Welcome to Mines to Megawatts

Reimagining Mines. Powering Tomorrow. Reigniting Missouri.

August 5, 2025

Welcome!

Thank you for coming. Our team is excited to see you all here.

Introductions

Committee:

- Joshua Schlegel
- Taghi Sherizadeh
- Joseph Newkirk
- Samuel Nowak
- Andy Ellis

Research Center & Staff Support

- Larissa Holthaus
- Amanda Schlegel
- Marjie Grimshaw

Special Thanks

Mo Dehghani, Chancellor

John Harris, Provost

Kamal Khayat, Vice Chancellor for Research and Innovation

David Borrok, Dean of the College of Engineering and Computing

Frank Liou, Director of the Intelligent Systems Center

Don Wunsch, Director of the Kummer Institute for AI and Autonomous Systems

INL Idaho National Laboratory

BB Brady's Bend UNDERGROUND STORAGE

OptiRock GROUP

Today's Agenda

- 8:30 AM: Welcome, Dr. Joshua Schlegel
- 9:00 AM: Concepts for Siting Underground Nuclear Power Plants in Limestone Mines, Dr. Wes Myers
- 9:30 AM: Site Considerations for Underground Nuclear Power and Benefits of Co-Location of Power Consuming Infrastructure, Dr. Sam Nowak
- 10:15 AM: Break
- 10:30 AM: Integrated Energy Systems, Dr. Rami Saeed
- 11:15 AM: Lunch
- 12:30 PM: Strategy Discussion
  - A Common Framework for Discussion
  - Key Needs and Challenges
  - Strategic Roadmap
- 4:00 PM: Closing Reception

Why We Are Here

Mine sites have advantages for Small Modular Reactor (SMR) and other energy development.

Existing electrical transmission and transportation infrastructure	Potential for safe, secure containment and protective structures reducing construction costs	Potential for integration with solar energy and/or energy storage systems.	Co-location with end users	Sites already have some environmental surveys completed.

These factors have the potential to reduce construction costs (and times) that have challenged previous nuclear installation efforts.

Why We Are Here

Mine sites also present potential challenges

Financial agreements and operational questions	Environmental and regulatory needs	Unique construction needs	Seismic design of SMRs

We will add to this list and discuss these in more detail throughout the day

What We Want To Accomplish

To put together a team or teams willing to seriously consider the construction of small modular reactors at mine sites.

We can harness the collective expertise of industry leaders and Missouri S&T to contribute to sustainable energy and economic development

Bring together the people and organizations with the expertise to:

- Establish a common framework to summarize the challenges facing the deployment of SMRs at mine sites.
- Identify the key needs for stakeholders to move forward, and begin developing a strategic roadmap.
- Discuss whether a follow-up meeting would be beneficial to further developing the concept.

Impacts

National Hub For Resilient Integrated Energy Systems

Drive innovation

Align with federal clean energy objectives

Create a hub for RD&D of integrated and smart energy systems.

Creating a Highly Skilled Nuclear Workforce

Address a critical workforce shortage in the nuclear sector

Provide training in reactor safety, controls, and security

Develop a Missouri-based workforce pipeline that will attract employers

Drive Regional Economic Development

Promote high-temperature process heat applications

Provide incubator space for nuclear and clean energy startups

Establish partnerships with manufacturers and clean tech companies

What's In It For You

Site Owners

- Additional revenue stream
- Will need to provide site data, security, other support.

Reactor Vendors

- "Showroom" model
- Consortium to support FOAK engineering costs
- Would partially subsidizing the cost of the first unit be possible?

Utilities

- Support for energy production needs
- Potential new revenue stream
- Investments in personnel/training
- Possible investments in transmission infrastructure

Why S&T?

Build on the engineering strengths of campus

- Protoplex
- Powerplex initiative
- Advanced Reactor Consortium
- Strong academic programs in relevant fields
- Existing microgrids
- Continuing development of strategic research areas
- Established collaboration with INL

How We See Our Role

- Communications Hub
- R&D Facilities and Expertise
  - Nuclear Energy
  - Electrical Energy
  - Energy Storage
  - Mining, Rock Mechanics
  - Energy Economics
- Helping access government funding
- Educational Resources and Workforce Development
- Community Outreach