

Two Top-ranked Project Descriptions

Breakout group spokespeople presented their proposed projects in plenary session. After all presentations had been made, each conference participant voted for their favorite projects. Each participant received five votes and could attach those votes to any of the proposed projects, using all five votes for one project, or any combination thereof, as desired.

The project receiving the most votes by conference participants was a solar project entitled, “Design of a high yield integrated concentrated photo voltaic and solar thermal systems that produces power and supports advanced water treatment of brackish water to serve remote and rural communities water and energy needs.” The project resolves a chronic water and power shortage for small remote/rural communities. It introduces a viable model to meet the water and power needs of dispersed rural populations. The benefits of this project would be the improvement of public health through the development of reliable high quality drinking water and water/power for economic development. The optimized project design achieves sustainability within the capacity of a population to pay operation, maintenance, and replacement costs for reliable access to power and water.

The project receiving the second most votes was a water resources project entitled, “Desalination technologies and trace contaminants.” For rural communities, the benefits of this project include: education for health protection; understanding of treatment needs and costs, and the development of local water supplies. For industrial technology developers, the project would assist in market identification. For Reclamation, the project develops strategies for future priorities and fund allocation, and helps develop future water supplies.

The Project Receiving the Most Votes by Conference Participants: Solar Project

Title

Design of a high yield integrated concentrated photo voltaic and solar thermal system that produces power and supports advanced water treatment of brackish water to serve remote and rural communities water and energy needs.

Needs the Project Meets

Resolves a chronic water and power shortage for small remote/rural communities; introduces a viable model to meet the water and power needs of dispersed rural populations.

Benefits of Project and Expected Outcomes

Improves public health through the development of reliable high quality drinking water and water/power for economic development. Optimized project design achieves sustainability within the capacity of population to pay operation, maintenance and replacement costs for reliable access to power and water.

- Outmigration to be reduced
- Transferrable model that can be applied in other communities
- Improved environmental impacts
- Drought mitigation
- Reduced vulnerability and risk to climate change

Research Objectives

Define a system that integrates solar and advanced water treatment to produce (potable and non-potable) water and power to meet the demands of a small/rural community; a sustainable system within the user's capacity to pay operation, maintenance and replacement costs; minimizes waste generation and, integrates an operational system that manages the control of the cogeneration of power and water from both a demand and supply management perspective.

Research Approach (numbered by task)

1. Analysis of (3) communities to capture a control group of poor condition, marginal condition and sustainable condition
2. From pre-commercial and commercially available solar systems define the best energy and advanced water treatment technology portfolio as a package system to meet defined water and power demand
3. Produce additional water as a storage of excess power produced from the solar energy system
4. Define a control system that optimizes the operation and user data interface
5. Define system design that minimizes brine disposal
6. Report of findings in a Guidebook defining the planning process and system parameters

Estimated Project Budget and Schedule

\$520,000

Proposed Partners

Reclamation, University of Arizona, University of British Columbia (RES'EAU Waternet), ProDes, KII, Inc./Suns River, and others to be defined.

Known Prior Research on This Topic

Various