



In Partial Fulfillment of the Requirements for the Degree of
Doctor of Philosophy
Tomasz Jasinski

Will defend his prospectus

A Scalable Grid Storage Option for Near-Term System Flexibility

Abstract

This research project focuses on operationalizing and evaluating an alternative approach to large-scale electrical grid energy storage to sustainably increase system flexibility and efficiency. Given the increasing renewable energy penetration and declining fossil-fuel and nuclear energy support, the U.S. electrical grid needs to incorporate large amounts of grid-tied storage to better balance variable and non-variable generation servicing unlevelled demand. First, the state of the U.S. electrical grid flexibility and system-wide efficiency will be examined to access the extent of negative or near-zero wholesale electricity pricing, variable renewable generation curtailment, and non-variable baseload under-utilization problems. Second, an alternative “load-as-storage” approach to utility-scale grid storage will be operationalized and tested. Third, near-term policy implications, including public and private infrastructure requirements, will be examined to help stage a low-disruption, localized deployment.

Wednesday, December 4, 2019
2:00 pm
Wrigley Hall, Room 323

Faculty, students, and the public are invited.

Supervisory Committee:

Dr. Hanna Breetz, chair
Dr. Deborah Strumsky
Dr. Jose Lobo
Dr. Nathan Parker