



MIDTERM PRESENTATION

IPRO 302

AMPS 2.0

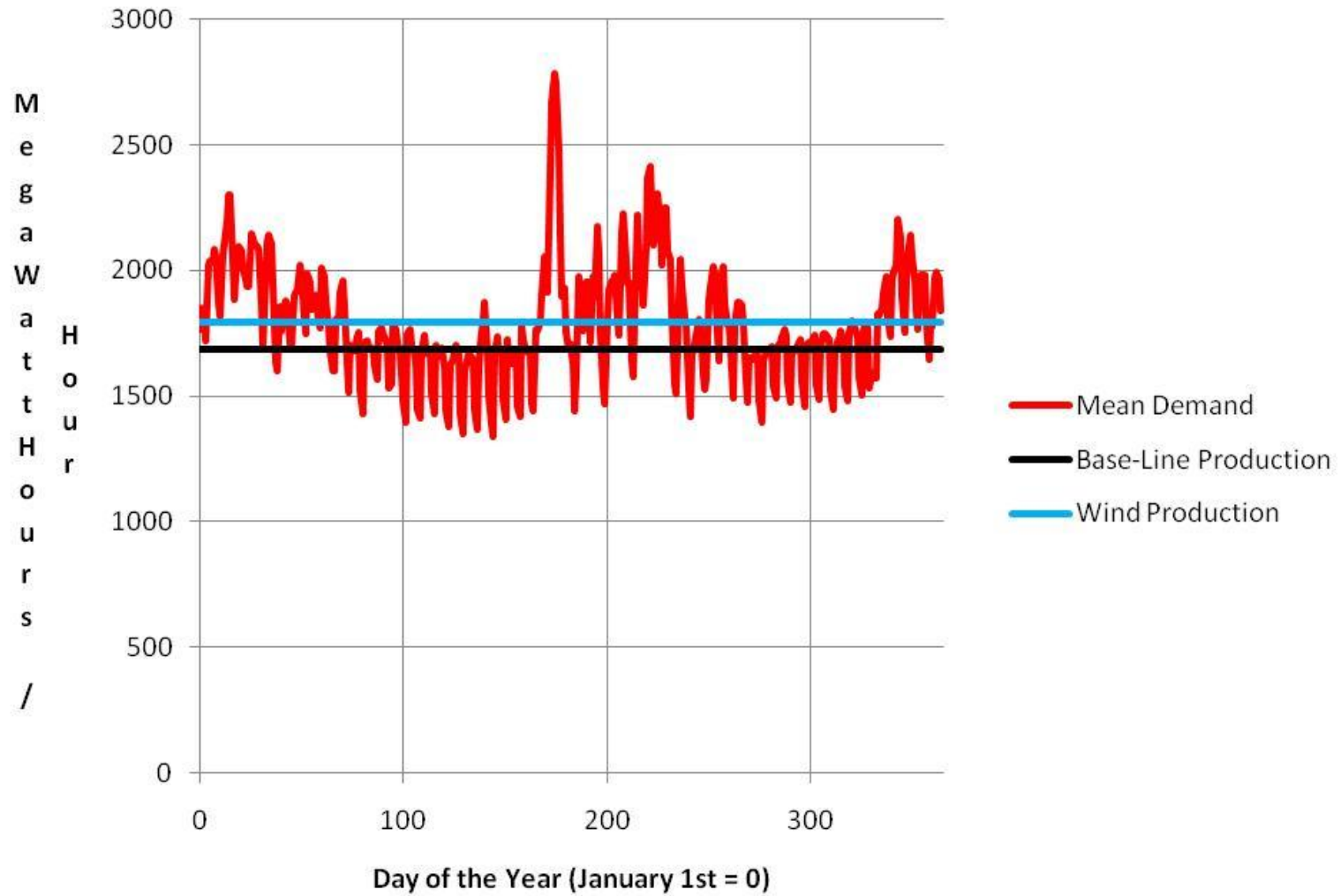
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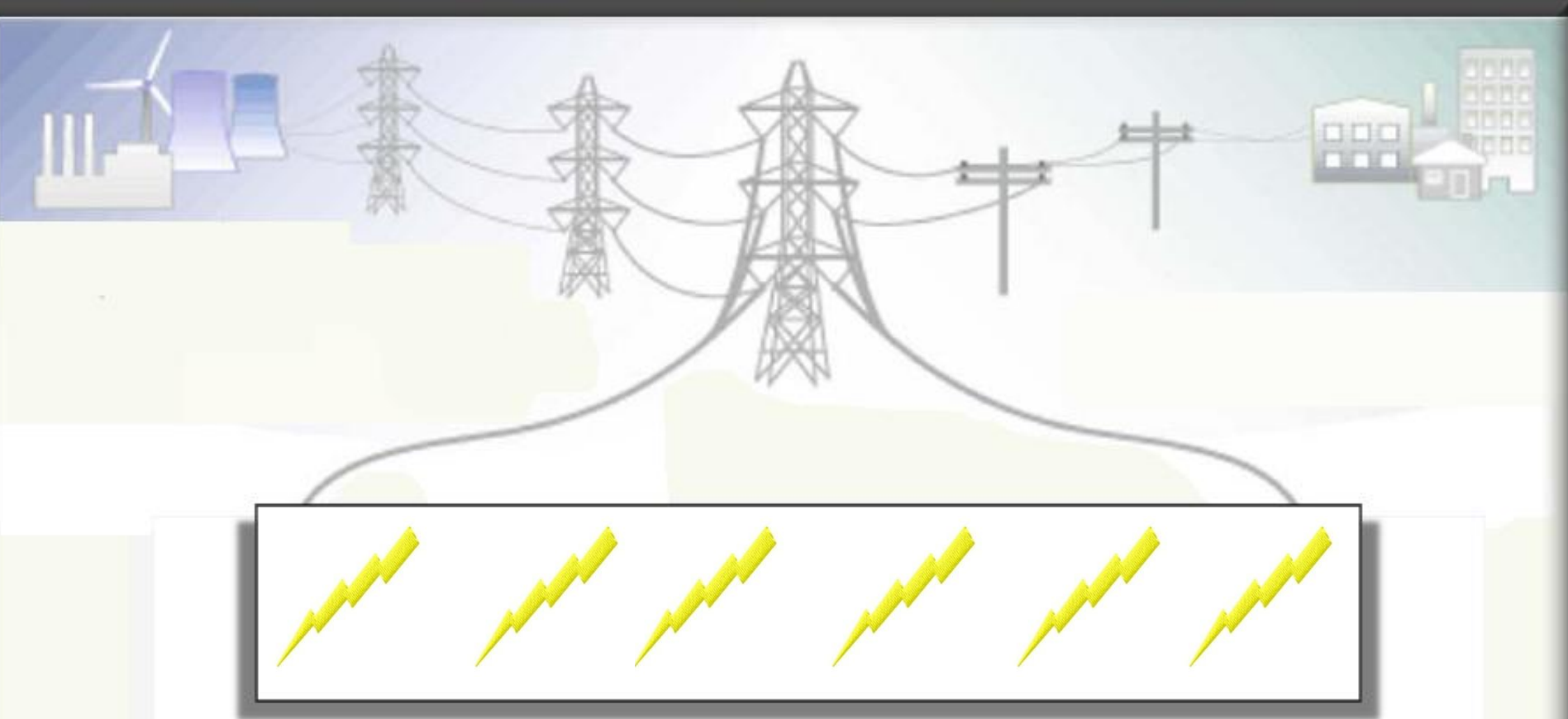


Statement of Problem

- ▣ Due to the effects of climate change, carbon-free energy technologies are needed to reduce green house gas emissions
- ▣ Determine specifications of a carbon-free system to meet expected electricity demands for Chicago

Annual Power (Chicago)



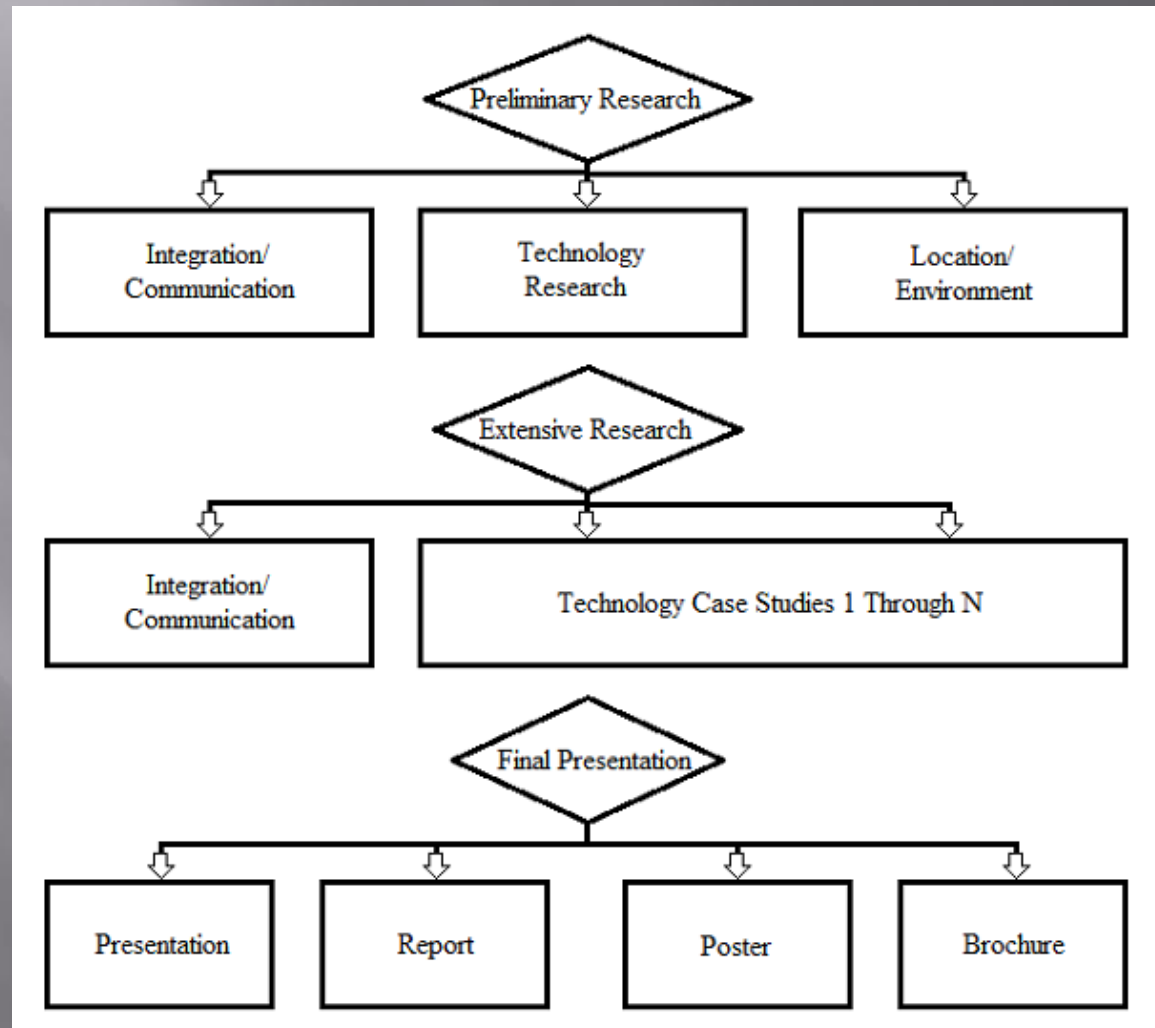


What Storage Technology Should We Use?

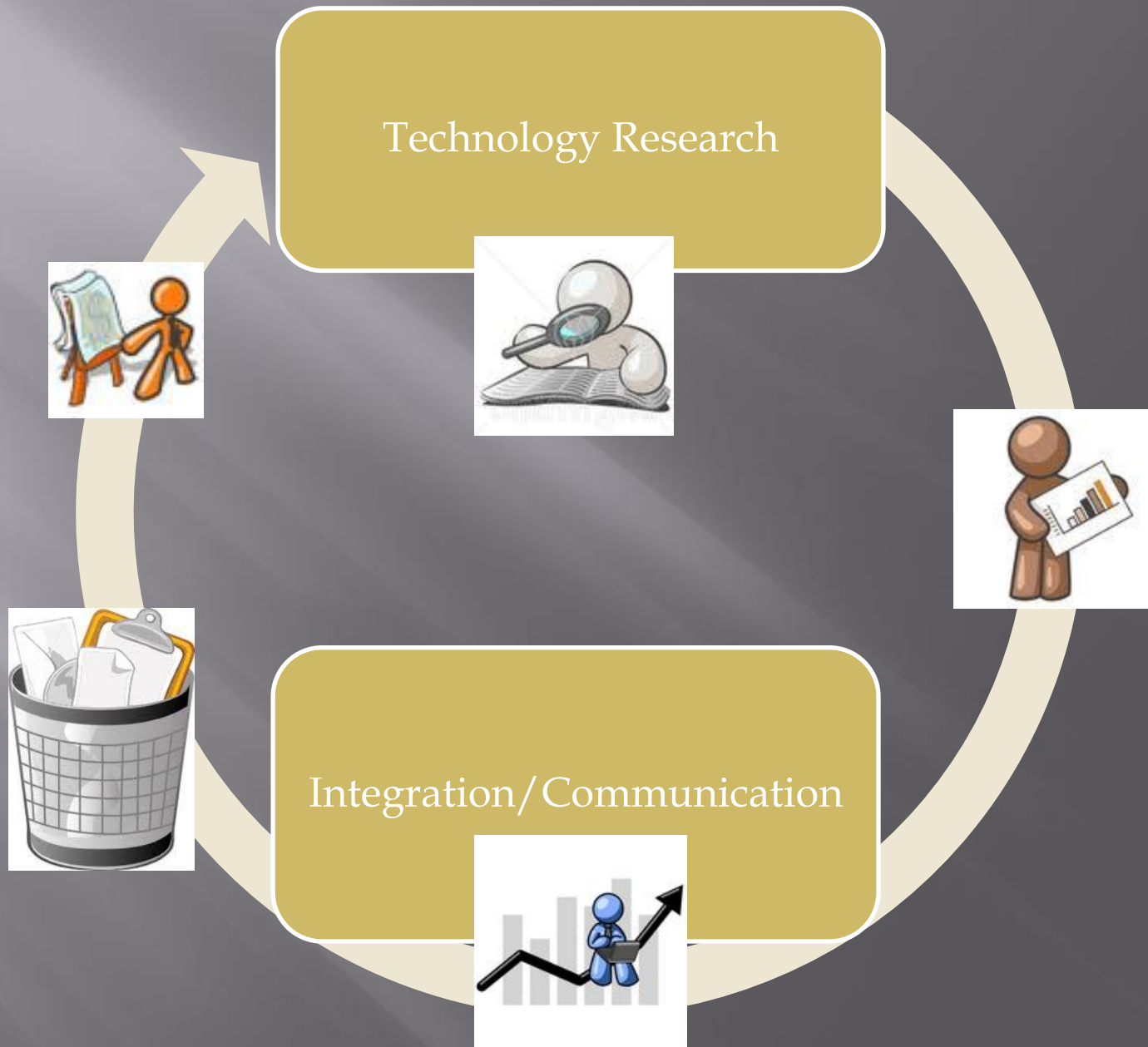
Goals of the Project

- ▣ Propose solution that would supply Chicago's electricity needs without producing carbon
- ▣ Determine the electricity demanded by Chicago as well as the electricity generated by wind turbines and nuclear plants
- ▣ Rank current storage technologies
- ▣ Determine the most cost efficient combination of power production and storage technologies to meet the expected electricity demands for Chicago

Organization of the Team



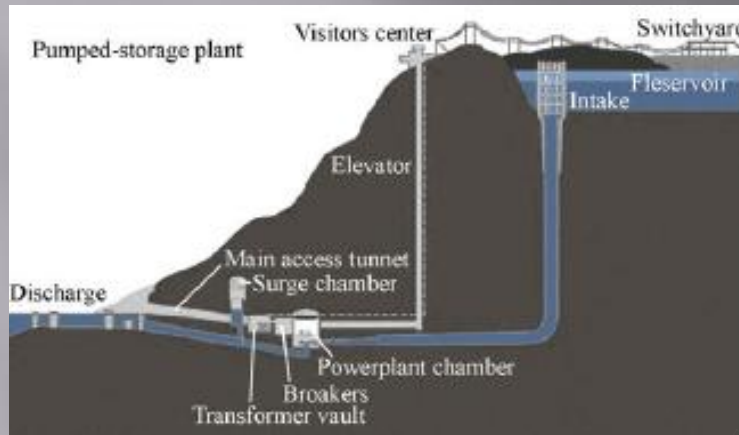
Extensive Research



Progress Toward Goals: Location/Environment

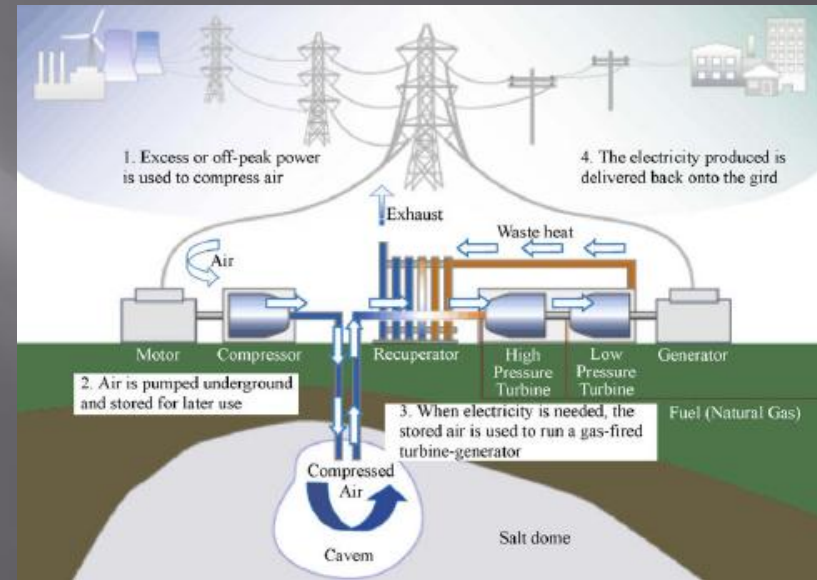
- ▣ Identified net generation of electricity in Northern Illinois, the percent of electricity generated by nuclear, and Chicago's total electricity demand
- ▣ Produced data regarding the annual wind speeds/patterns and Northern Illinois' electricity demand on a daily, weekly, and yearly basis

Progress Towards Goals: Technology Research

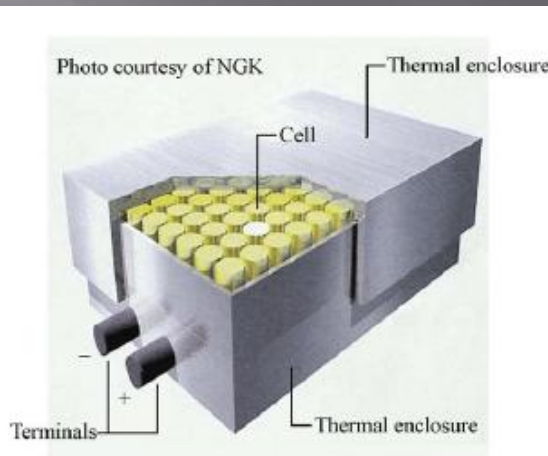
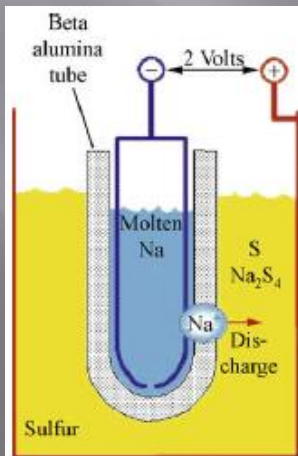


⚡ Pump Hydro System

Compressed Air ⚡



⚡ Batteries



Major Obstacles Encountered

- ▣ Identifying the scope of the project
- ▣ Understanding the demand of the project
 - Integrating the technical and power demand data
- ▣ A lack of familiarity with technical terminology
- ▣ Scheduling wind farm tour
 - Work has been done, but little progress has been made due to lack of contact from wind farms

Anticipated Major Challenges

- ▣ Making sure that research progress keeps up with timeline
- ▣ Narrowing down storage technologies
- ▣ Assumptions
- ▣ Static vs. dynamic data
- ▣ Evaluating data to form a simplified model

