



Energy Systems Innovation Center (ESIC)



Mani V. Venkatasubramanian
Director, ESIC
July 2025





WSU Power Program



- Power Professorship program since 1973
- Energy Systems Innovation Center since 2012
- 50th-anniversary celebration on Sep 15, 2023
- To recognize, honor, and thank contributions from students, faculty, alumni, and industry





Energy Systems Innovation Center

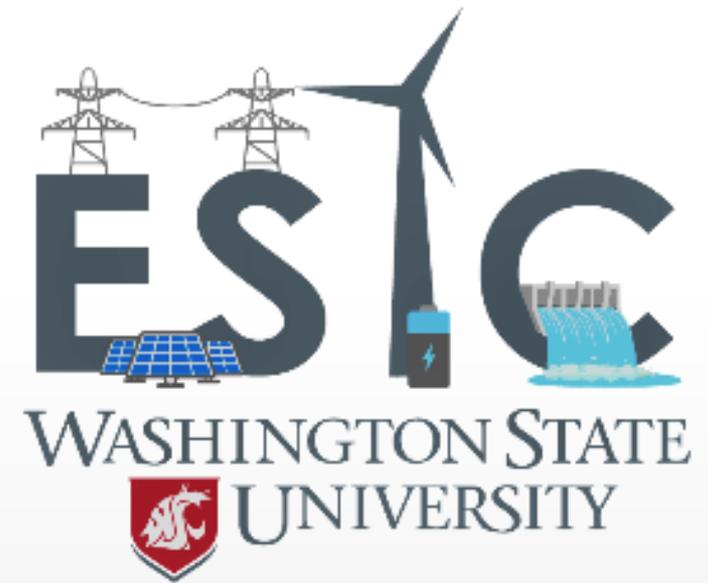


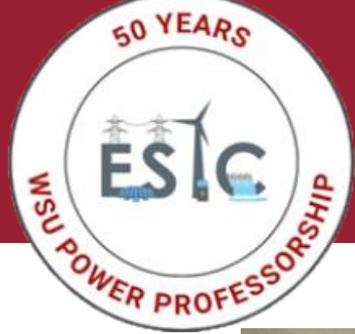
Vision

Leading the transition to affordable, sustainable and resilient electric power systems

Mission

Collaborative research, education, and outreach to solve challenges for modern power systems





ESIC Power Faculty



Mani Venkatasubramanian, ESIC Director

Anjan Bose, Regents Professor

Noel Schulz, INEF Director

Robert Olsen, Professor Emeritus

Saeed Lotfifard, Associate Professor

Anamika Dubey, AGI Co-Director

Milad Ebrahimi, Assistant Professor

Rahul Gupta, Assistant Professor

Javier Guerrero, Clinical Assistant Professor

Shuzeng Xie, Clinical Assistant Professor

Bo Liu, Assistant Professor

Hang Gao, Assistant Professor

Wei Du, AGI Co-Director, Research Professor

Kevin Schneider, Research Professor





ESIC Faculty in Allied Disciplines



Electrical Engineering

- **Pat Pedrow – High Voltage**
- **Xinghui Zhao – WSU Vancouver**

Civil & Environmental

- **Michael Wolcott – Sustainable Infrastructures**
- **Jennifer Adam – Water and Storage**
- **Ji Yun Lee – Infrastructure resilience**

Chemical Engineering

- **Su Ha – Fuel Cells**

Mechanical & Materials Engineering

- **Jacob Leachman – Hydrogen/Nuclear**
- **Dustin McLarty – Energy Storage**
- **Grant Norton – Nanotechnology**
- **Soumik Banerjee – Solar Cells, Batteries**
- **Yuehe Lin – Batteries**

Computer Science

- **Partha Pande – Network-on-Chip**
- **Diane Cook – Smart Home/Environments**
- **Jana Doppa – Machine Learning**
- **Assefaw Gebremedhin – Data science**
- **Ananth Kalyanaraman – Computing**

Architecture

- **Todd Beyreuther – Integrated Design**

Economics

- **Alan Love – Electricity Markets**

Communication

- **Amanda Boyd – Risk Communication**

Liberal Arts

- **Paul Whitney – Cognitive Behavior**
- **Christine Horne – Social Norms**



ESIC Staff



Jeannine Burke – Manager

Darlene Miller – Research Administrator

Jake Baumgartner - ESIC Industry Liaison (50%)





ESIC Thrust Areas



- 1) Microgrids and IBRs**
- 2) Reliability and Resilience**
- 3) Grid Edge/Privacy/Cybersecurity**
- 4) AI and ML Applications**
- 5) Workforce 2.0**



ESIC PEP Membership



- **ESIC Power Education Partnership (PEP)**
- **Annual Membership: \$3K to \$15K**
- **Benefits – Support Power Engineering Education**
 - **Practicum**
 - **Support for Internships/Jobs**
 - **Power curriculum feedback**
 - **Free booths at the Fall and Spring Career Fairs**
 - **Professional Development Hours for weekly seminars**
 - **Optional Tutorials by Faculty Experts**
 - **Dedicated Industry Liaison**



ESIC PEP Membership



ESIC PEP Members 2024





ESIC REP Membership



- **ESIC Research Excellence Partnership (REP)**
- **Annual Membership: \$15K**
- **Benefits - Access to ESIC research:**
 - **Research collaborations**
 - **ESIC weekly seminars**
 - **Project catalog/announcements**
 - **Research reports and papers on a secure website**
 - **Invitation to be project advisors**
 - **Tutorials by faculty experts**
 - **Dedicated industry liaison**
 - **Seed projects at no overhead (no deliverables)**



ESIC REP Membership



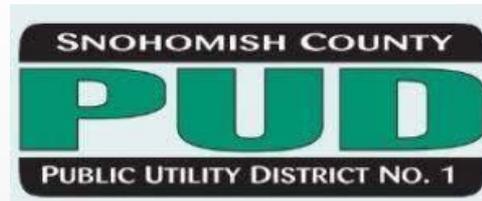
ESIC REP Members 2024



Pacific Northwest
NATIONAL LABORATORY



GE VERNOVA



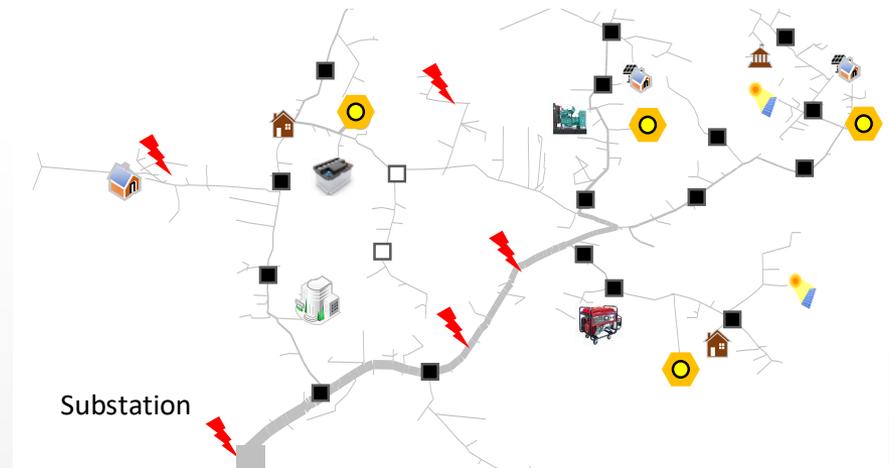


DOE SETO RACER Resilient Communities via Risk-driven Infrastructure Planning and Automated Restoration (Recuperat)



- ◆ Led by WSU
- ◆ Planning tools for managing uncertainties in future scenarios.
- ◆ \$2.5M DOE funding.
- ◆ Anamika, Mani, and Ji Yun.
- ◆ Close collaboration with ComED, WWU, PNNL, OES, Eaton, Altitude Grid, and R1.

Goal: Enhance grid resilience for underserved communities primarily affected by high-speed wind hazards through risk-based community resilience planning and distributed energy resource (DER)-assisted automated restoration.



DER Assets



Island coordinator
Other controllable DERs
Uncontrollable DERs

Customers



Critical loads
Loads with BTM PVs

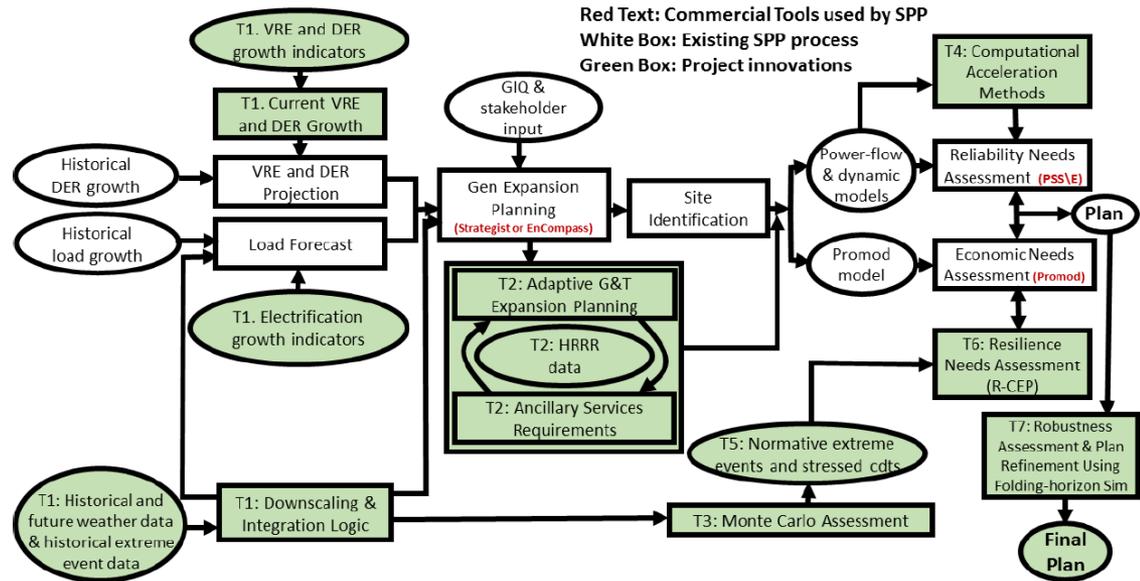




DOE SETO OPTIMA Plato Planning Tools for Managing Uncertainties



- ◆ Led by WSU
- ◆ Planning tools for managing uncertainties in future scenarios.
- ◆ \$2.4M DOE funding.
- ◆ Mani and Anjan.
- ◆ Close collaboration with Iowa State University and Southwest Power Pool.



WASHINGTON STATE UNIVERSITY

