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# Seeking Pathways for Water and Electric Utility Integrated Planning

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Water Research Foundation

## AWWA Sustainable Water Conference

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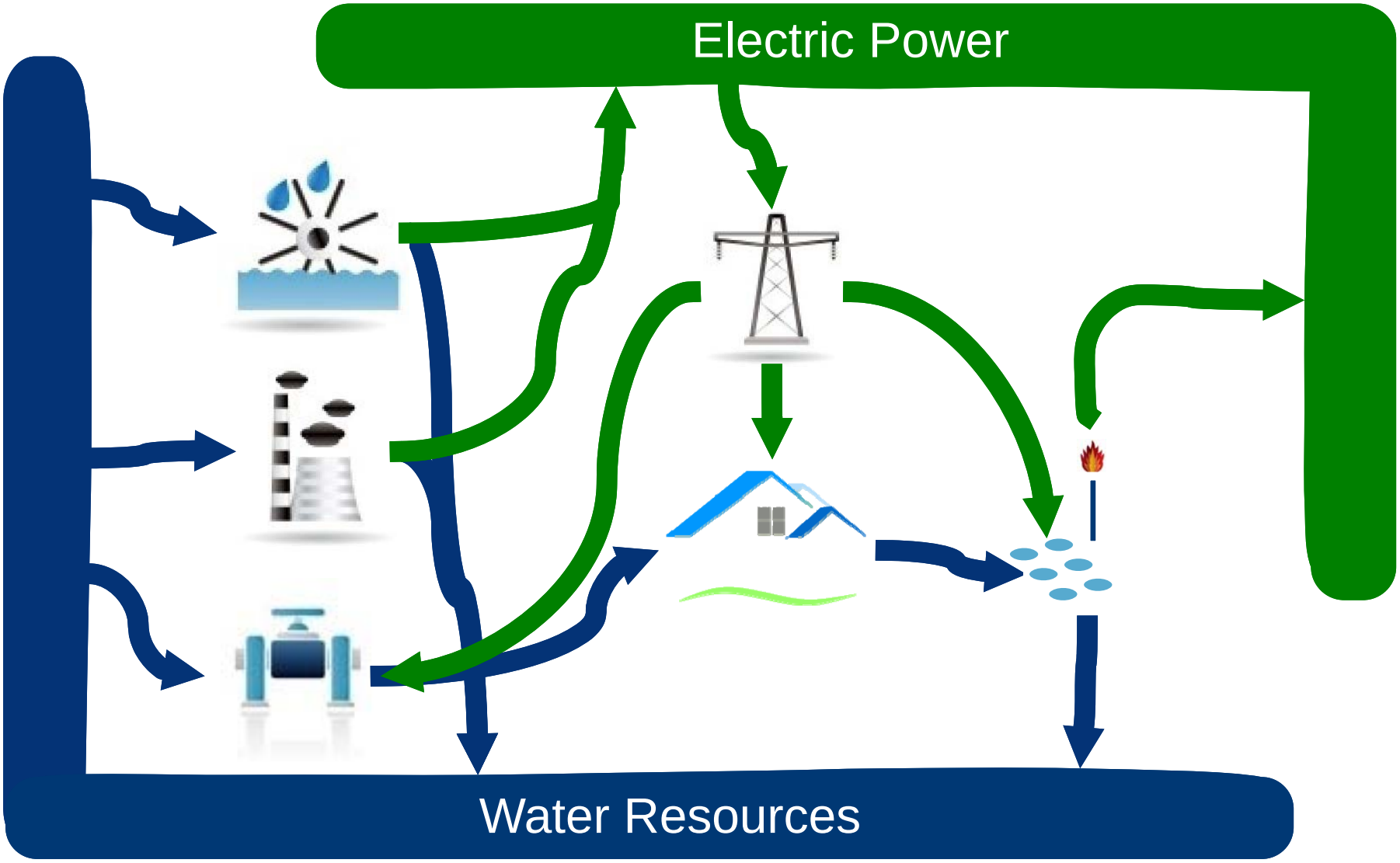
# Interconnections… It's why we are talking today…



# *California Drought Cuts Hydroelectric Generation in Half*

- Anastasia Pantsios, October 7, 2014, EcoWatch.com

# This presentation presents outcomes from project 4469

Water Research Foundation Project 4469 – Water and Electric Integrated Planning (WEUIP)

Our research approach was designed around the primary goal to:

*Investigate and advise on how water and electric utilities may engage in integrated planning together with an understanding of related benefits and costs.*

Work includes

- Literature review of nexus and planning activities
- Case studies
- Planning tournament
- Concept survey

# At the start of our research we heard…

"Energy efficiency just isn't a priority right now so we don't see a need to engage local energy providers"

"We've been doing our own watershed plan for as long as I can remember without ever including downstream utilities"

"I'm not sure how we'd balance differing priorities between utilities"

"They [electric utility] don't seem interested in us [water utility] generating electricity"

Electric Utility  Water Utility

# Water and Electric Utilities have multiple synergies

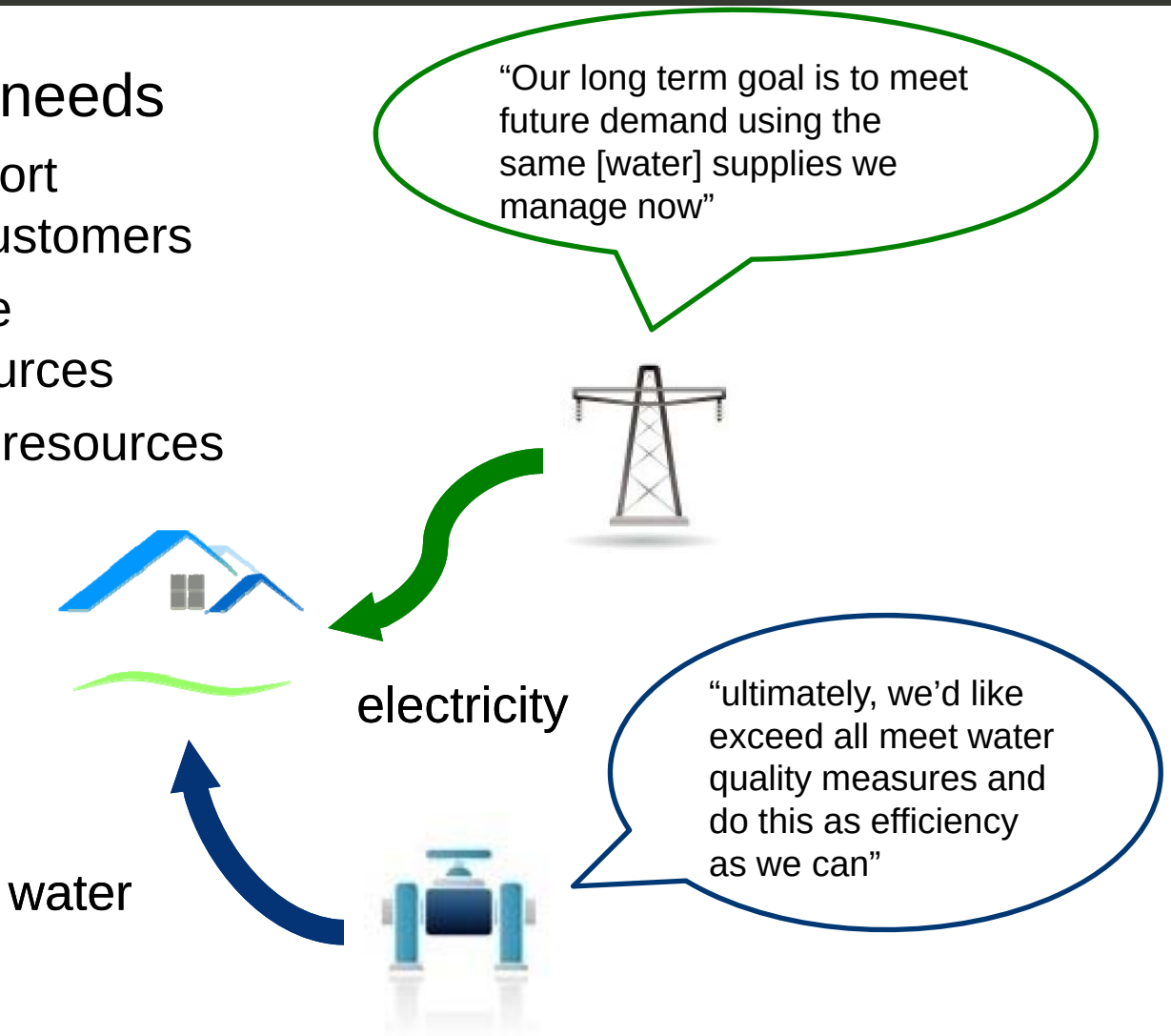
- Both seek to use resources (water or energy) efficiency and minimize cost
- Both are facing growing demand pressures with limited or fixed supplies
- Both are impacted by climate uncertainties

# Water and Electric Utilities have multiple synergies

- Both depend on water availability
- Likewise, **changing energy sector will affect water and electric service delivery** (pricing, electricity generation profile)

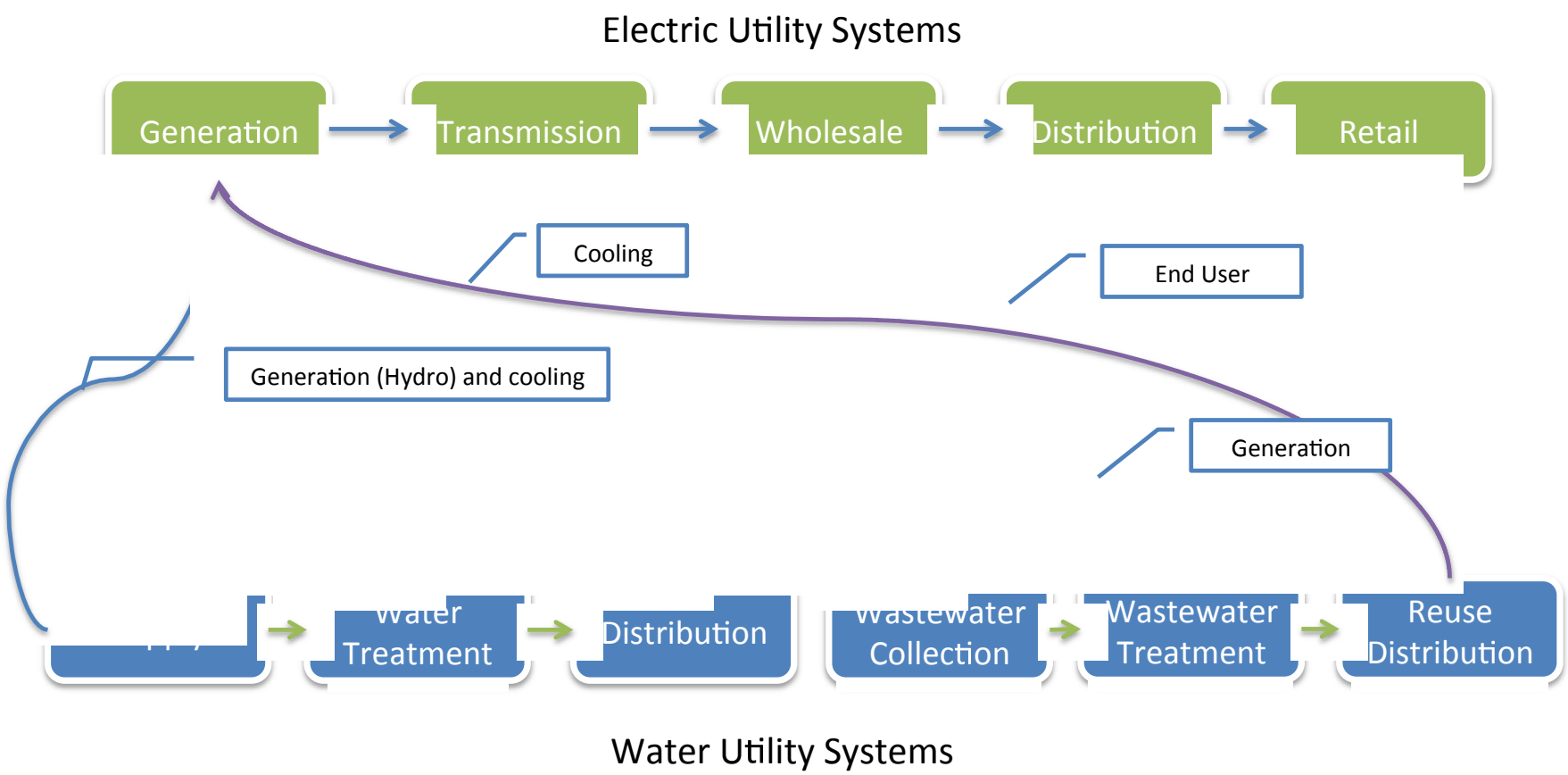
# W&E Utilities are not all that dissimilar

- Similar service needs
  - Need to transport resources to customers
  - Need to ensure adequate resources
  - Need to utilize resources efficiently



# Pathways provide opportunities to work together

Synergies and common paths utilities can use to work together

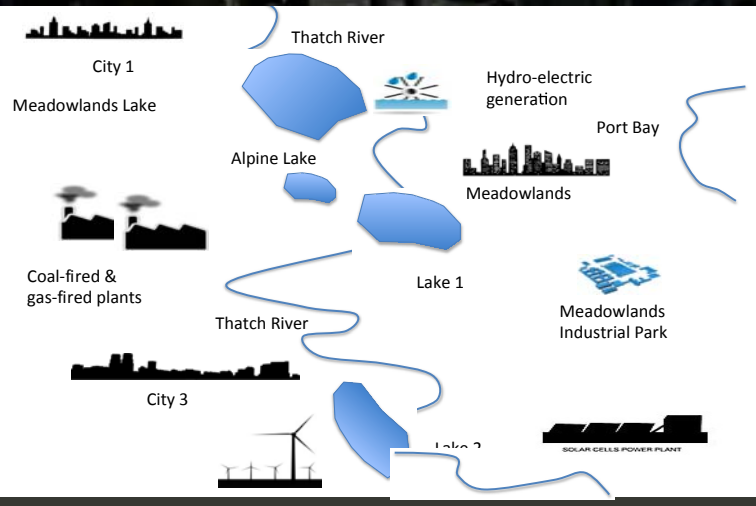


# Exploring these pathways through a Joint Utility Planning Tournament

Simulation gaming exercise

Teams of multi-disciplinary stakeholders

- **guided** through several integrated **planning scenarios** set in a **fictitious city** and region
- Discuss and **develop an integrated water and electric utility plan** consisting to meet the goals of the in both the short and long term.



# Two scenarios focus on common pathways for collaboration…

**Securing water supply futures**

- declining water supplies affecting drinking water, hydroelectric generation, and coal generation cooling
- ***prepare a strategy for sustainable management of water over the next 20 years***

# Two scenarios focus on common pathways for collaboration…

**Clean energy regulations ($CO_2$ emission limits)**

- Federally imposed regulation of carbon dioxide (CO2) reducing electric generation capacity from 10% to 25%
- ***prepare an integrated water and energy transformation plan for the next 10 years***

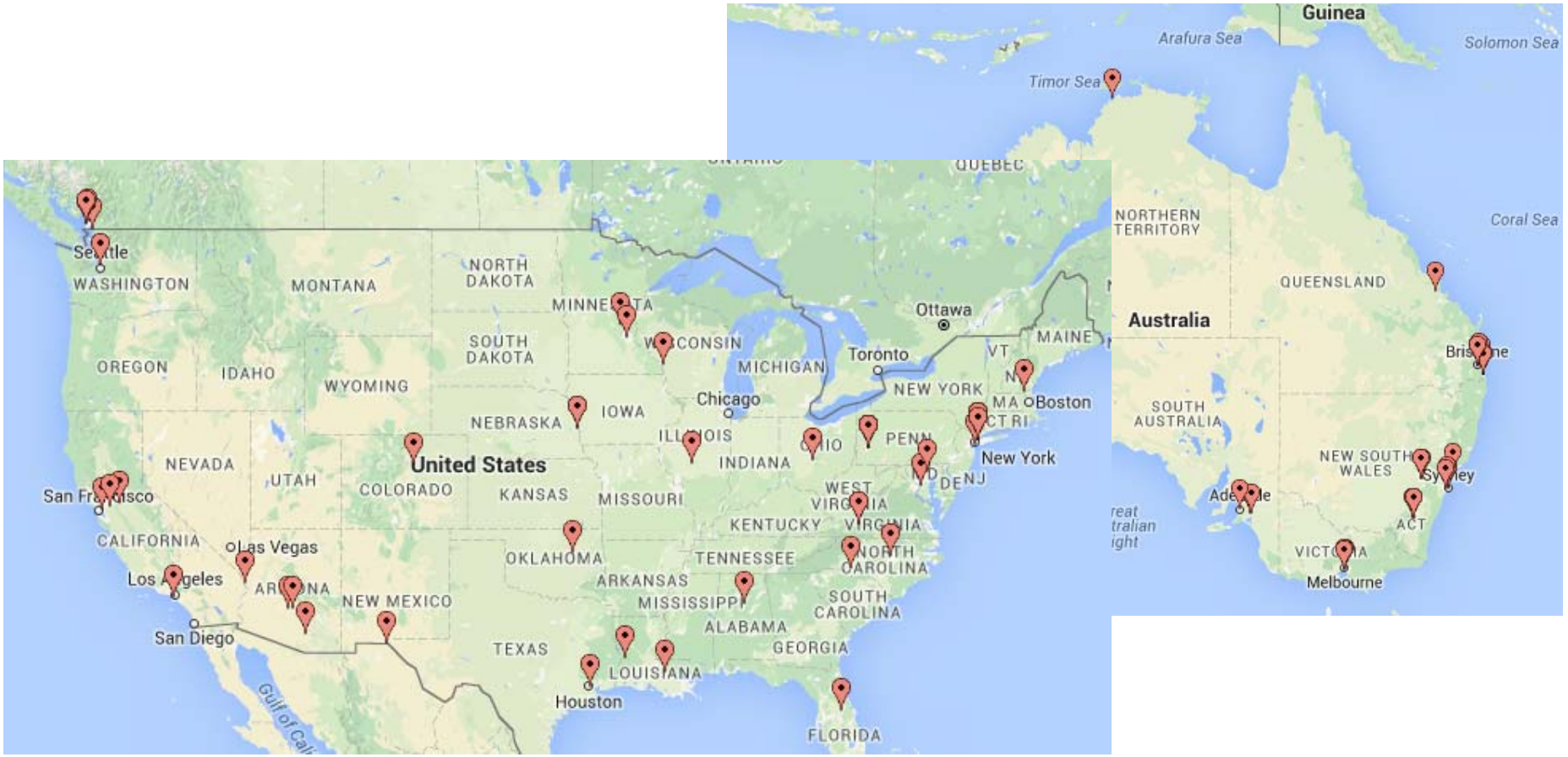
# Tournament outcomes

Overall participants enjoyed and commented on the enhanced discussion that took place during the Denver 2014 tournament

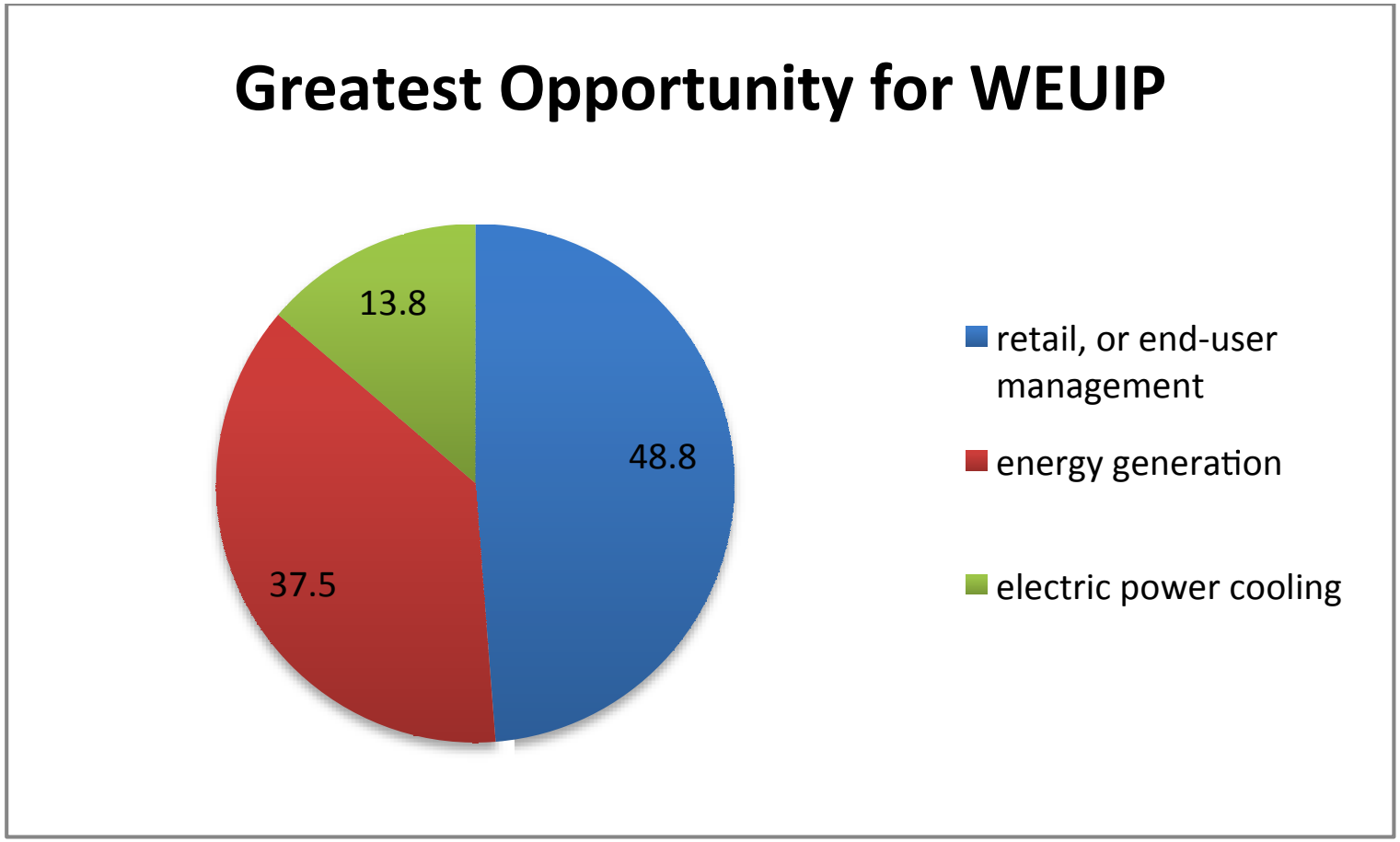
- Key discussion points included:
  - **Language and terminology** between water and electric utilities
  - **Incompatible** political and regulatory **environments**
  - **Differing viewpoints** on how customers/public view water and electric resources
    - ***Water viewed more as a right than electricity***
  - **Lack of public awareness** of the linkages between water and electric service delivery
  - Strong **history of silo'ed** operations

# Industry survey validated findings and suggested priorities

105 responses across the United States, Canada, and Australia provided feedback on key water and electric utility integrated planning themes



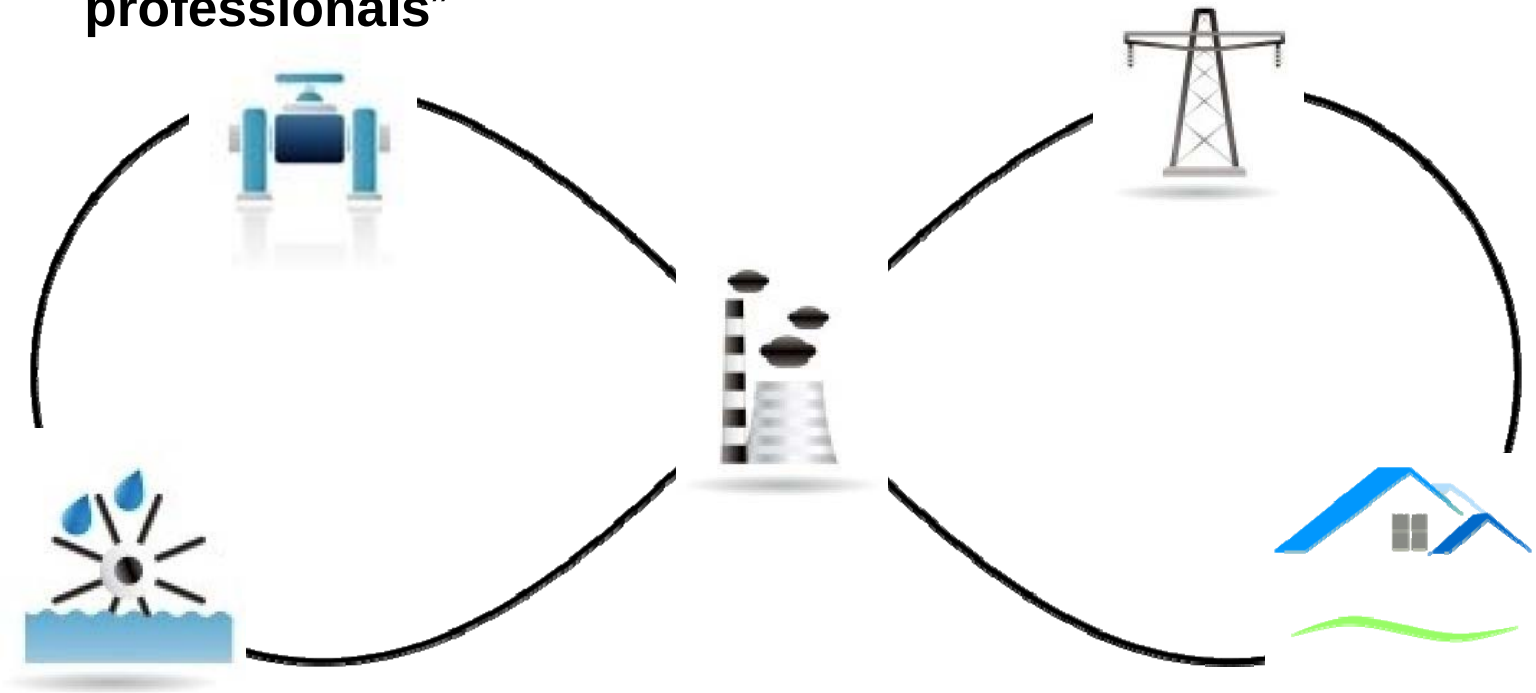
# Perception of the greatest opportunity for WEUIP



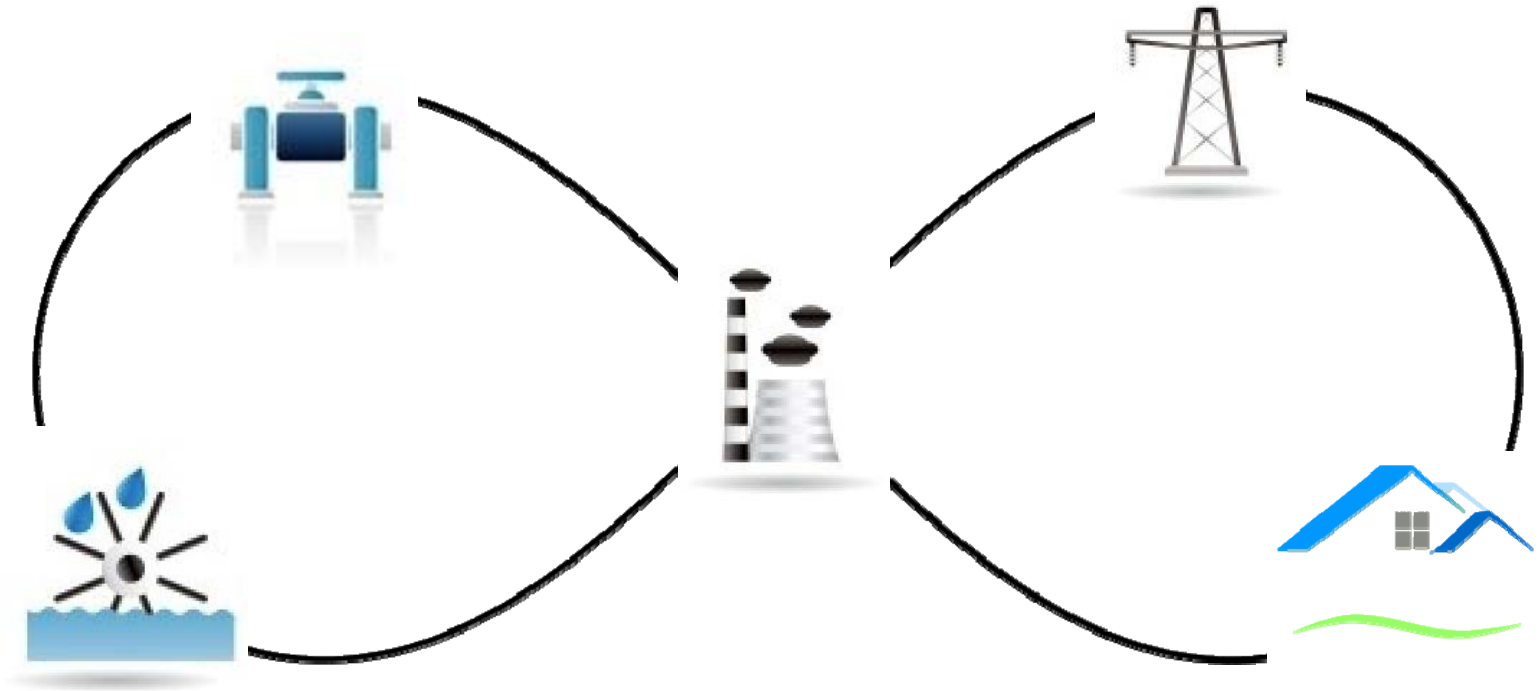
# Benefits of water and electric utility integrated planning

More agreed upon benefits:

- "**Provides water and energy savings**"
- "**Enhances communication among water and electric sector professionals**"



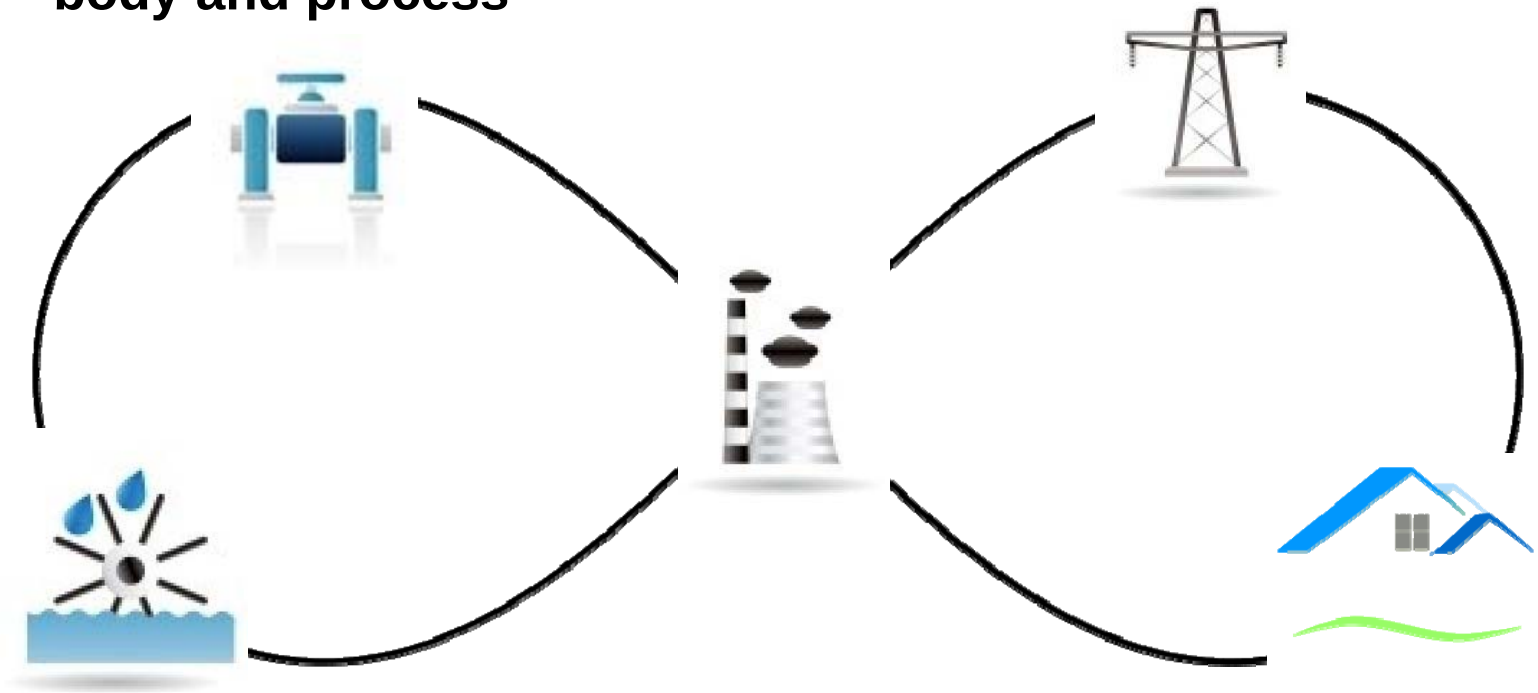
# Potential of programs supporting WEUIP



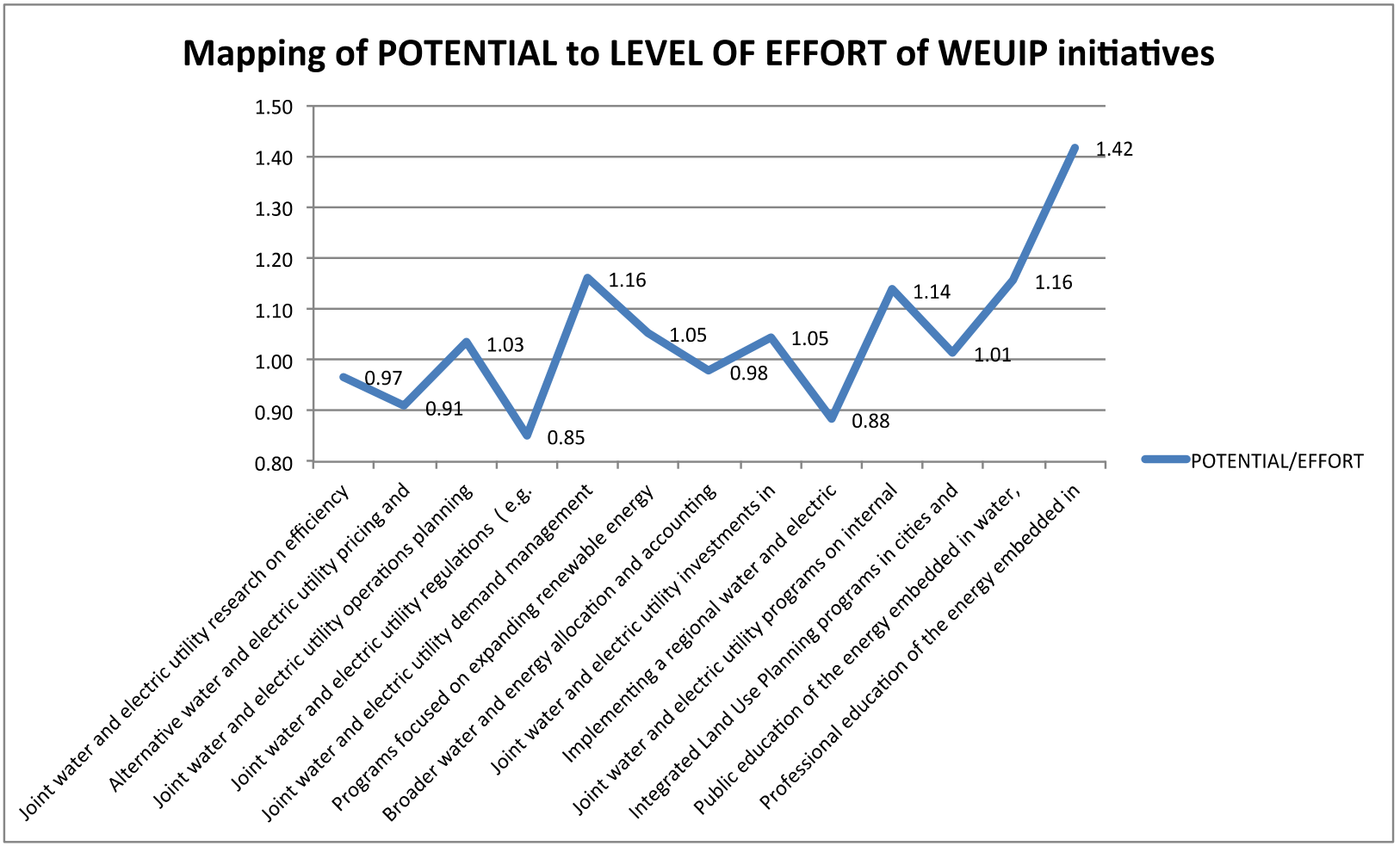
High potential for “**Joint water and electric utility operations planning**” and “**Joint water and electric utility demand management programs**” ”

# Level of Effort for programs supporting WEUIP

Many initiatives would require effort including significant effort for "**Joint water and electric utility regulations**" and "**Implementing a regional water and electric coordinating body and process**"



# Map of potential to effort to identify priorities



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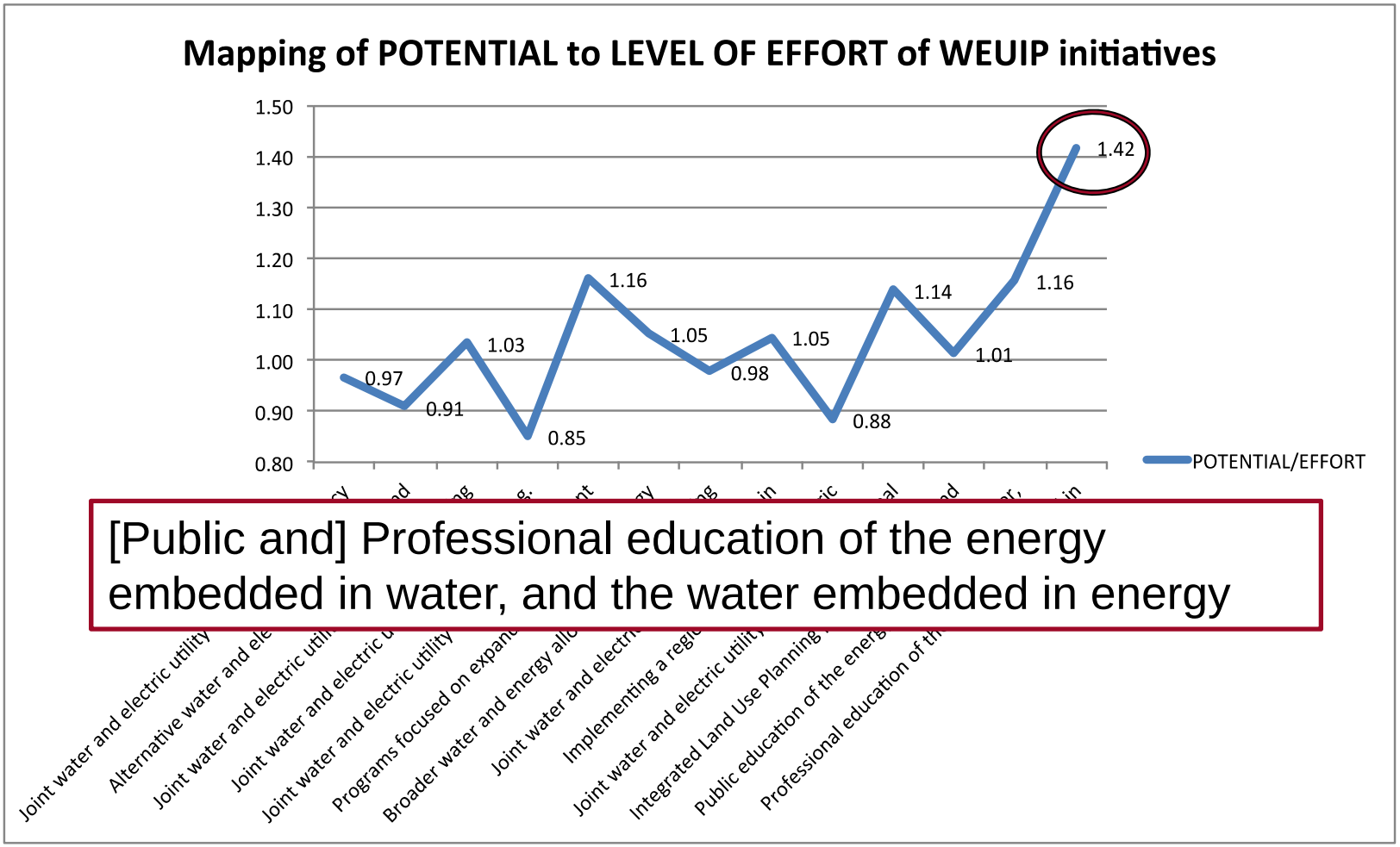

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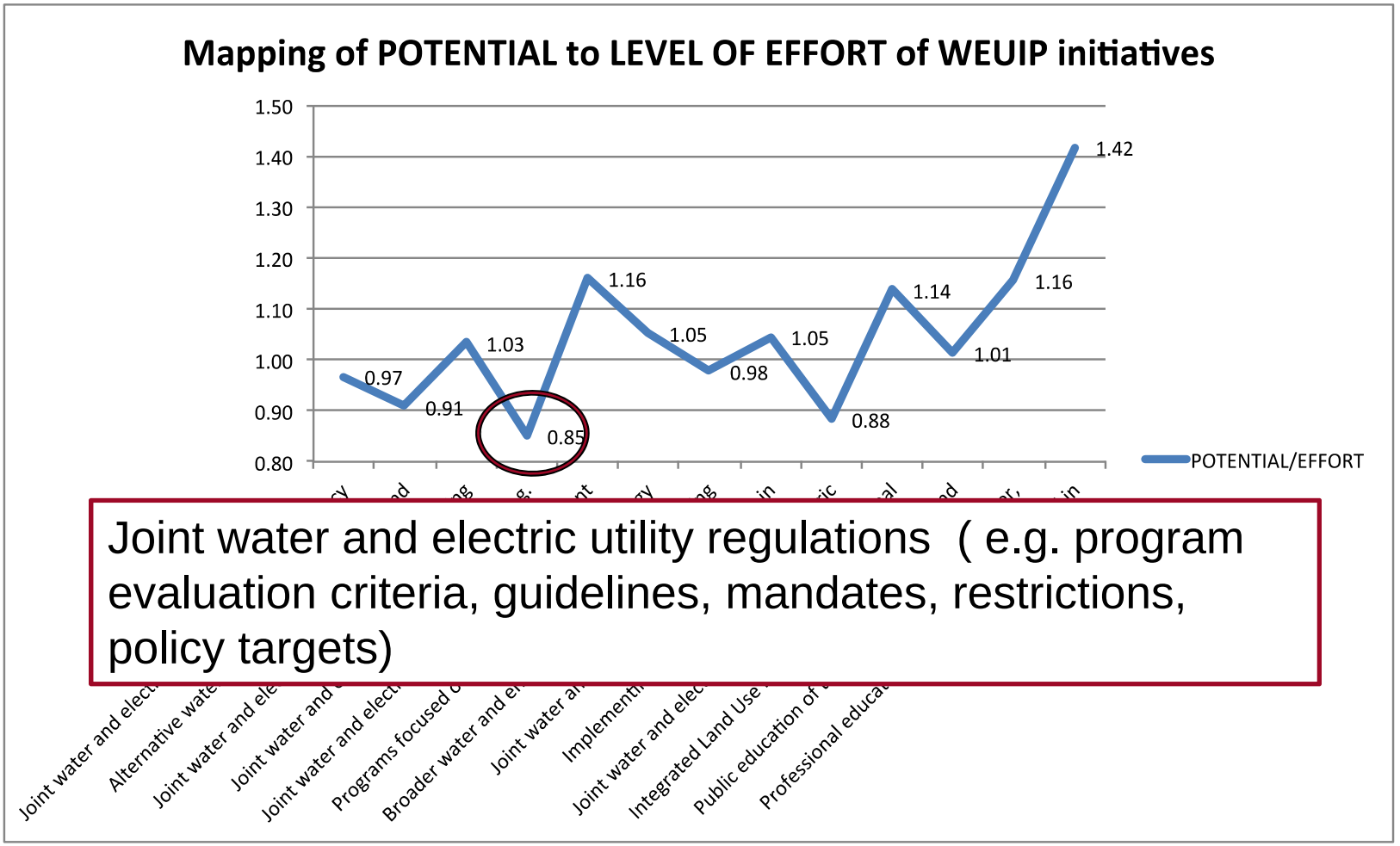

# Other high potential to low effort programs

- Joint water and electric utility programs on internal water & energy reduction
  - e.g. leak management, transmission loss reduction
- Joint water and electric utility demand management programs
  - e.g. devices, incentives, energy and water efficiency programs, joint metering, customer awareness programs

## Some differences in perceived benefits and effort between utility sectors

water

See more benefit in integrated metering

See greater potential in integrated demand management programs

electricity

See greater potential in regional water and electric coordinating bodies and processes

See more effort required to minimize water and energy losses internally

See more effort required to educate professionals on embedded water and energy in systems

# Key findings

In general, **cross-utility partnership and planning is not as common as expected**

**Demand management is driving electric utilities to partner with water utilities to achieve non-network alternative solutions**

**Alternative water supply sources** from wastewater recycling or stormwater capture and reuse are being used to diversify water supply sources, and reduce demand for energy intensive water supplies

Alternative water supply options are creating opportunities to integrate with **land use planning** and promote energy and water efficient **building and land use designs**

# Key findings

- **Significant and recognized benefit** and effort present encouraging joint planning
- **Cost effectiveness is highly regarded in both sectors**, especially in privately owned utilities (energy sector dominant)
- **Water security is a strong driver** for integrated planning and many jurisdictions are looking a joint sponsored initiatives for end use efficiency
- **Integrated planning practices** (Australia, California, etc…) is **considered a vehicle for encouraging joint planning efforts**, but not a requirement

*Still considered time consuming and difficult to bring multiple partners to the table/project*

# Thank you

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Project website:

http://www.waterrf.org/Pages/Projects.aspx?PID=4469