having most promise over next 5-10 years
 - institutional & process changes needed to incorporate identified innovations
2. Identify appropriate technology planning, pilot projects & investments
 - by Federal, Tribal, State, regional and local governments & agencies, NGOs, & private applied research and innovation initiatives
 - required to achieve the needs identified
3. Provide technology opportunities input to the DWR 2013 Update of the State Water Plan

California's Water Future Project: Overview



2. Methodology

a. Committee Assembled

b. Online Survey – Late 2012

Science and Technology Innovation for California's Water Future

Project Steering Committee

- Jude Laspa (Chair), Retired Deputy Chief Operating Officer, Bechtel
- Bryan Hannegan, VP, Environment and Renewables, EPRI
- Soroosh Sorooshian, Dist Prof, Civil & Env Engrg & Earth Sci; Dir, Center for Hydrometeorology & Remote Sensing, UCI
- Robert Wilkinson, Lecturer, Env Studies & Adjunct Assoc Prof, Bren School of Env Sci & Mgmt, UCSB
- David Zoldoske, Exec Dir, Water Resources & Policy Initiatives, CSUF

Project Investigators

- M. Daniel DeCillis, Senior Research Associate , CCST
- Karl Longley, Engineering Prof & Dean Emeritus, CSUF; Chair, California Reg Water Qual Board, Central Valley

California's Water Future Project Online Survey

2. Methodology (Continued)

b. Survey included questions such as:

- i. What important, existing technologies are being used that have the potential for more broad application?
- ii. What promising technologies are emerging, including information technology, needing to be developed to better support integrated data analysis for water management?
- iii. If the State had money to invest, what technology would you recommend for investment? Why?

California's Water Future Project Online Survey

- iv. How big of an impact could commercialization of the technology have on improvement in California's water quality, and the complex water-related ecosystem?
- v. What are the potential roadblocks related to commercialization of this technology?
- vi. Are there regulatory issues that must be addressed in applying this technology?

California's Water Future Project: Next Steps

3. Follow up focus groups, individual interviews, and regional review meetings – Underway thru 4/2013
4. Summary Report
 - Input into Department of Water Resources 2013 State Water Plan Update – May 2013
 - Complete by mid-2013 (or later)

California's Water Future Project: Results To-Date

1. Most respondents indicated that technologies exist to significantly improve California's water supply and management which are either ready for deployment or which can be commercialized/scaled up within three to five years.

California's Water Future Project: Results To-Date

2. Most Common Areas Suggested

- a. Access to higher quality data & better analysis & modeling tools
- b. Improvement of onsite monitoring of water quality and environmental conditions
- c. Use of remote sensing to evaluate snowpack and other water supply conditions

California's Water Future Project: Results To-Date

2. Most Common Areas Suggested (Continued)
 - d. Use of innovative water treatment technologies including membrane filtration and desalination
 - e. Improved watershed management including groundwater recharge
 - f. Emphasis on good practices for agricultural and urban water use efficiency

California's Water Future Project: Results To-Date

3. Focus Groups – Underway

- Organized around most common areas suggested
- Experts who participated in survey and who did not participate

List Of Focus Groups

- Optimizing data management & use
- Data acquisition and monitoring (incl. remote sensing)
- Water treatment (incl. membrane, biological and solar technologies)
- Watershed management
- Urban water efficiency
- Agricultural water efficiency
- Water/energy nexus

Biggest Challenges

- Assessing progress since 2009 swp update in technology areas
- Developing more “out of the box”, game changer ideas
- Assessing where development dollars could have the biggest impact, including the use of public-private partnerships
- Consolidating all input into the summary and detail reports, especially to support DWR