I-WEST: Intermountain West Energy Sustainability & Transitions

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I-WEST: Intermountain West Energy Sustainability & Transitions

Intermountain West region

Regionally-relevant technology roadmap to transition the Intermountain West region to a carbon-neutral energy economy

- Stakeholder-based roadmap
- Build regional coalitions

Priorities: regional attributes and societal readiness

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Intermountain West region

Who funds this initiative?

-Department of Energy

Who leads?

-Los Alamos National Laboratory

Who are partners?

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I–WEST is looking at equitable transition strategies

Place-based Approach

- Prioritize regional attributes and societal readiness for developing and deploying technologies
- Explicitly consider non-technological aspects of region—policy landscape, revenue and jobs, workforce, equity and environmental justice

Multiple Technologies

- Carbon capture, utilization, and storage
- Hydrogen
- Bioenergy
- Low-carbon electricity

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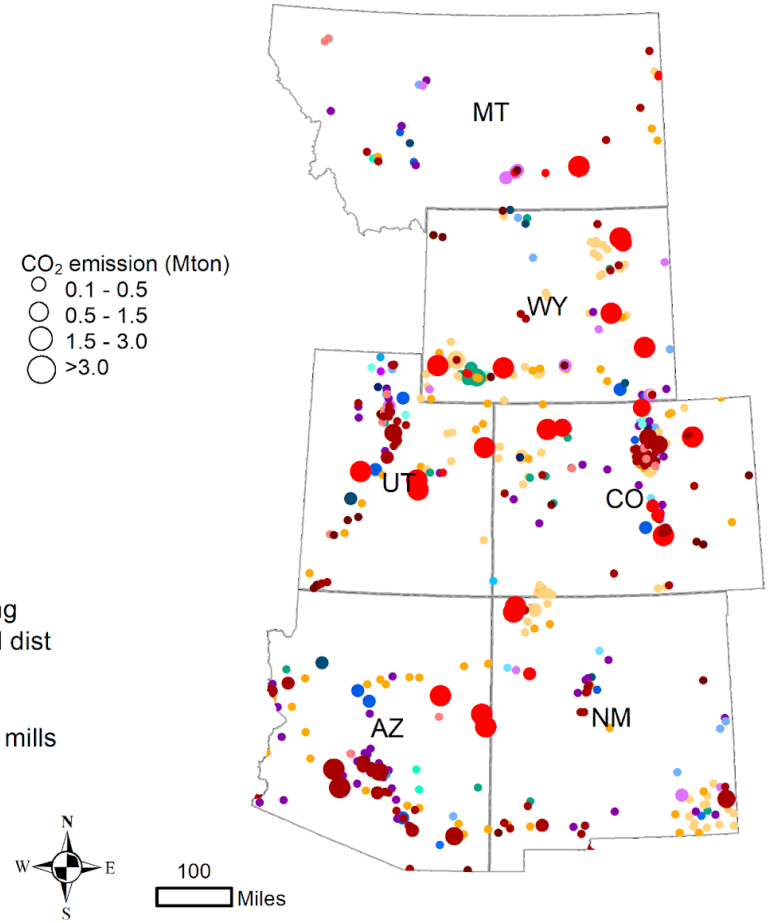
I-WEST phase I

- Started summer 2021
- Deliverable to DOE: roadmap for energy transition in the I-WEST region
- Coalition building through workshops, listening sessions, meetings
  - Concerned citizens
  - Governments
  - Energy companies
  - Advocacy groups
  - Consulting and Engineering companies
  - Investment companies
  - Universities, Colleges
  - Non-profit organizations
  - US Department of Energy (FECM and EERE; DOE Secretary's Office; Arctic Energy Office; Office of Economic Impact and Diversity; Office of Energy Justice; Office of Policy; NNSA
  - National Labs

Workshops: technologies, policies, economics, water

CO_2 emissions



CO_2 sector

- Ag/food manufacturing
- Ammonia/fertilizer
- Cement/concrete
- Chemical manufacturing
- Electricity (Biomass)
- Electricity (Coal)
- Electricity (Gas)
- Electricity (Other)
- Facilities
- Hydrogen production
- Iron/steel
- Lime/gypsum
- Manufacturing (other)
- Metals manufacturing
- Mining
- Natural gas processing
- Oil/gas extraction and dist
- Other
- Petroleum refineries
- Pulp/paperboard/saw mills
- Solid waste

+transportation

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Point source capture and direct air capture

Technology development and deployment to capture CO_2 at the source

Identify candidates in I-WEST region (power plants, fertilizer plants, etc.).

This CO_2 can be stored underground: identify locations, storage volumes, transport routes, costs, permitting

CO_2 point source capture, Baker Hughes

Point source capture and direct air capture

DAC: Direct air capture

CO_2 is removed from the atmosphere

Orca facility, Iceland
Currently removes 4000 tons of CO_2 per year

- Technology development and deployment
- Identify locations
- CO_2 storage


Orca direct air capture facility, Iceland CNN.com

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CO_2 sequestration

- Where can CO_2 be stored underground or utilized?
- What is involved?

Demonstration sites, sources of CO_2, research, monitoring, leak detection, induced seismicity, transport, volumes, permits, policies

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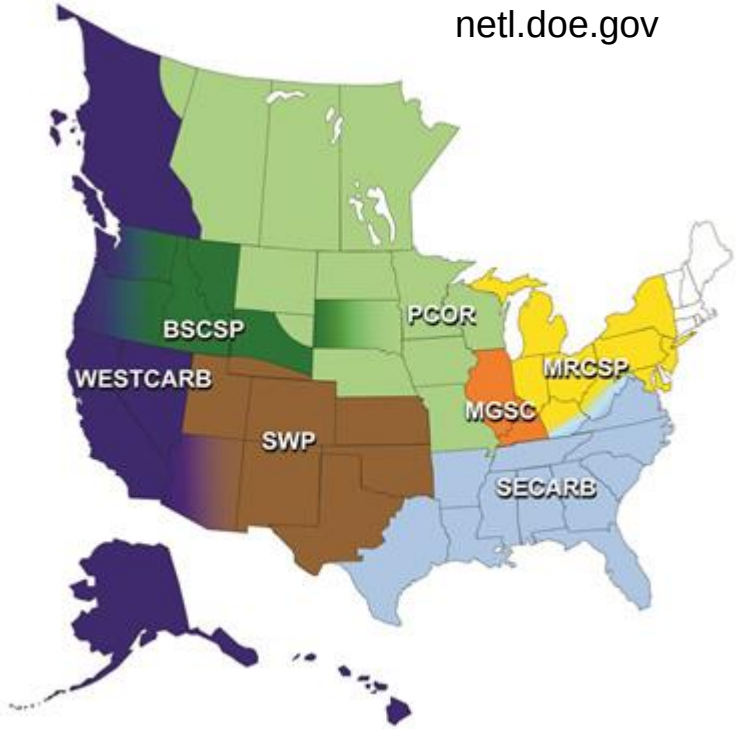

Kevin Dome project, Montana

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Hydrogen economy

- The **hydrogen economy** uses hydrogen to decarbonize some economic sectors
- Technical challenges (long-term storage, transportation, safety concerns, expenses, production technology)
- I-WEST region: production, transport, storage

LA Times Hydrogen hub in Utah

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Bio-energy

A form of renewable energy that is derived from biomass

Usage: transportation fuels, heat, electricity, and products

I-WEST focus

Bio-energy source, water usage, etc.

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Policies workshop

- For certain technology pathways, the federal government is the only option, including removing barriers to federal tax credits
- In some cases, waiting for the federal government is too uncertain and may take too long. In other areas, needed policies are outside the federal purview
- Please visit iwest.org

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Economics workshop

Sovereign Nations

Fossil fuel energy production

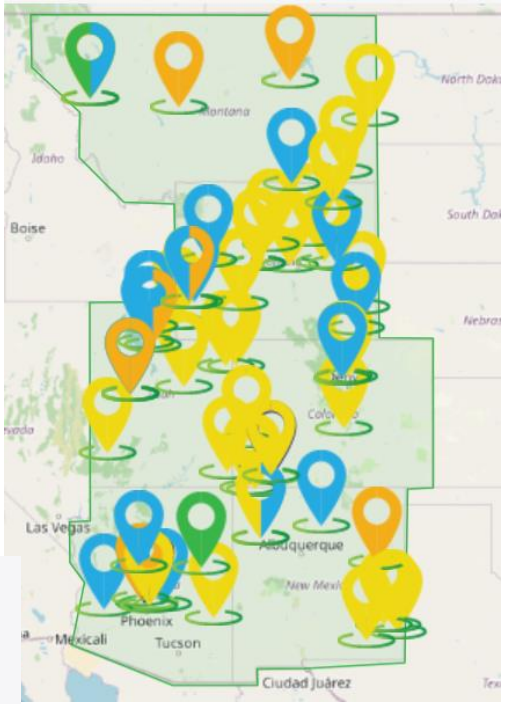
- Jobs, education and tax revenues
- Careers that allowed people to stay and thrive in their community
- Environmental and health consequences
- No across-the-board economic development with many community services and attributes lagging behind (e.g., housing)

Energy transition: Several Sovereign Nations have the potential to develop energy projects

Roadmap

Phase I

- Roadmap report to DOE
- Project catalog



CO_2—capture, use, storage

H_2—production, storage, transport, use

Biomass—production, use, conversion

Electricity

Other

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