Smart Grids Center

VISION: Sustainable power distribution, shifting to energy delivery using smart grids.

OBJECTIVES
- Interdisciplinary
- Energy delivery paradigm
- Education & training
- Diverse student researchers
- Sustainable & resilient
- International leadership

Research Activities

1. Energy Sources, Integration, Infrastructure
   - Integration of Distributed Resources
   - Design for Resilience
   - Validate Design & Operational Concepts
   - Customer Acceptance & Public Policy

2. Communication Infrastructures
   - Multidimensional Extension of Architecture
   - Extending Novel Wireless Technologies
   - Co-Modeling Power & Information Network
   - Effective Assimilation of PEVs

3. Security and Protection
   - Protection of Power Systems
   - Physical Security & Protection
   - Data Security, Privacy, Availability
   - User-Device Privacy
   - Reliability & Dependability

4. Coordination
   - Robust Decision-Making Models
   - Resilient Coordination Algorithms
   - Sustainable Adoption of Technology
   - Deploy Developed Technologies
   - Benchmarks & Models for Coordination in Energy Systems

5. Big Data
   - Real-Time Monitoring of Energy Systems
   - Prediction of Energy Consumption
   - Prediction of Energy Production from Different Sources
   - Derivation of Relationships Among Disturbances

Energy Delivery-Distributed Scheduling

Establish a solid foundation for real-time disturbance data analysis in power systems.

Integrated hardware/software framework to expand the use of wireless sensors for long-term and frequent monitoring and remote data acquisition in diverse settings.

Power Consumption

- Personal hours: $1.00 per hour
- Peak hours: $2.00 per hour
- Hourly peak periods: $2.00 per hour
- Hourly rate: $0.10 per hour

Collaborations

Sandia National Laboratories
Los Alamos National Laboratories
NM EPSCoR - Stimulate Competitive Research
University of New Mexico
New Mexico Tech
Northern New Mexico College
Doria Ana Community College
Santa Fe Community College
Microgrid Systems Laboratory
El Paso Electric Company
PNM Public Service Co. of New Mexico
NMSU Center for Public Utilities
Los Alamos Department of Public Utilities
Kit Carson Electric Cooperative

Publications

https://icredits.nmsu.edu/publications/

Education

COURSES
- Introduction to Smart Grids
  - Algorithm Design and Implementation

DEGREE AND MINORS
- Masters of Science in Data Analytics
- Smart Grid Technologies Minor: EE and CS

Outreach

Served 3,147 from Fall 2015 - Fall 2016
Tailored to achieve four major goals:
- Build a knowledgeable smart grid community
- Increase participant interest in smart grid technologies
- Help students gain knowledge and experience in the ways they personally impact the grid
- Dramatically increase all students’ confidence in the technologies associated with smart grids