

Modernization of the Electric Infrastructure & The Energy-Water Nexus

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Problem Statement:

1. Population growth and climate change simultaneously strain existing electric infrastructure and water supplies
2. Power plants with existing water rights have little incentive to reduce water consumption or invest in expensive capital assets
3. Water and energy stakeholders lack cross-coordination and information sharing

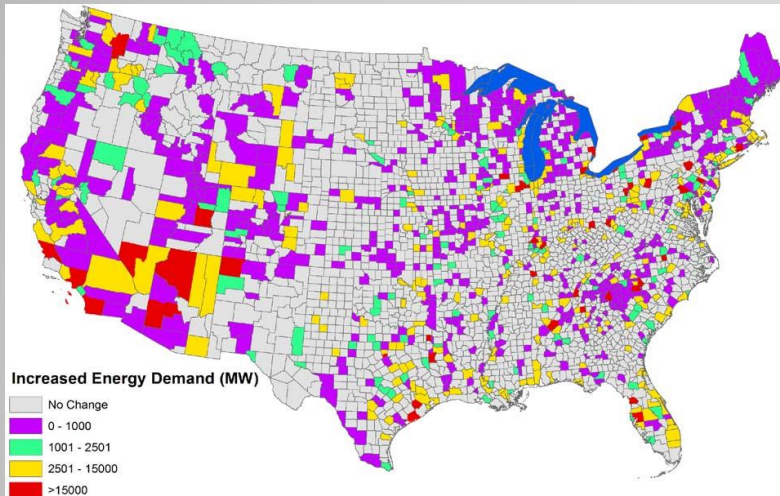


Figure: Projected Increased Energy Demand in 2025

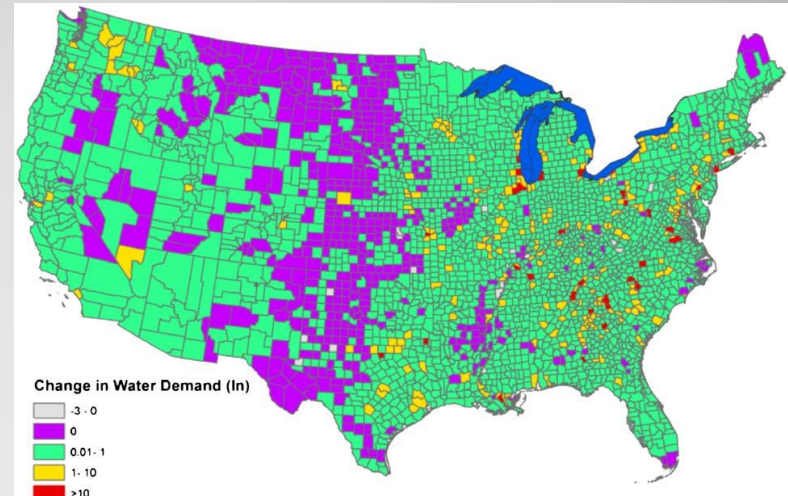


Figure: Projected National summer water deficit in 2025 (by county, in inches).

Research Focus

Research Question:

- What Texas counties are most susceptible to inadequate power supply from severe drought?
- What are the associated economic, environmental, and social impacts in those counties?

University of Texas Advisors:

Community & Regional Planning:

Dr. Robert Young, Dr. Alan Shearer,
Dr. Katherine Lieberknecht, Dr. Barbara
Wilson

Mechanical Engineering:

Dr. Michael Webber

Political Science:

TBD

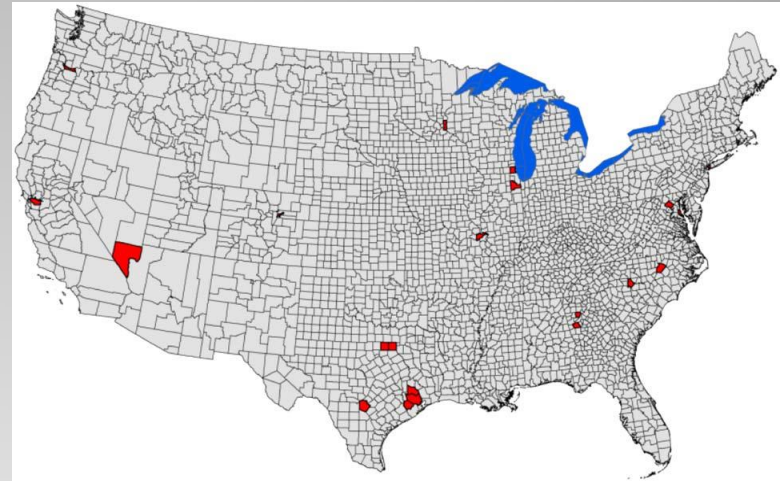


Figure: Metropolitan areas in the United States most at risk to water shortages due to electricity generation (in 2025).

Research Focus

Goals:

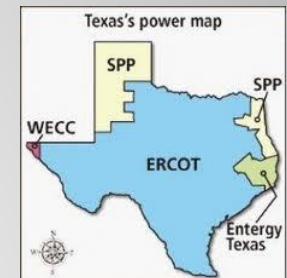
1. Evaluate the economic, environmental, and social impact of severe drought on power generation in Texas
2. Improve cross-coordination between energy and water stakeholders and resources

Proposed Methodology:

- Mixed methods (quantitative & qualitative)
- Case Study of Texas
 - Diverse energy supplies
 - Isolated electric grid
 - 6 of 22 counties previously identified as high-risk

Anticipated Contributions:

- Assist funding and investment decisions
- Encourage debate in academic community
- Support energy-water nexus knowledge base



Research Focus