

Secure Energy Initiative Seed Funding Request for Proposals

Project Start Date: January 1, 2027

Project End Date: December 31, 2027

Total Funding Available: \$250,000

Anticipated Number of Awards: 3-4

Anticipated Range of Funding per Project: \$50,000 to \$100,000

I. Program Overview

The Secure Energy Initiative (SEI) invites proposals for seed funding of interdisciplinary or transdisciplinary projects that advance energy security through integrated technical, institutional, and social solutions. The Secure Energy Initiative (SEI) organizes its activities around four technical focus areas ("Pillars") and two enabling themes ("Crosscuts"). Across all focus areas, SEI emphasizes collaboration with organizations and communities that will ultimately use, regulate, or benefit from energy technologies and practices. This approach accelerates the translation of research into deployable solutions that improve energy security.

SEI seed funding is intended to support activities that position teams for larger externally funded projects and deployment-oriented initiatives. The program is intended to generate preliminary results, partnerships, data, tools, and implementation pathways that increase competitiveness for external funding opportunities.

SEI seed funding should be used to support use-inspired projects that advance the deployment, adoption, operation, and societal integration of secure energy systems. Basic research components are welcome when clearly connected to longer-term energy security outcomes and pathways to implementation.

II. Definitions and Program Intent

Energy Security. For purposes of the SEI, energy security refers to ensuring availability of energy that is ***affordable, accessible, reliable, and resilient*** under both normal and disrupted conditions. Energy security challenges may involve technical, economic, social, behavioral, regulatory, supply chain, workforce, or policy dimensions.

Interdisciplinary and Transdisciplinary Projects. Interdisciplinary projects integrate expertise, methods, or perspectives from multiple academic disciplines.

Transdisciplinary projects build on interdisciplinary collaboration by integrating academic and stakeholder knowledge to develop actionable solutions that extend beyond traditional disciplinary boundaries and address complex societal challenges.

Stakeholder Engagement. Stakeholder engagement refers to substantive interaction with organizations or groups affected by, responsible for, or positioned to implement proposed solutions. Stakeholders may include industry, utilities, communities, government agencies, regulators, workforce organizations, and other end users.

Engagement may include problem identification, project co-design, data sharing, evaluation, implementation planning, or other activities that improve the likelihood of real-world adoption and impact.

A project that integrates approaches from multiple disciplines but employs stakeholder engagement only for problem identification would be considered ***interdisciplinary***. A project that utilizes stakeholder engagement at a deeper level would be considered ***transdisciplinary***. Projects demonstrating meaningful participation by industry, community, utility, government, or regulatory partners are strongly encouraged. Both interdisciplinary and transdisciplinary projects are eligible for funding, but projects demonstrating meaningful stakeholder participation throughout the research process may be more competitive under the transdisciplinary integration criterion.

III. Program Goals

Funded projects should contribute to:

- Accelerating adoption of energy technologies
- Integrating technical innovation with social and institutional systems
- Strengthening alignment among industry, communities, utilities, and policymakers
- Positioning Kansas as a living laboratory for energy systems
- Building scalable pathways to external funding and deployment

IV. Project Requirements

Solution-Oriented: Proposed projects **shall** be structured to solve pressing problems related to energy security in the State of Kansas and the Great Plains region. National and international relevance is encouraged.

Outcome-Driven: Proposed projects **shall** explicitly address at least one aspect of energy security as defined by the SEI: affordability, accessibility, reliability, and resilience.

Foundation-Based: Engagement is foundational to the SEI because successful energy technologies depend not only on technical performance, but also on adoption, trust, institutional support, workforce readiness, and regulatory feasibility. Social, institutional, and behavioral barriers are primary constraints when it comes to transforming energy systems regardless of technology.

Proposed projects **shall** include meaningful engagement with at least one industry partner, community partner, or government/regulatory partner. Priority consideration will be afforded to proposed projects that include the following aspects:

- Stakeholder co-design and participatory research
- Community outreach and trust-building
- Policy and regulatory engagement
- Risk and science communication

Pillar-Anchored: Proposed projects **shall** be anchored in at least one SEI pillar, with priority consideration afforded to projects that demonstrate clear cross-pillar linkages. Descriptions of each pillar are provided below.

1. Advanced Nuclear Systems

This pillar focuses on the science, engineering, and deployment challenges associated with advanced nuclear energy systems, recognizing nuclear as a critical component of reliable, low-carbon energy. Importantly, advanced nuclear energy deployment is an adoption challenge, requiring attention to public trust, regulatory frameworks, and community acceptance.

Research may include:

- Nuclear materials, radiochemistry, and fuel cycles
- Reactor instrumentation, monitoring, and safety systems
- Risk assessment and operational reliability
- Used fuel management and waste disposition
- Integration of advanced reactors (e.g., SMRs, microreactors) with industrial and regional energy systems
- Advanced reactor modeling and simulation (e.g., thermal hydraulics, multiphysics)
- Artificial intelligence, machine learning, and digital twins for nuclear systems

Proposed projects should emphasize:

- Community-informed siting and deployment
- Regulatory pathways and public acceptance
- Integration with industrial or data center loads
- Demonstration of technologies that enhance reactor safety, operational efficiency, and deployment readiness

2. Grid Integration and Reliability

This pillar addresses the operation, modernization, and resilience of electric power systems, with a strong emphasis on utility-centered system integration. Given that utilities act as system integrators and gatekeepers, successful projects must align with real-world utility constraints and decision-making structures.

Research may include:

- Grid stability, resilience, and infrastructure modernization
- Integration of baseload (e.g., nuclear) and intermittent renewable resources
- Energy storage and load balancing
- Smart grids, power electronics, and grid-edge technologies
- Utility planning, operations, and regulatory interactions
- Development of policy guidelines for data center regulations

Proposed projects should emphasize:

- Resilience strategies aligned with utility operations
- Infrastructure modernization and planning tools
- Energy storage integration

3. **Grid-Independent Systems**

This pillar focuses on distributed, decentralized, and end-use energy systems, where adoption, affordability, and user behavior determine successful deployment.

Research may include:

- Bioenergy, hydrogen, and alternative fuels
- Industrial process heat and waste heat recovery
- Rural and agricultural energy systems
- Islanded microgrids and off-grid applications
- Transportation energy systems and electrification

Proposed projects should emphasize:

- Local decision-making and community-level deployment
- Behavioral, economic, and trust barriers to adoption
- Solutions tailored to rural and distributed contexts

4. **Advanced Manufacturing & Supply Chain**

This pillar supports the industrial backbone of energy systems, ensuring that technologies can be produced, deployed, and sustained at scale.

Research may include:

- Manufacturing processes for nuclear, grid, and energy components
- Supply chain resilience and risk management
- Domestic production capacity and industrial ecosystems
- Quality assurance and regulatory compliance in energy manufacturing
- Integration of energy systems with regional economic development

Proposed projects should emphasize:

- Scaling deployment beyond prototypes
- Strengthening regional and national supply chains
- Aligning manufacturing with energy system needs and workforce capabilities

Crosscutting: Proposed projects **shall** substantively incorporate at least one SEI crosscut. Descriptions of each crosscut are provided below for reference.

1. **Workforce Development**

This crosscut focuses on building the human capital required to deploy, operate, and sustain future energy systems at scale. Given projected energy system growth and transformation, workforce development is a critical bottleneck and enabling factor for all pillars.

Activities may include:

- Workforce training, reskilling, and upskilling programs
- Development of certifications, micro-credentials, and curricula
- K–12, community college, and university pathway development
- Industry-informed training aligned with emerging technologies
- Strategies to address workforce gaps across nuclear, grid, and manufacturing sectors

2. Digital Engineering

This crosscut enables system-wide integration, efficiency, and decision-making through advanced digital tools.

Research may include:

- Modeling and simulation of energy systems
- Digital twins for infrastructure and operations
- Data analytics, AI/ML, predictive tools, physics-informed machine learning, and digital twins
- Cybersecurity for critical energy systems
- Cyber-physical systems integration

Digital engineering is viewed as a force multiplier across all pillars, enabling:

- Improved system performance
- Faster innovation cycles
- Better operational and planning decisions

V. Additional Priority Considerations

Strong proposals will:

- Focus on adoption and implementation, not just technology development
- Address social license, trust, and behavioral barriers
- Align with utilities and institutional decision-makers
- Strive for scalable and transferable solutions
- Deliver decision-support tools or actionable insights
- Demonstrate speed, coordination, and integration
- Potential to position the team for competitive external funding

VI. Evaluation Criteria

Proposals will be evaluated on:

1. Novelty and significance of the proposed approach
2. Potential for adoption and impact in Kansas
3. Contribution to energy security outcomes (improving energy affordability, accessibility, reliability, and/or resilience)
4. Alignment with SEI Pillars, Crosscuts, and Engagement Foundation
5. Likelihood of project success
6. Strength of transdisciplinary integration
7. Quality of industry and other stakeholder engagement
8. Scalability to large, consortium-level projects

Secure Energy Initiative Seed Funding Proposal Instructions

RFP Issue Date: July 15, 2026

Poster Presentation Date: September 2, 2026

Pre-Proposal Due: October 1, 2026, 11:59 PM Central

Full Proposal Request Date: October 9, 2026

Full Proposal Due: November 8, 2026, 11:59 PM Central

Full Proposal Presentation Date: November 9, 2026

Anticipated Award Date: December 1, 2026

Project Start Date: January 1, 2027

Pre-Proposal Submission Link:

https://kstate.qualtrics.com/jfe/form/SV_5bZ79wpQjEbEwF8

I. PI Eligibility and Allowable Costs

Only K-State employees are eligible to serve as PI of an SEI Seed Funding Proposal. There is no restriction on the number of pre-proposals for which an individual serves as PI or Co-PI.

Allowable costs include salary/wages, fringe benefits, graduate student tuition, domestic travel, equipment, materials/supplies, services, and publication costs. Equipment purchased **shall** be the property of Kansas State University, tagged and inventoried, and made available after the project end date upon request by the Office of the Vice President for Research. Indirect costs and international travel costs are not allowable. No more than 40% of the requested funds may be used to support external collaborators.

II. Required Poster Presentation

At least one member of each proposing team **shall** attend and present a poster at the SEI Technical Interchange Meeting, to be held at K-State Olathe on September 2, 2026, from 12 pm to 5 pm. Mileage and poster printing cost reimbursement will be provided for presenters. Additional travel reimbursements may be made on a case-by-case basis and should be requested during registration. Registration instructions and a poster template will be provided by August 1, 2026.

III. Pre-Proposal Content

The pre-proposal **shall** consist of a Qualtrics survey, subject to character limits indicated on the survey, with the following required entries:

- A. Principal Investigator (PI) name.
- B. PI email address.
- C. PI phone number.
- D. PI's primary departmental affiliation.
- E. Name(s) and primary departmental affiliation(s) of Co-PI(s).
- F. Total funding requested.
- G. SEI Pillar(s) anchoring the proposal.

- H. Proposal Title.
- I. Energy security problem addressed by project.
- J. Proposal executive summary.
- K. Energy security outcome(s) addressed by project in problem context.
- L. Workforce Development and/or Digital Engineering incorporation.
- M. Community, Industry, and/or Government Collaborator(s) and Role(s).
- N. Innovation and scalability.

IV. Pre-Proposal Review Process

Each pre-proposal will be reviewed by three to five individuals with expertise relevant to the most applicable pillar working group, one individual with expertise relevant to the most applicable crosscut working group (Workforce Development or Digital Engineering), and one individual with expertise relevant to the Community, Industry, and Government Engagement working group. Pre-proposals will be rated by each individual as **Competitive**, **Borderline**, or **Not Competitive**, with a brief explanation for each rating. The top and bottom individual pillar working group-associated ratings will be discarded.

The SEI Proposal Selection Committee, comprised of members of the SEI Steering Committee, **shall** invite full proposals using information from the working group reviews, with consideration of broader SEI and University priorities. Incomplete or clearly unrelated pre-proposals **shall not** be considered for invitation. **All reviewers are required to recuse themselves from reviewing their own proposals. SEI Steering Committee member(s) who submit a pre-proposal shall not serve on the SEI Proposal Selection Committee.**

V. Full Proposal Content

The full proposal **shall** consist of a single PDF file, submitted by upload to a Qualtrics survey, with the following sections:

- A. *Proposal Title.*
- B. *PI Name, Contact Information, and Departmental Affiliation.*
- C. *Energy Security Problem.*
- D. *Background and Approach.* Include a succinct review of previous attempts to solve the problem, stakeholder-provided information/feedback, your planned approach with emphasis on innovation, and a clear explanation of why KSU is well-positioned to create impact.
- E. *Funding Plan.* Include a summary of the budget by major category with justification, address sustainability beyond the project period, and present a project timeline by calendar quarter with specific project milestones.
- F. *Project Personnel.* Provide detailed information on project staffing requirements, including a table of all involved personnel that specifies role, affiliation (including primary department if affiliated with KSU), time commitment, funding source(s), and major activities.
- G. *Desired Outcomes.* Enumerate project objectives and the energy security-related outcomes associated with achieving these objectives.

H. *Project Focus Areas*. Explain how your project relates to the SEI Foundation, Pillars, and Crosscuts. Address whether your proposed project is interdisciplinary or transdisciplinary in nature.

I. *Evaluation Plan*. Define quantitative and qualitative metrics for project evaluation. Describe how data will be collected and analyzed to assess impact.

J. *Detailed Project Plan*. Provide detailed information on project tasks (and subtasks, if applicable), including responsible personnel and resources, required to achieve desired outcomes according to the project timeline.

K. *Risk Assessment*. Assess project risks by likelihood and consequence. Suggest possible risk mitigation strategies.

L. *Scalability*. Describe how your project will be scaled to a large, consortium-level effort, including reference to specific funding opportunities to be targeted.

M. *References*.

The full proposal **shall** adhere to the following formatting specifications:

- 1-inch margins
- 12-pt Arial font
- Single-spaced
- 10-page limit, not including the *References* section

Proposing teams may include additional supporting materials as appendices, but appendices may not be used to subvert the 10-page limit on required sections A-L.

VI. Full Proposal Presentations

Information regarding full proposal presentations will be provided prior to invitation of full proposals.

VII. Award Selections

Information regarding the process for award selections will be provided prior to invitation of full proposals.

VIII. Information Security

Proposers **shall not** submit or present any materials that consist of Export Controlled Information (ECI), Controlled Unclassified Information (CUI), or classified information.

Proposers are advised that submission or presentation of information may constitute a public disclosure. Questions regarding intellectual property issues should be directed to Mr. Chris Brandt, Associate Vice President for Research for Tech Transfer and Commercialization, before submission of any associated pre-proposal or full proposal.

IX. Final Report

A final report on the funded project **shall** be submitted within 60 days of the project end date. Information on required final report content will be provided prior to the project start date.