



EGI Annual Conference 2023

September 18-21

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EGI Director

Meldrum Professor of Chemical Engineering

What is The Energy & Geoscience Institute?

- ❑ Multifaceted institute at the University of Utah
- ❑ University of Utah – Premier research and flagship State University
 - ~600 million dollars/year in research
- ❑ EGI
 - 50-year history
 - »» Frontier exploration of oil and gas
 - »» Geothermal resources – home to FORGE and CCUS projects
 - Working on all aspects of energy transition...while promoting energy security

EGI Project Portfolio 2022 and beyond (~ 50 projects)

Geothermal

FORGE
Operations
R & D

Geysers LLC
Vernal City

Carbon Capture
and Utilization

Membrane DAC
DAC HUB (ASU)
DAC HUB (Fervo)
Energy Storage

Carbon Storage

SWP
Carbonsafe
SMART
CUSP

Energy Fluids & Minerals

CA Program
EGIconnect
iCORDS
Critical Minerals
Database
Targeted Exploration
Projects
Shales

EGI Energy & Geoscience Institute **50**
AT THE UNIVERSITY OF UTAH YEARS

Decarbonization
Energy Efficiency
Grid Resilience
Optimization

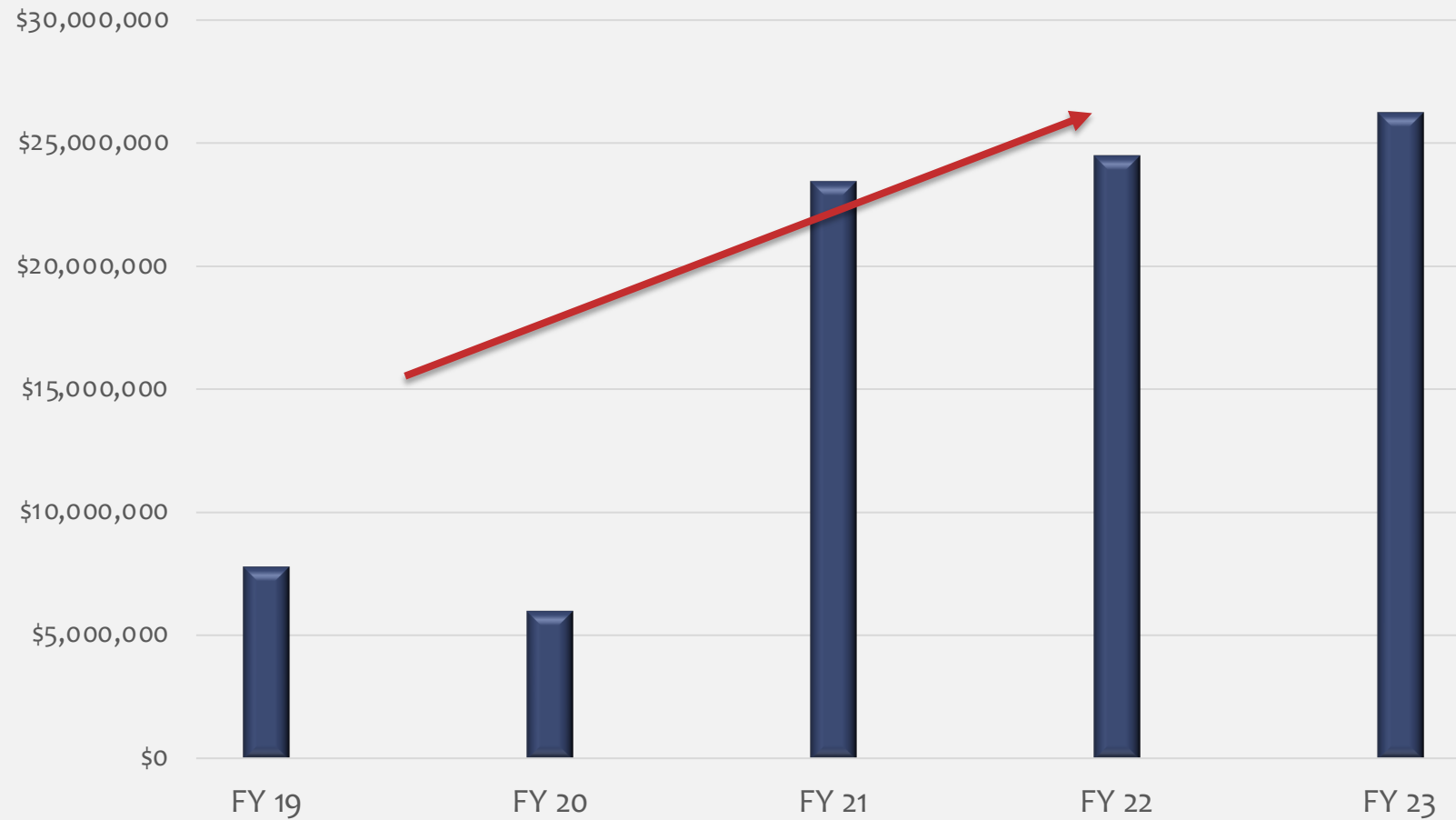
Workforce
Resilient
Energy

Biofuels
Aviation Fuels
(CleanJoule)

Hydrogen
Water Use
Storage
Natural Hydrogen

EGI Research

Research Expenditures

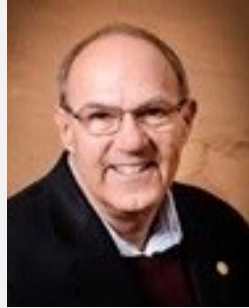


EGI
50+ professionals
and students

*Membership
provides access
to research*

Kudos to the FORGE Team!

- ❑ Demonstrated interwell connectivity
- ❑ Numerous advances related to drilling, completion and stimulation
- ❑ Press stories highlighted the capabilities of EGI and the University of Utah
 - New York Times
 - Wired Magazine
 - Scientific American
 - All local newspapers

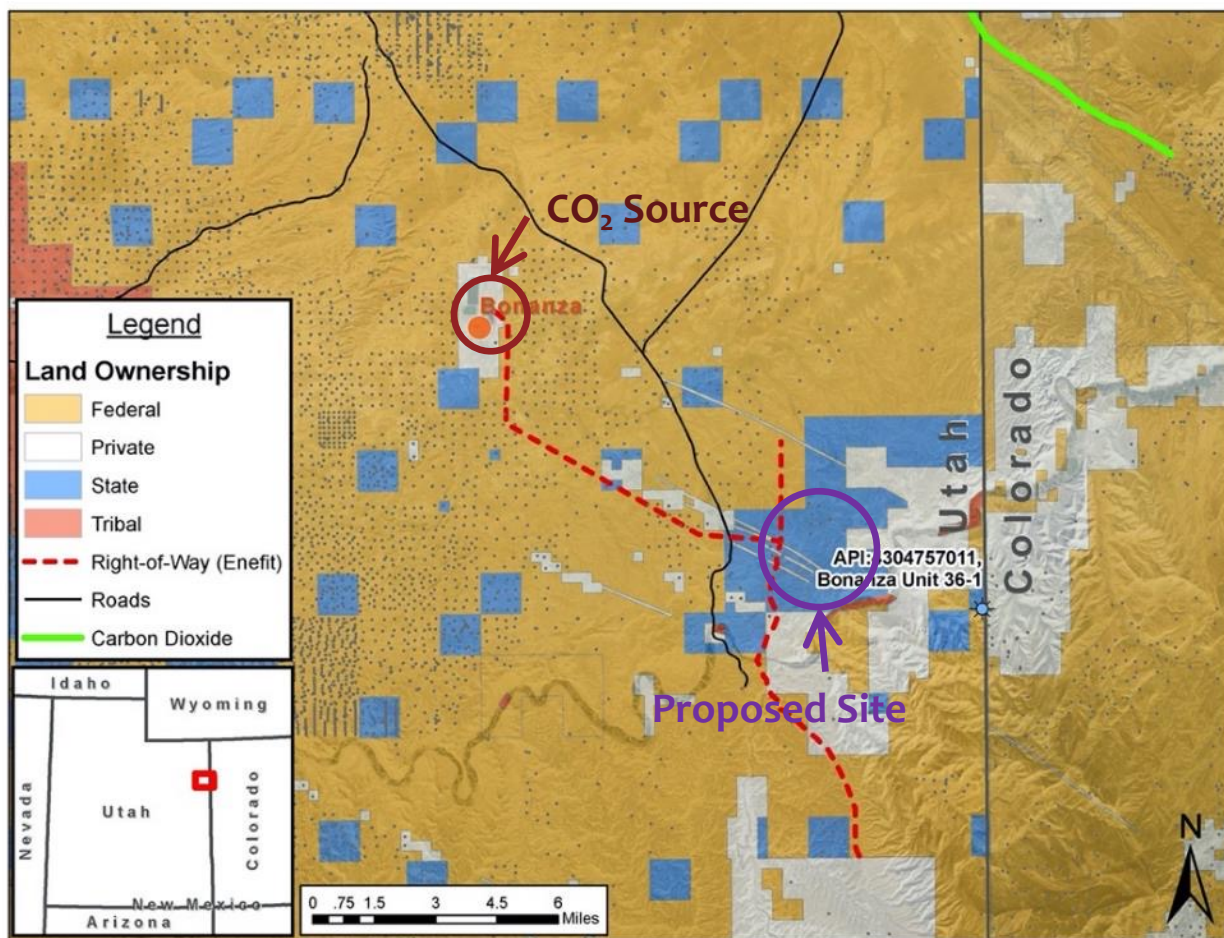


And many others

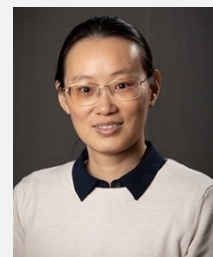
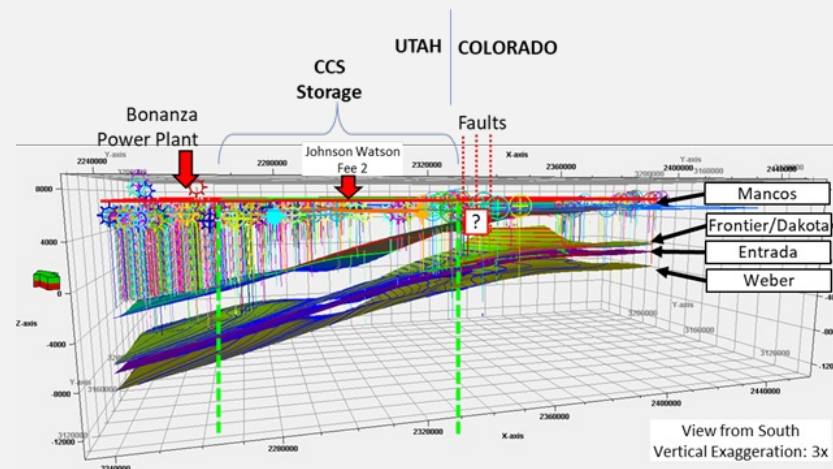
Uinta Basin CarbonSAFE Phase II

Primary Objective:

- To establish the feasibility of a commercial-scale CO₂ geological storage complex to sequester 50 million metric tons of captured CO₂ in 30 years.



Modeling Better Technical and Policy Solutions



And many others

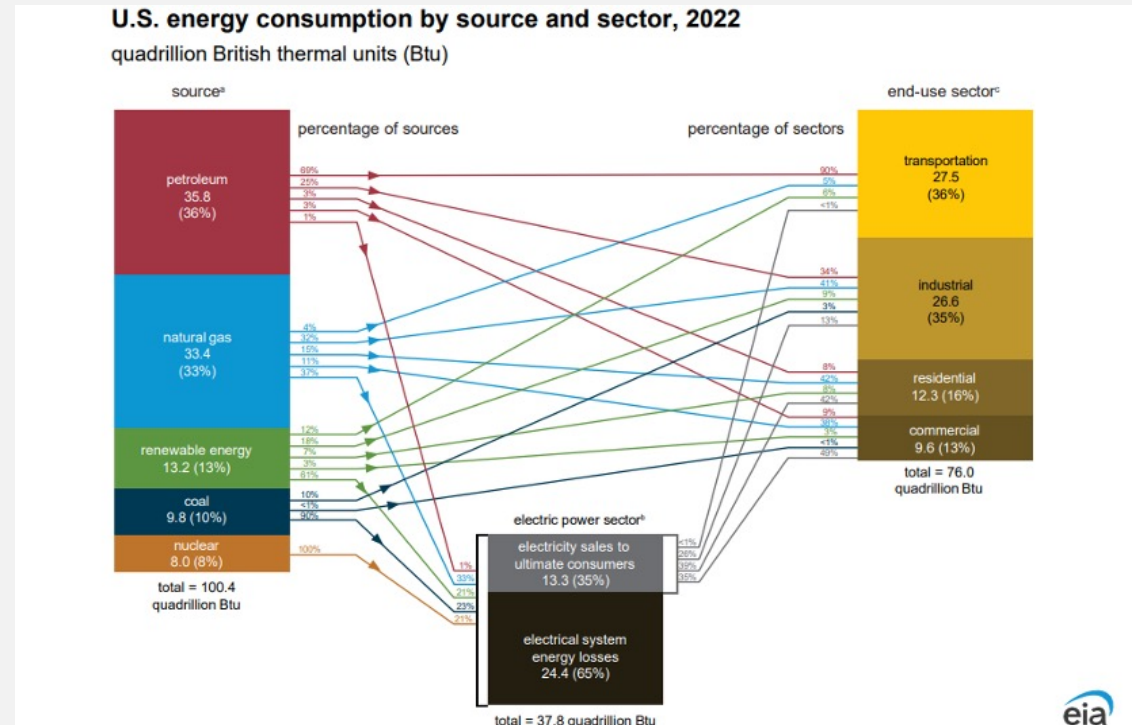
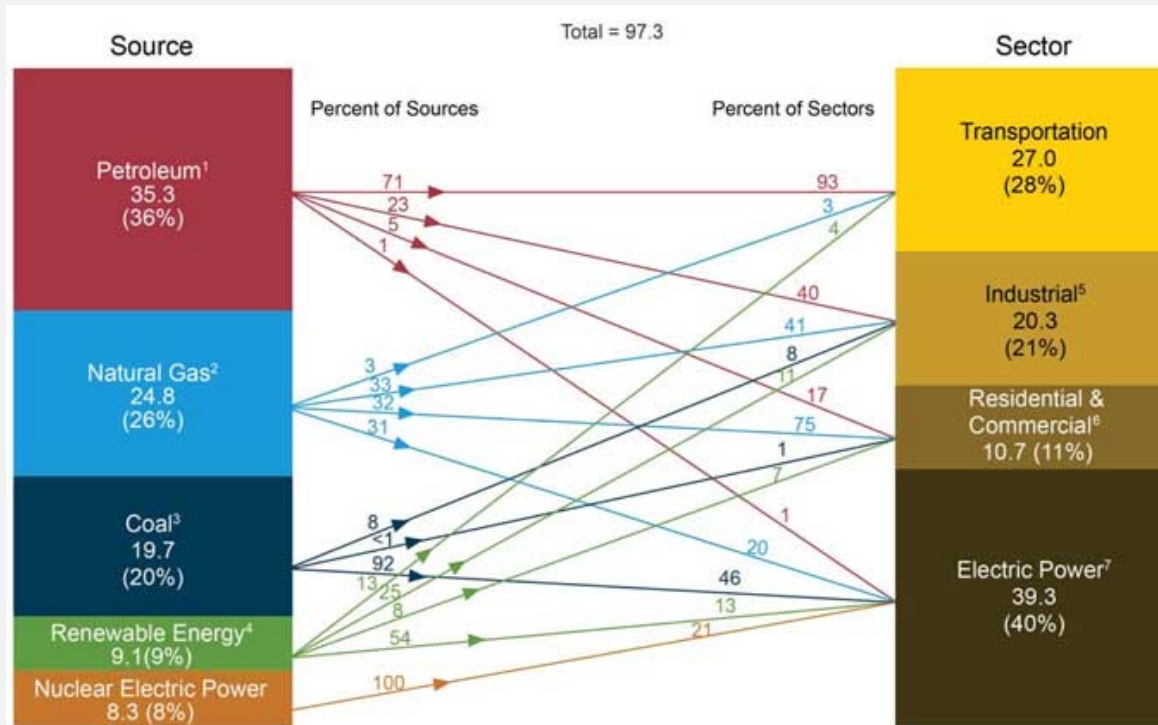
Changing Energy Landscape

Data source: U.S. Energy Information Administration

2012



2022

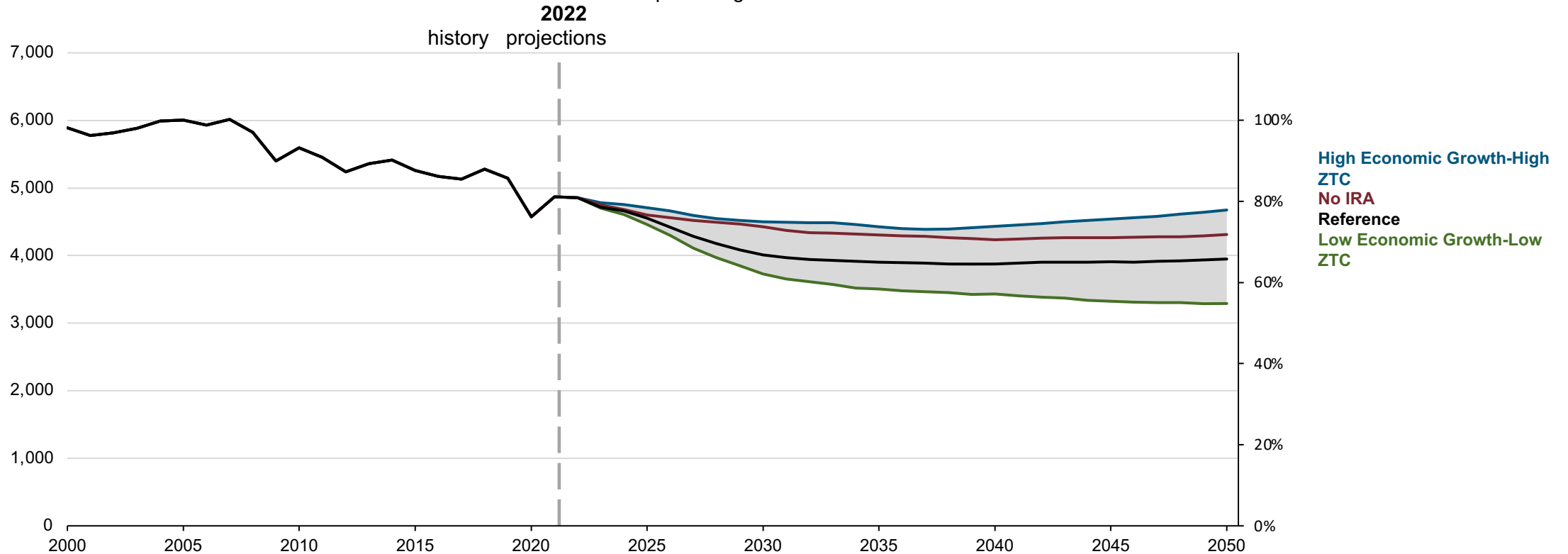


- Growth in renewables, decline in coal
- Proportion of oil and natural gas higher

Progress in Decarbonization

Total energy-related carbon dioxide emissions
million metric tons

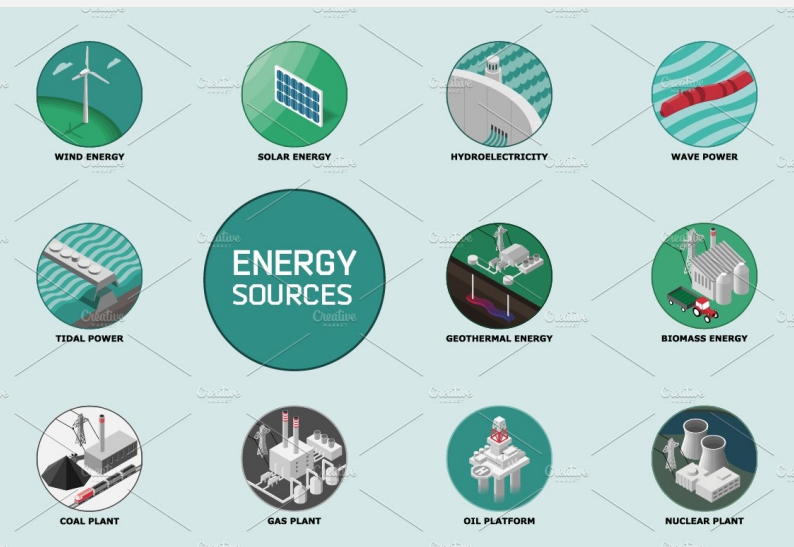
percentage relative to 2005



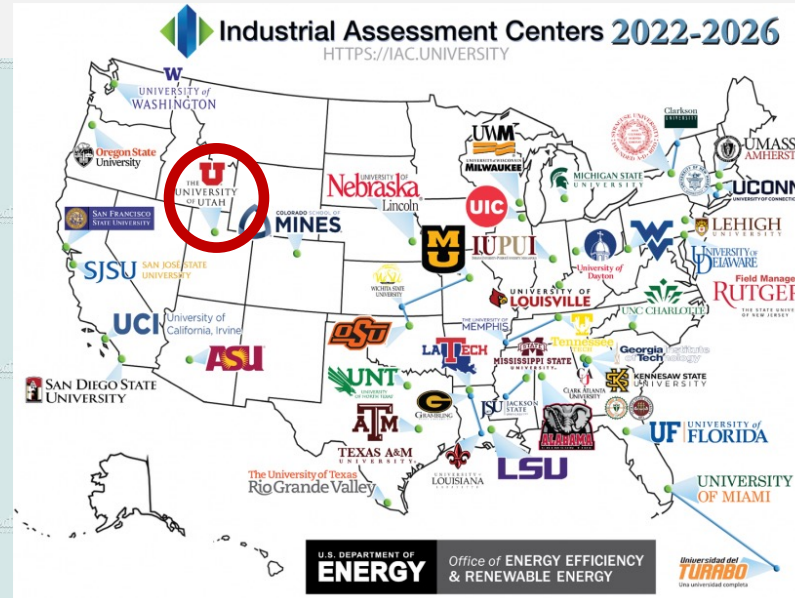
Data source: U.S. Energy Information Administration, *Annual Energy Outlook 2023* (AEO2023)

Note: Shaded regions represent maximum and minimum values for each projection year across the AEO2023 Reference case and side cases. ZTC=Zero-Carbon Technology Cost; IRA=Inflation Reduction Act.

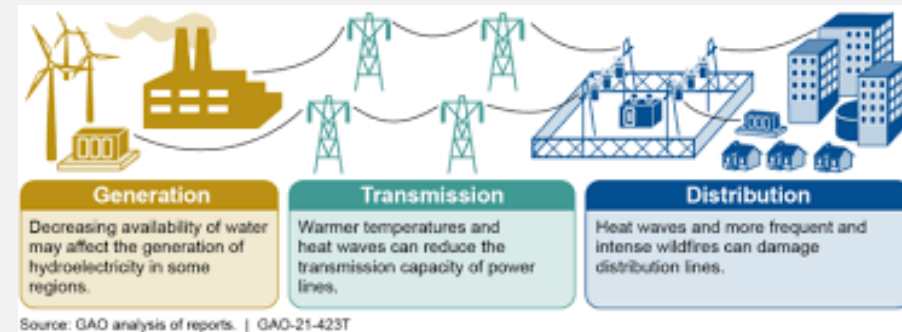
Integrating Energy, Climate and Water



Energy Sources

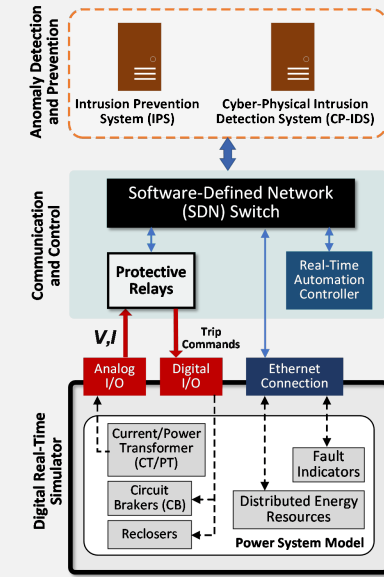


Energy Efficiency and Decarbonization

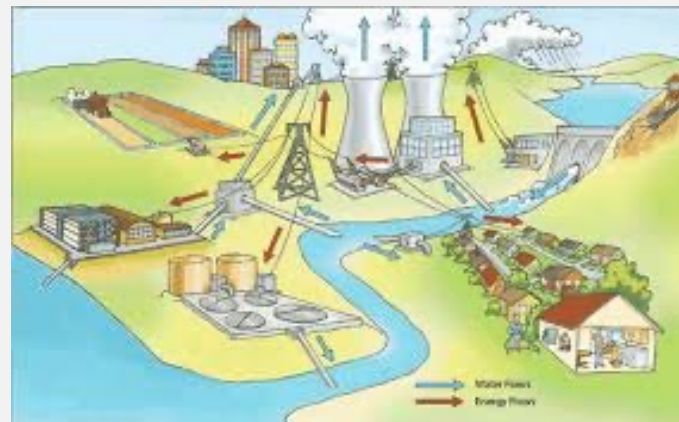


Grid Resiliency U-EPIC

Emissions and Pollutants



Energy,
Climate
and
Water



Energy, Climate and Water



Looking Forward

- ❑ Effective use of data and knowledge
 - Lowering the carbon footprint of oil and gas resources
- ❑ Transformation through integration
 - Decarbonization, energy efficiency
 - Grid resilience and security
 - Carbon capture, utilization and storage
 - Effective mineral use
- ❑ Grow EGI's research portfolio

Resilient Energy Program

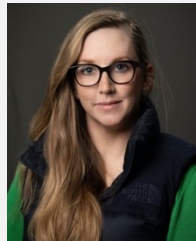
Unique opportunities to disseminate information concerning geoscience for energy transition, carbon management, decarbonization, data analytics

Offer courses traditionally not offered by departments to non-matriculated students

- Short courses – one day to several weeks long
 - Resilient Energy Program
 - *Geoscience for Energy Transition*
 - *Alternate Energy*
 - *CCUS*
 - *Energy Entrepreneurship*
 - *Energy Management*
- Training
- Certifications
- Partner with Continuing Education and Community Engagement

The Conference Program

- ❑ Session 1: Enhanced Geothermal System
- ❑ Session 2: Carbon Dioxide Storage
- ❑ Session 3: Energy Fluids and Minerals
- ❑ Session 4: Energy Efficiency, Grid and Hydrogen
- ❑ Great Salt Lake Geology Field Trip
- ❑ Big Thank You to EGI Organizing Staff!



And many others