

# Water-Energy Nexus: The Consumer Counselor Perspective

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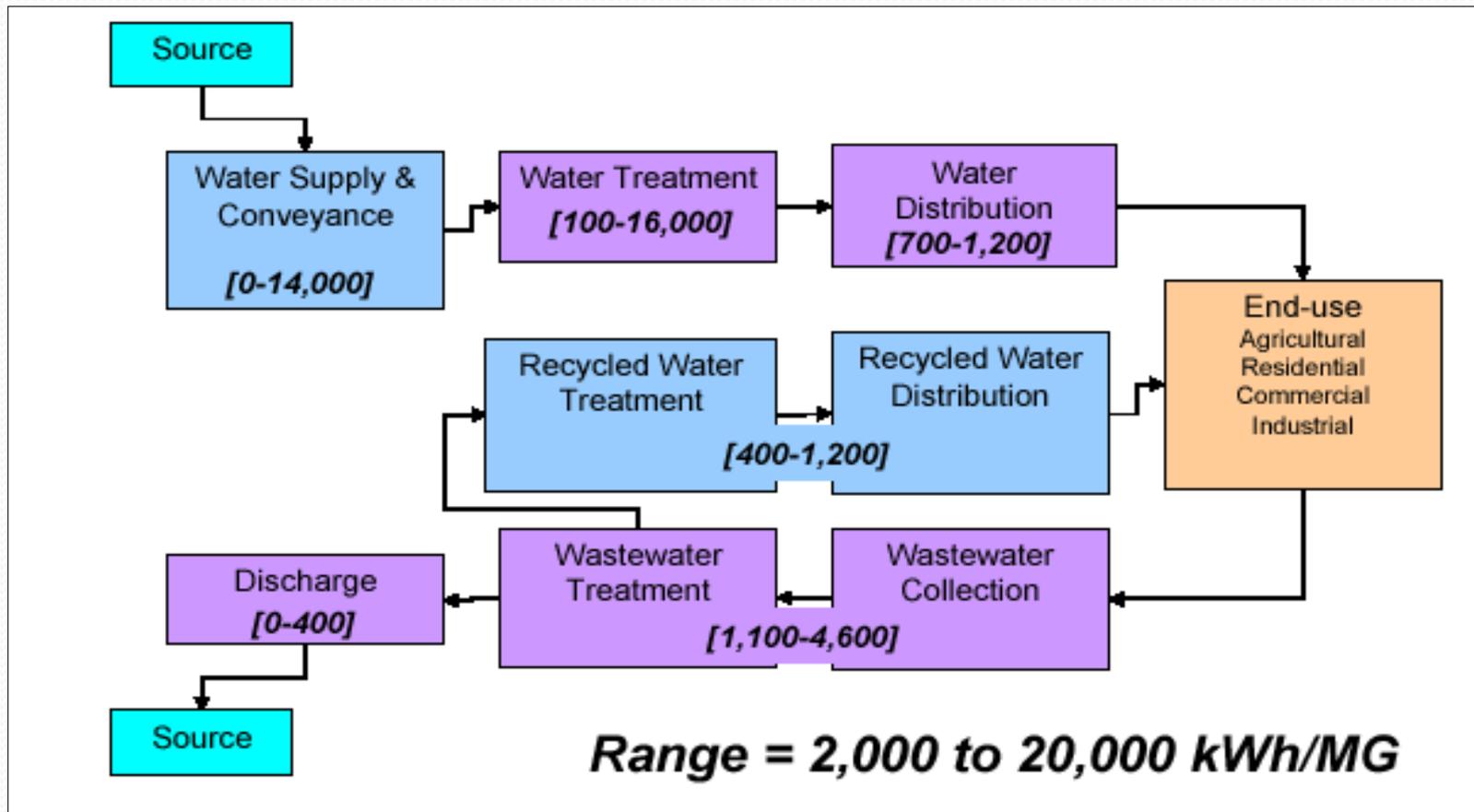
# OUCC Mission

- “To represent all Indiana Consumers to ensure quality, reliable utility services at the most reasonable prices possible through dedicated advocacy, consumer education and creative problem solving.”

# The Water-Energy Nexus

- "Without water, and particularly freshwater, much of our energy, electricity included, could not be produced and our economy would come to a screeching halt. Water and its continued availability must not be taken for granted."

# The Water-Energy Nexus – Embedded Energy



Source: California Energy Commission, 2005 IEPR

# The Water-Energy Nexus

- "The more freshwater used by the energy sector, the more the sector is vulnerable to water constraints."
- On August 16, 2007, the Browns Ferry Nuclear Power Plant in Alabama shut down a nuclear reactor for a day because its cooling water discharge did not meet temperature regulations.

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TESTIMONY OF JOHN D. SWEZ  
DIRECTOR, FUELS & SYSTEMS OPTIMIZATION  
DUKE ENERGY BUSINESS SERVICES LLC  
ON BEHALF OF DUKE ENERGY INDIANA, INC.  
CAUSE NO. 38707-FAC94 BEFORE THE  
INDIANA UTILITY REGULATORY COMMISSION

INDIANA UTILITY  
REGULATORY COMMISS

1 Q. IN THE COMMISSION'S DECEMBER 28, 2011 ORDER IN CAUSE NO.  
2 38707 FAC90, THE COMMISSION ORDERED DUKE ENERGY  
3 INDIANA TO DISCUSS IN FUTURE FAC PROCEEDINGS MAJOR  
4 FORCED OUTAGES OF UNITS OF 100MW OR MORE LASTING MORE  
5 THAN 100 HOURS. WERE THERE ANY SUCH OUTAGES  
6 OCCURRING DURING THIS REPORTING PERIOD, JUNE THROUGH  
7 AUGUST 2012?

8 A. Yes. Significant derates and outages occurred during the summer at Wabash  
9 River and Cayuga Station to comply with the Company's NPDES permit limits at  
10 each station. These restrictions limit the discharge of hot water into the Wabash  
11 River at the Wabash River and Cayuga generating stations. Much below average  
12 rain caused the flow of the Wabash River at Terre Haute, Indiana to average  
13 approximately 1,500 cubic feet per second (cfs) for the months of June through  
14 August versus a historical average of approximately 3,000 to 5,000 cfs for the  
15 same time period. In fact, June 2012 was the driest month on historical record for

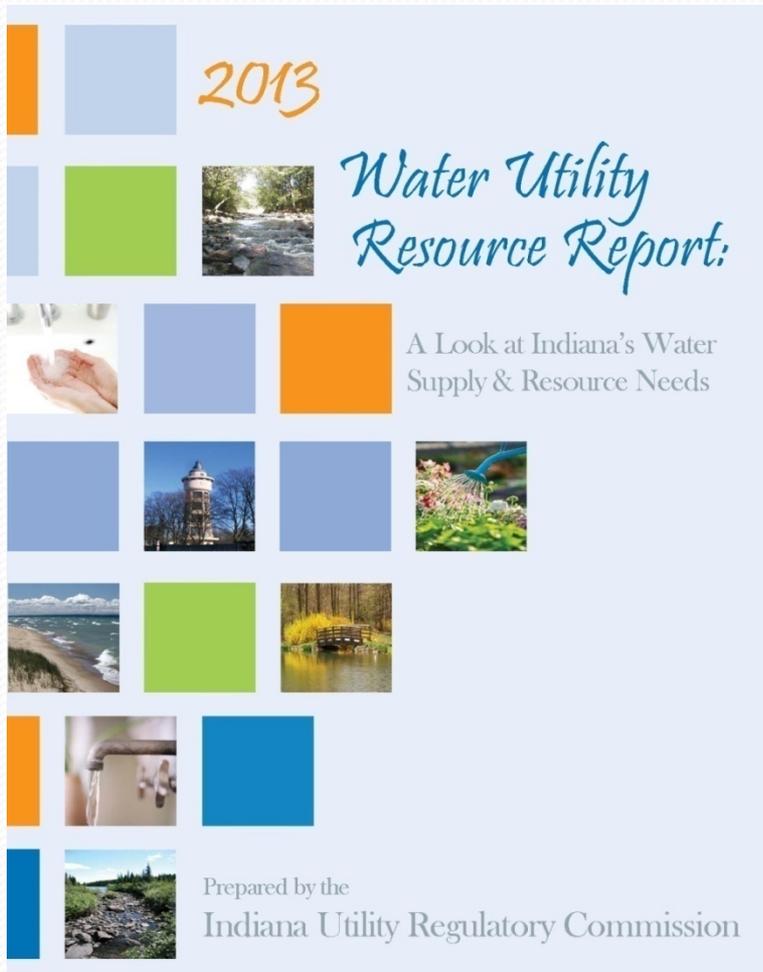
# The Water-Energy Nexus – Who Cares?

- Investors
- Insurers
- Rating Agencies
- Utilities
- Governmental Officials
- Non-Governmental Organizations
- Customers

# Aspects of Water – Energy Nexus

- Water Quantity
- Water Quality
- Expensive Environmental Regulations
- Aging Infrastructure
- Emerging Contaminants
- Energy Extraction

# What is Indiana Doing?



- Address additional significant water withdrawals
- Begin Integrated Water Resources Management (IWRM)
- Form an institution to focus on water research and forecasting
- Reduce non-revenue water

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF GRAIN BELT EXPRESS CLEAN LINE )  
LLC FOR: (1) A DETERMINATION OF ITS STATUS AS A )  
"PUBLIC UTILITY" UNDER INDIANA LAW; (2) A )  
DETERMINATION THAT IT HAS THE TECHNICAL, )  
MANAGERIAL, AND FINANCIAL CAPABILITY TO )  
OPERATE AS A PUBLIC UTILITY IN INDIANA; (3) )  
AUTHORITY TO OPERATE AS A PUBLIC UTILITY IN )  
INDIANA, INCLUDING AUTHORITY TO EXERCISE ALL )  
RIGHTS AND PRIVILEGES OF A PUBLIC UTILITY ) CAUSE NO. 44264  
ACCORDED BY INDIANA LAW; (4) AUTHORITY TO )

and associated wind turbines. The Project will also have a positive impact on the environment by reducing the need for energy from other sources that will therefore reduce emissions of carbon dioxide, SO<sub>2</sub>, NO<sub>x</sub> and mercury. **Additionally, the Project will also reduce water withdrawal and evaporation required for cooling thermal power plants.** Finally, the Project will create geographical diversity in the wind projects that deliver into the MISO and PJM transmission systems, thereby reducing variability, facilitating wind integration, and improving reliability.

Pursuant to the provisions set forth in Ind. Code § 8-1-2.5-5, the Commission finds

# Solutions - The Water – Energy Nexus

- “Expand the Pie” – deliberate communication and collaboration with stakeholders
- Pivot to a “One Water” ethic
- Need comprehensive, routine system-based assessments to better identify cost-effective solutions
- Evaluate pricing mechanisms as an efficient tool for reducing water and energy costs
- Incorporate water efficiency into demand-side management (DSM) programs
- Encourage adoption of ISO 14001, ISO 50001, and other voluntary programs
- Reduce non-revenue water through routine water audits (AWWA M36)
- Implement smart irrigation measures
- Implement supply chain sustainability
- Factor water-energy nexus into both Integrated Resource Planning (IRP) and Integrated Water Resources Management (IWRM)
- Develop common evaluation, measurement, and verification (EM&V) protocols for water and energy sectors
- Support pilot projects addressing innovative technology

# QUESTIONS?

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