Transactive Energy Challenge
Building Energy Efficiency Lab @ The University of Oklahoma

- **Area of Interest:** Design for control of robust, resilient, adaptable complex systems to facilitate the integration between smart grids and various types of buildings. HVAC control via responsive load of smart grids or buildings, development of smart grids/buildings with restoration capabilities, and its impact on grid reliability.

- **Functionality / Capabilities**: 1) Developing hybrid models of building load and HVAC system dynamics based on physical laws and measured system behaviors; 2) Developing smart virtual energy meter system that provides high-resolution energy metering capacity ; 3) Designing active controller enabling smart and robust controls that meet system constraints (e.g. user's comfort and grid supplies) while minimizing operational costs, 4) Planning and operation of power system restoration.

- **Proposed Scenario**: Develop model and smart TE control systems for campus and districts with multiple buildings with different requirements that are interconnected to the power grids.

- **Impacts / Motivation:** 1) Enhance the grid reliability; 2) Extend the capability of building to support the power system restoration following blackouts; 3) Dealing with computational complexity.

- **Partners Needed:** Partners that have experience and ideas for a test-bed design and construction.