PNNL/WSU Advanced Grid Institute (AGI) Industry Day

August 30, 2023

Jeff Dagle, Co-Director
PNNL

Noel Schulz, Co-Director
WSU
Mission
To promote the research and evolution of advanced grid modeling to support planning and operations of complex power systems of the future and its workforce.

Vision
To be recognized as a leading engineering source that will enhance the North American power system and will influence the rest of the world.

Outcome-Oriented Goals (3-5 year focus)
Research
The AGI will have a robust portfolio of high-impact research projects that are aligned with our clients’ key technology challenges.

Education
AGI will excel in workforce development, both current and future. Students will be more connected with industry challenges through their interactions with AGI. AGI will be a source of training for the existing power engineers to keep up with the rapid pace of changing technologies.

Influence
AGI will increasingly become known as a thought leader and influential knowledge source for technology and policy development for advanced power systems.

Institutional Collaboration
Both WSU and PNNL will benefit from AGI collaboration.
AGI Joint Appointments

JA from PNNL Opportunities
- More frequent interactions with WSU faculty and on-going projects
- Access to WSU facilities and resources
- Lead or Join WSU proposals in areas not available as PNNL such as NSF
- Serve on graduate student committees
- Teach or co-teach classes
- WSU email and communications
- Participate in other WSU activities including curriculum discussions

JA from WSU Opportunities
- More frequent interactions with PNNL researchers and on-going projects
- Access to PNNL facilities and resources
- Can lead or join DOE projects including proposals with lab only funding opportunities
- PNNL email and communications
- Participate in other PNNL activities
Existing Projects

• GMLC: Citadels: Enable networked microgrids and distributed energy resources to operate in a distributed manner using collaborative autonomy
• GMLC Open Source ADMS Platform
• GMLC HELICS: Addressing gaps in in scalable integration with diverse infrastructures and usability for co-simulation complexity
• Clean Energy Fund Transactive Campus Phase II
• Bandwidth Forecast in Grid Communications
• Development of performance degradation models (led by WSU)
• Industry Acceptance of Energy Storage (Avista)
• Spokane Connected Communities Project
• DOE/SETO Resilient Communities via Risk-driven Infrastructure Planning and Automated Restoration (Recuperat) Project (led by WSU)
Newly Funded AGI-related Projects

Selections for Funding Opportunity in Support of the Hydrogen Shot and a University Research Consortium on Grid Resilience

<table>
<thead>
<tr>
<th>Stanford University</th>
<th>Stanford, CA</th>
<th>An Equitable, Affordable &amp; Resilient Nationwide Energy System Transition (EARNEST)</th>
<th>$17.8 million</th>
</tr>
</thead>
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DOE Renewables Advancing Community Energy Resilience (RACER) Program

WASHINGTON STATE UNIVERSITY

Project Name: Resilient Communities via Risk-driven Infrastructure Planning and Automated Restoration (Recuperate)

Location: Pullman, WA

Doe Award Amount: $3 million

Awarded Cost Share: $1 million

Principal Investigator: Anamika Dubey

Project Description: This project is working to improve the grid resilience for underserved communities in Rockford, Illinois that are affected by high-speed winds. The solution under development uses metrics-driven distribution system planning to rapidly restore the power grid with the assistance of distributed energy resources. The technology will establish new value propositions for the capability of solar-plus-storage to enable automated restoration with self-organizing “islands” in power distribution systems.

Inland Northwest Center for Energy and Decarbonization – INTENT (WA, ID) wins $1 million NSF Engines Development Award

The Inland Northwest Center for Energy and Decarbonization (INTENT) has been awarded $996,450 through its partner, Urbanova, from the U.S. National Science Foundation’s Regional Innovation Engines, or NSF Engines, program. The funded two-year project is “Advancing energy and decarbonization technologies in the Inland Northwest (WA, ID).” The INTENT/Urbanova team is among the more than 40 unique teams to receive one of the first-ever NSF Engines Development Awards, which aim to help partners collaborate to create economic, societal, and technological opportunities for their regions.

This Regional Innovation Engines Development Award is focused on accelerating the equitable decarbonization of the power grid and energy systems in the Inland Northwest region by establishing INTENT, a cross-sector public-private collaboration. INTENT aims to address the social, economic, and environmental impacts of the power grid and lead the transition to clean energy. INTENT’s impact will be measured through economic growth and investment, sustainability, resource stewardship, environmental equity, sustained workforce opportunity, and ability to scale to other regions. More information about INTENT can be found at: INTENT.Urbanova.org.
Distinguished Graduate Research Program (DGRP) 2023

Ben McCornack
- WSU Mentor: Noel Schulz
- PNNL Mentor: Mark Rice
- Topic: Advanced control applications integrating AI techniques

Charlotte Wertz
- WSU Mentor: Anamika Dubey
- PNNL Mentor: Jason Fuller
- Topics
  - Weather-grid impacts models and integration with National Grid Modeling (NAERM) efforts
  - Grid Resilience Planning

https://esic.wsu.edu/spring-2023/
Outreach Activities and Interactions

AGI Industry Advisory Board

Tech Alliance Policy Matters Summit – Dec 14, Seattle
Keeping up with AGI news and information

- Quarterly E-Newsletters
  - [https://natlab.wsu.edu/grid/news-letters/](https://natlab.wsu.edu/grid/news-letters/)

- Social Media –
  - Twitter (X) [https://twitter.com/advanced_grid](https://twitter.com/advanced_grid)
  - LinkedIn [https://www.linkedin.com/company/79120688/admin/](https://www.linkedin.com/company/79120688/admin/)

- AGI Blog [https://natlab.wsu.edu/grid/blog/](https://natlab.wsu.edu/grid/blog/)
Advanced Grid Institute

https://natlab.wsu.edu/grid/

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