

Permian Energy Development Laboratory

Panel for the 2023 JISEA Annual Meeting, Golden, Colorado



Kyle Simpson, KSE LLC (Moderator)

Jill Engel-Cox, JISEA/NREL

Gregory Pogue, The University of Texas at Austin

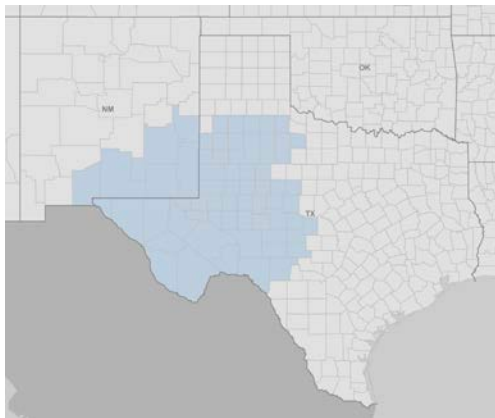
Patricia Sullivan, New Mexico State University

Liz Ross, JISEA/NREL

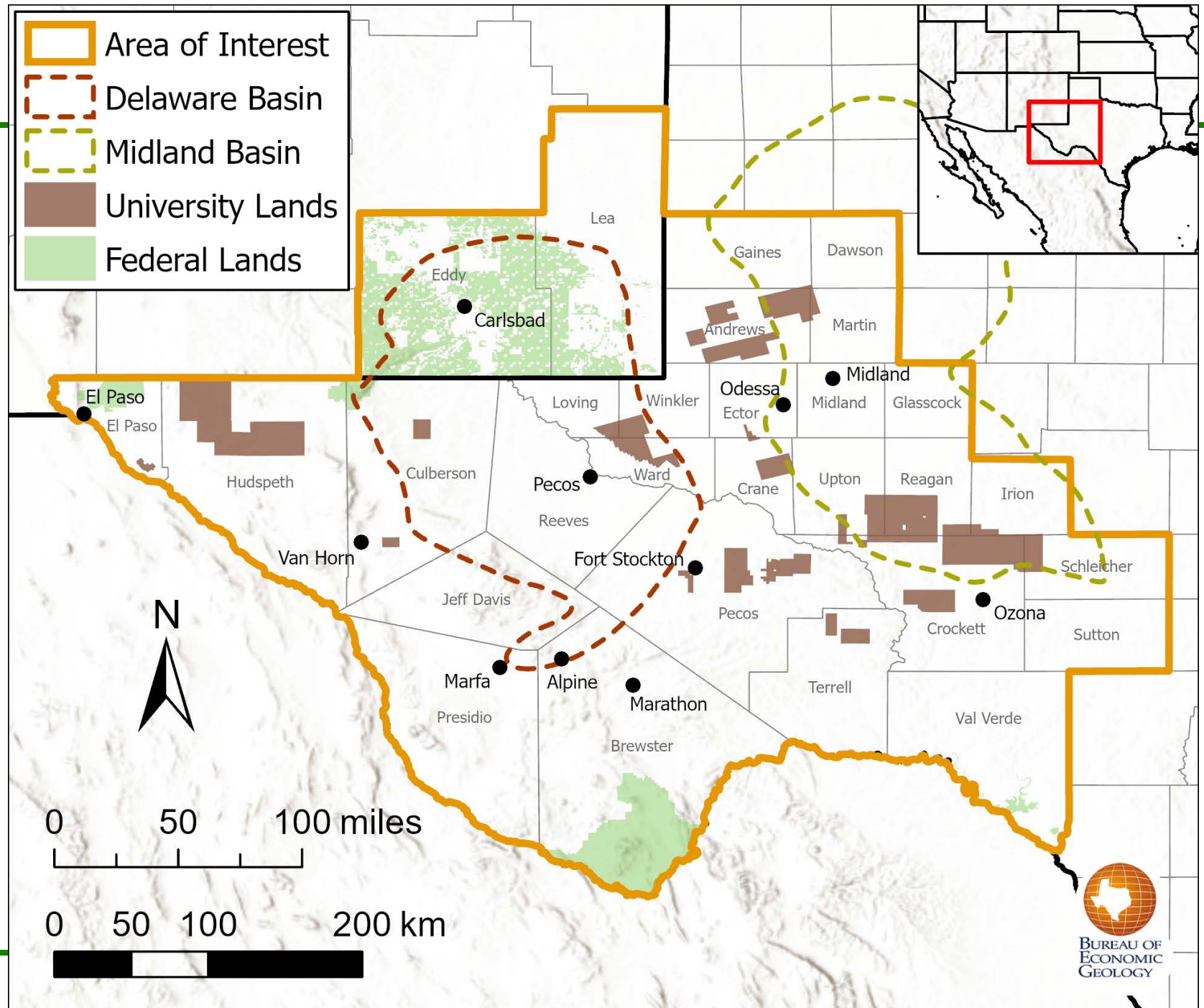
Looking for input from you via Poll Everywhere and Discussion

PEDL Region

- 55 counties in West Texas and southeast New Mexico
- 86,000 square miles (220,000 km²)
- 250 miles (400 km) wide by 300 miles (480 km) long



(Map Source: UT/BEG)



PEDL Purpose and Goals

Advanced Energy Solutions

- Develop the next generation of energy technologies
- Demonstrate the technologies in real-world conditions
- Accelerate their adoption and use

Education and Workforce

- Introduce young people to new energy concepts
- Develop higher and continuing education programs and credentials in emerging energy technologies
- Mentor entrepreneurs who will build local energy companies

Community Engagement

- Ensure the public is aware of and has access to educational and economic opportunities in the new energy environment
- Share the benefits and costs to communities fairly
- Provide a forum so everyone has a voice in the future of their communities

Partners: Planning MOU Signed

- The Cynthia and George Mitchell Foundation
- Houston Advanced Research Center
- Midland College
- National Renewable Energy Laboratory (NREL)
- New Mexico State University
- New Mexico Tech
- Odessa College
- Sandia National Laboratories
- The University of Texas at Austin
- The University of Texas at El Paso
- The University of Texas Permian Basin

PEDL Research Agenda: Key Areas of Inquiry

Carbon and Materials Management

- C.1 Carbon capture and beneficial reuse
- C.2 Methane and emissions management
- C.3 Carbon accounting and certifications
- C.4 Circular economy of energy technologies

Advanced Energy, Fuels, & Integration

- E.1 Renewable power, storage and integration
- E.2 Subsurface energy and long-term storage
- E.3 Low carbon fuels, chemicals, and energy carriers
- E.4 Industrial and energy systems infrastructure
- E.5 Energy industry policy, analysis, and safety

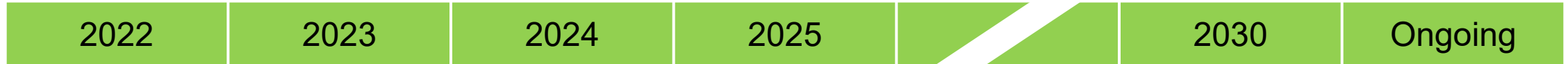
Water, Land, and Agriculture

- W.1 Water resource use, treatment, & conservation
- W.2 Environmental monitoring and GIS
- W.3 Regenerative agriculture, land restoration, and conservation

Economic Development and Environmental Justice

- D.1 Equitable energy economics
- D.2 Community resilience modeling and integration
- D.3 Entrepreneurship and technology transfer
- D.4 Regional education and knowledge ecosystem development

Long-Term Strategy



Planning • Design • Launch

- Planning workshops
- Structure & governance
- Partnership agreements
- Early research wins
- Strategic & operational plan
- Public opinion research
- Community engagement
- Marketing
- Fundraising
- Establish 501(c)3
- Interim operator selected
- Launch

Inception • Growth

- Ongoing research activities
- Technology design & testing
- Design education curriculum
- Build entrepreneurial network
- Deploy new business models
- Transition to independent operation

Maturity

- Fully operationalize ongoing research & technology portfolio

Current Activities

Planning

Designing funding approach, organizational structure, and research facilities

Conducting socioeconomic analysis for outreach and research

Designing classes for the region in the fall

Partnering

Negotiating and looking for collaborating partners on PV recycling, agrivoltaics, carbon management, energy systems integration, water management

Discussions with local and regional entrepreneur centers and decisionmakers

Funding

Actively pursuing sustainable funding for long-term development and operations

Overview of Key Aspects of PEDL

Community Research and Engagement:

Gregory Pogue, The University of Texas at Austin

Liz Ross, JISEA/NREL

University and Lab Partnerships:

Patricia Sullivan, New Mexico State University

Poll Questions and Discussion

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