Equitable, Affordable & Resilient
Nationwide Energy System Transition (EARNEST)
Drivers of U.S. Electric Power Transition

- **Decarbonization efforts**
  Transition is driven by efforts to decarbonize the U.S. economy.

- **Electrification**
  Growth in demand due to end-use electrification as we decarbonize the grid.

- **Equity concerns**
  Desire to reduce social inequities, as attested by EJ40 Initiative.

- **Economic impacts**
  Concerns about current economic conditions and impacts of energy transition on employment.

- **Grid resilience**
  Need to improve resilience of the electric grid.

- **Incentive reform**
  Reforming public and private incentives for innovation.
Team

Iowa State University
Massachusetts Institute of Technology
North Carolina A&T State University
Northwest Indian College
Princeton University
Stanford University (Lead Organization)
University of Alaska Fairbanks
University of California San Diego
University of Hawaii at Manoa
University of Michigan Ann Arbor
University of Tennessee Knoxville
University of Texas Austin
Washington State University

University of Calgary (Canada)
University of Waterloo (Canada)
Tec de Monterrey (Mexico)

Argonne National Laboratory
Lawrence Livermore National Laboratory
National Renewable Energy Laboratory
Pacific Northwest National Laboratory

Electric Power Research Institute
National Rural Electric Cooperative Association

$25M for three years, DOE share $20M, Recipient share: $5M
Goal 1: Establishing baseline metrics for the resilience, equity, and emissions of the US electric grid.

Source: energy.Stanford.edu/gridemissions
Goal 2: Developing open-source data products, tools and models that support grid decisions considering resilience, equity and decarbonization in North America.
Goal 3: Executing Pilot Projects across the nation in partnership with communities.
**Theme 1:** Strategies for decarbonization and to enhance resiliency, EJ, and resource adequacy at a state or regional level (4 different states/regions):

- **PP1a:** California
- **PP1b:** Texas
- **PP1c:** ISO New England
- **PP1d:** Iowa

**Theme 2:** Grid solutions for decarbonization and to enhance resiliency, EJ, and resource adequacy at in small or isolated grids (4 different geographical contexts):

- **PP2a:** Spokane WA
- **PP2b:** Alaska/Canada
- **PP2c:** Hawaii
- **PP2d:** Puerto Rico
- **PP2e:** Inuvik, Northwest Territories, Canada

**Theme 3:** PP3 theme: Solutions for decarbonizing neighborhoods/cities while improving EJ and enhancing resilience:

- **PP3a** New York City
- **PP3b:** Boston
- **PP3c:** Ann Arbor
- **PP3d:** Tennessee
Goal 4: Equipping an interdisciplinary highly skilled workforce that can tackle the emerging challenges of the grid of the future

Online training library  
Summer internships  
Training graduate students
Goal 5: Engaging underrepresented communities to provide equitable energy solutions.

Five of the pilots are directly located in disadvantaged communities or on tribal lands defined by the DOE Energy Justice Dashboard:

- Spokane Indian reservation;
- Puerto Rico;
- RiseBoro Community in Brooklyn, NY;
- Bryant Community in Ann Arbor;
- Lenoir City, TN.
Outcomes and Impacts

Interdisciplinary Tools
Develop tools incorporating resilience, equity, decarbonization for grid planning and operations.

Inclusive Engagement
Focus on inclusive community engagement, especially with disadvantaged and underrepresented communities.

Open Data Repositories
Create open data repositories to support decision making around the grid.

Multi-Objective Metrics
Incorporate metrics for resilience, equity, and environmental sustainability.

Workforce Training
Equip an interdisciplinary workforce to tackle emerging grid challenges.
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