Food-Energy-Water Nexus Research:
NSF-EPRI Collaboration on Water Use Optimization (10/1 to 10/20)

http://www.epri.com/Pages/NSF-EPRI-Collaboration-on-Water-Use-Optimization-.aspx
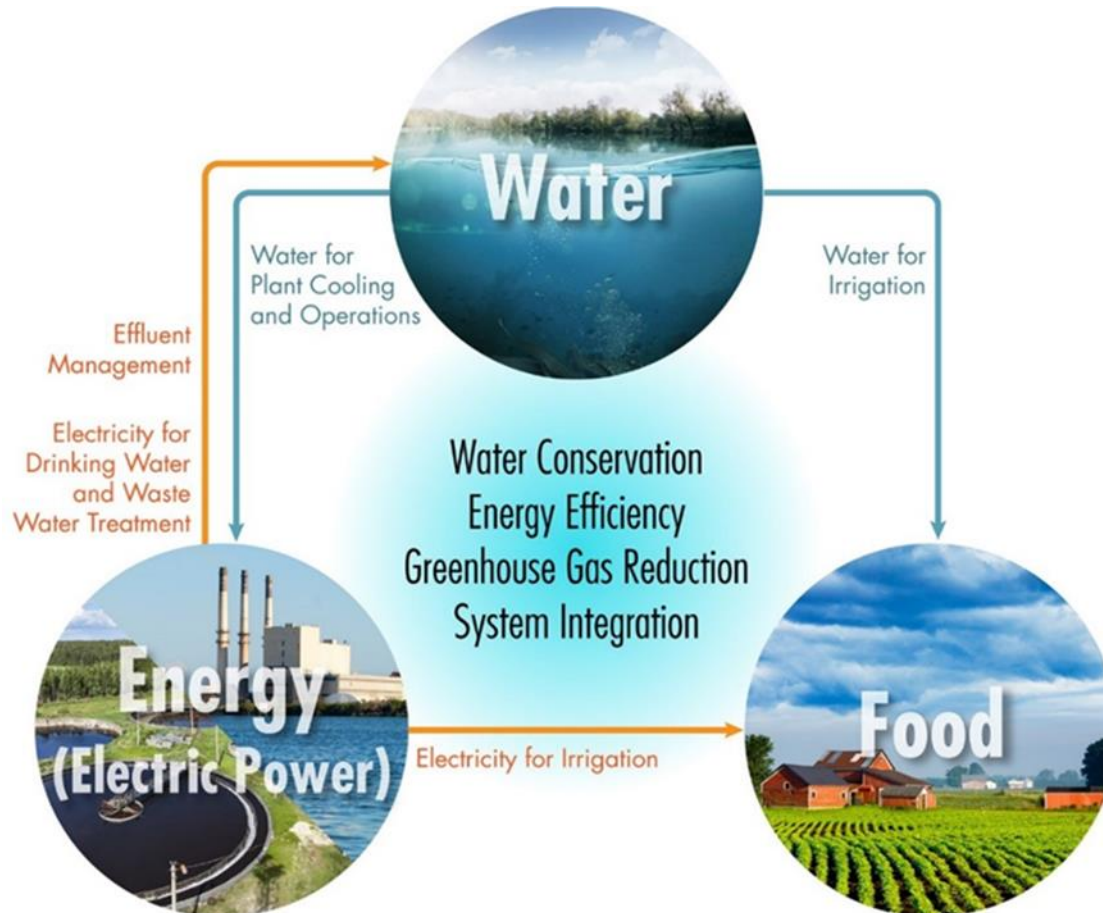
Research Needs for the Power Sector

- For EPRI scientists and research managers, the following areas are of high importance:

Tier One	Example
Desalination and Water Reuse	• Use of process heat streams for desalination vs reverse osmosis • Combined renewable/solar energy and desalination technology
Integration of water and energy systems, and sensor technologies	• Water infrastructure for storage of water and energy • Low-grade energy for wastewater treatment
Water and Energy Use Efficiency and Water Treatment/Reuse	• Water/energy efficiency technologies in residential, commercial, agricultural, and industrial sectors • Conveyance

Challenges in the Food-Energy-Water Nexus

- Water withdrawal and consumption in different sectors: Can we understand the barriers to achieving higher water use efficiency for different sectors?

- Can we use treated wastewater for power and agricultural operations to alleviate pressure on freshwater sources?

- Can we improve and update water conveyance and water transport?

- What are the risks and uncertainties in changing operations vs. technological innovations?

- Applications of environmental economics—cost analysis, least cost analysis, benefit cost analysis for a comparative framework

Example of a small-scale product design—Grove Labs

World-class LED Grow Lights
Efficient and aesthetic, our LED lights mimic the sun to power photosynthesis.

Large Main Gardening Bed
Tomatoes to cilantro. Peppers to arugula. Harvest a bounty with plenty of grow space.

Self-Cleaning Aquarium
Naturally balanced as part of the larger ecosystem, this stunning aquatic habitat will replace your flat screen TV.

Intelligent Connected Device
Sensors and Wi-Fi connectivity help you cultivate a healthy Ecosystem 24/7.

Greens and Seedling Bed
More than double your productivity with dedicated seedling grow space.

Tool Storage
Integrated storage for everything you need to tend to your plants.

See Ecosystem Specs and Pricing

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