

# Charting New Waters



The  
**Johnson**  
Foundation  
AT WINGSPREAD



## Navigating to New Shores

**Seizing the Future for Sustainable and Resilient  
U.S. Freshwater Resources**

Brad Spangler, Meridian Institute

# The Johnson Foundation at Wingspread



## CNW 1.0

2008–2011

Catalyzed new coalitions, new energy and increased visibility around U.S. freshwater challenges

## CNW 2.0

2011–2013

Focused on following through on commitments made as part of CNW 1.0

## CNW 3.0

2013–2014

Focused on catalyzing the widespread adoption of more sustainable and resilient water infrastructure systems in the United States

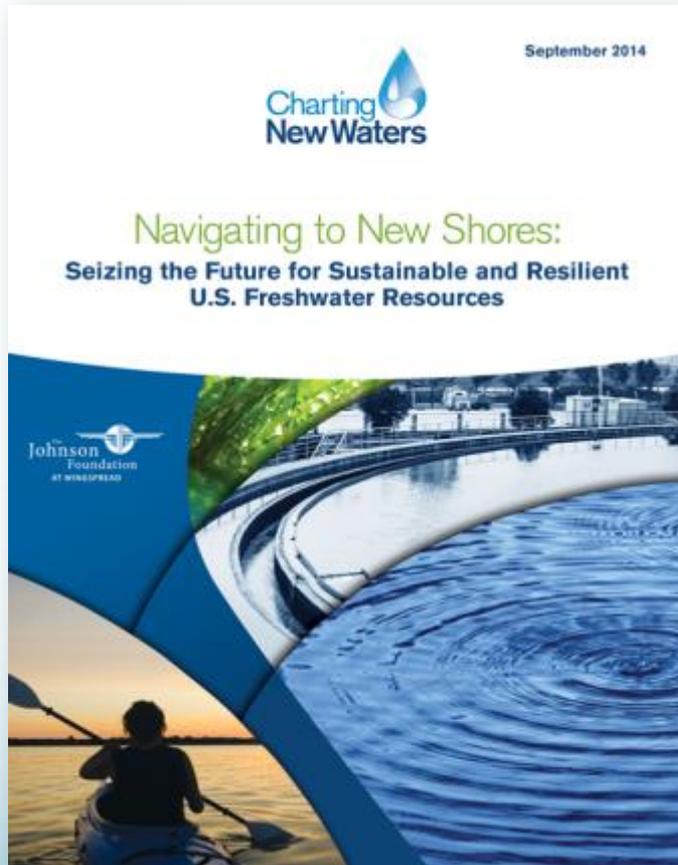


# Key Challenges Explored

- Climate change
- Infrastructure
- Water scarcity
- Flooding
- Nutrient management
- Water-energy collision



# Navigating to New Shores



- Forge partnerships
- Develop integrated solutions
- Promote innovation
- Highlight multiple benefits
- ***Adapt to & mitigate climate change***
- Balance human & environmental needs
- Restore ecosystem function
- Prioritize local water sources
- Redefine “waste”
- Right-size systems
- Tap sustainable financing streams
- Ensure accountability

# Key Guiding Principle

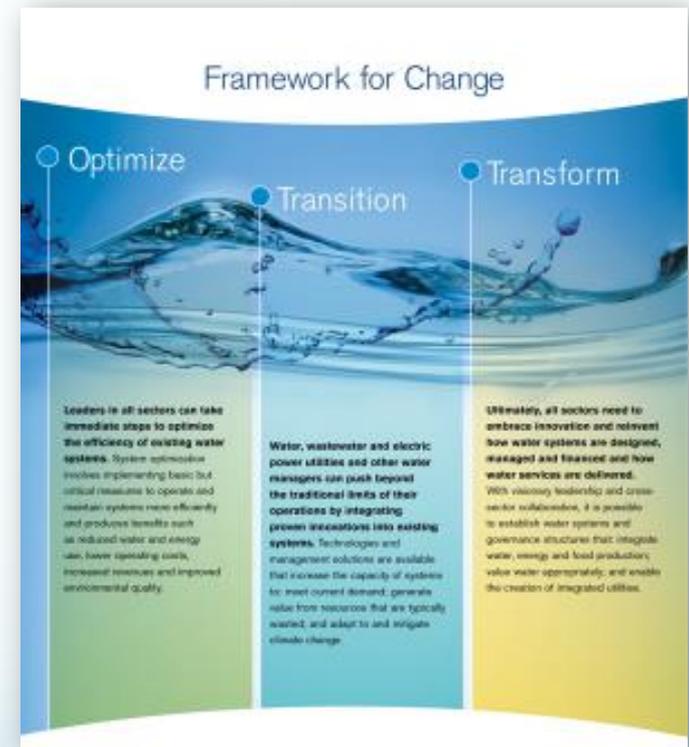
- **Plan for Adaptation to and Mitigation of Climate Change Impacts:** Given projections of future climate variability (e.g., dry regions getting drier, wet regions becoming wetter, more frequent and intense storms), develop long-term water resources management plans for climate readiness, to adapt to and mitigate further climate change.

# Relevant Assumptions

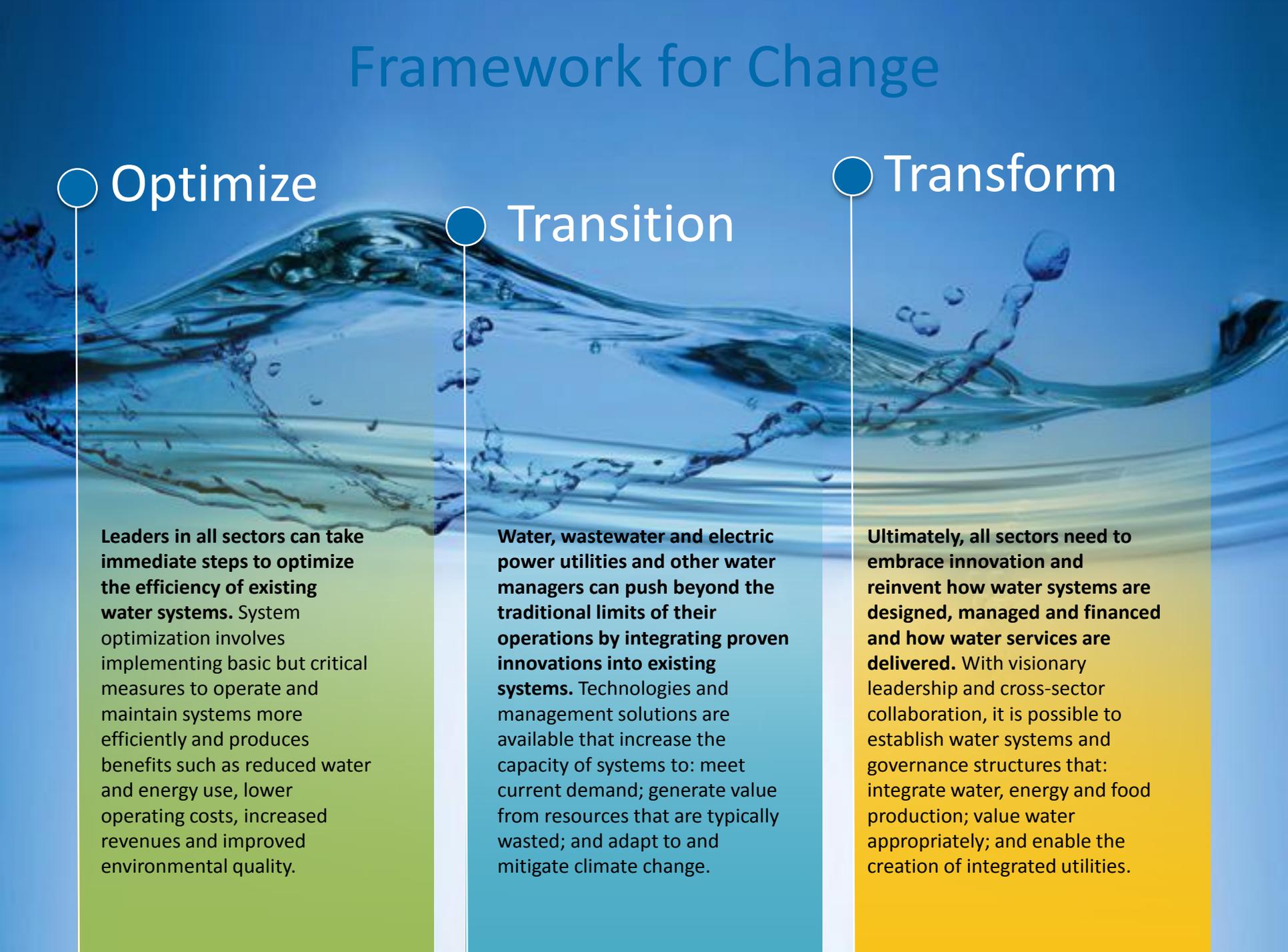
- Many water challenges stem from chronic underinvestment or misguided investment in outmoded solutions
- Proven innovations are available to optimize, upgrade and transform U.S. water management and infrastructure
- Need long-term, adaptive planning (“stationarity is dead”)
- Need integrated management solutions (break down siloes)
- The best solutions generate multiple benefits
  - Sustainable = environment, economy and social (TBL)
  - Resilient = to both acute, episodic events & slow, chronic trends

# Recommendations to Catalyze Change

- 1) Optimize the Use of Available Water Supplies
- 2) Transition to Next-Generation Wastewater Systems
- 3) Integrate the Management of Water, Energy & Food Production
- 4) Institutionalize the Value of Water
- 5) Create Integrated Utilities



# Framework for Change



## Optimize

**Leaders in all sectors can take immediate steps to optimize the efficiency of existing water systems.** System optimization involves implementing basic but critical measures to operate and maintain systems more efficiently and produces benefits such as reduced water and energy use, lower operating costs, increased revenues and improved environmental quality.

## Transition

**Water, wastewater and electric power utilities and other water managers can push beyond the traditional limits of their operations by integrating proven innovations into existing systems.** Technologies and management solutions are available that increase the capacity of systems to: meet current demand; generate value from resources that are typically wasted; and adapt to and mitigate climate change.

## Transform

**Ultimately, all sectors need to embrace innovation and reinvent how water systems are designed, managed and financed and how water services are delivered.** With visionary leadership and cross-sector collaboration, it is possible to establish water systems and governance structures that: integrate water, energy and food production; value water appropriately; and enable the creation of integrated utilities.

# Optimize Use of Available Supplies

- Increase efficiency of distribution systems
- Establish rates that drive conservation & efficiency
- Implement policies & programs to stimulate efficiency
- Expand adoption of water-wise agricultural practices
- Diversify with underused sources
- Reclaim and reuse water from wastewater
- Match the right quality water to the right use



Photo courtesy of iStock Photo

# Transition to Next-Generation Wastewater Systems

- Keep clear water out of sewer systems
- Complement centralized infrastructure with distributed systems
- Maximize resource removal and recovery
- Develop energy-positive wastewater treatment facilities



Photo courtesy of Water Environment Research Foundation



Photo courtesy of Hampton Roads Sanitation District and Backus Aerial Photography, Inc.



Photo courtesy of Ostara



# Integrate Management of Water, Energy and Food

- Improve energy management at water and wastewater utilities
- Prioritize water-smart electric power
- Recovery nutrients and energy from agriculture
- Plan for sustainable rural water supplies



Photo courtesy of iStock Photo



Photo courtesy of Forest County Potawatomi Community

# Institutionalize the Value of Water

- Tap new capital sources & use innovative financing mechanisms
- Institute sustainable pricing for water services
- Account for the value of ecosystem services
- Create a culture in which water is highly valued

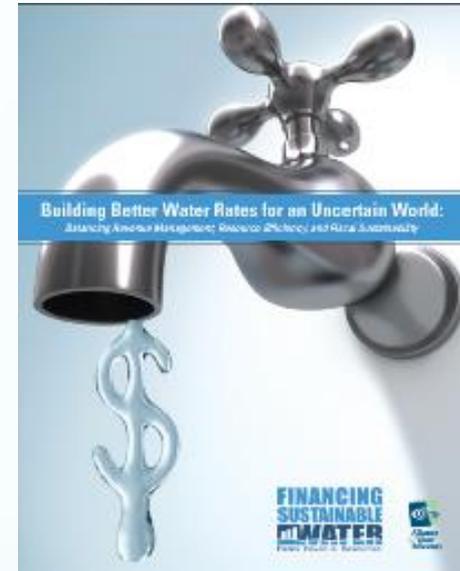


Photo courtesy of Alliance for Water Efficiency



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# Create Integrated Utilities

- Create new design principles & evaluation criteria
- Transform from service providers into resource managers
- Develop new business models & regulatory schemes
- Cultivate resource management partners & customers of the future



Photo courtesy of WRT Design and the City of Philadelphia



Charting New Waters: <http://www.johnsonfdn.org/chartingnewwaters>

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