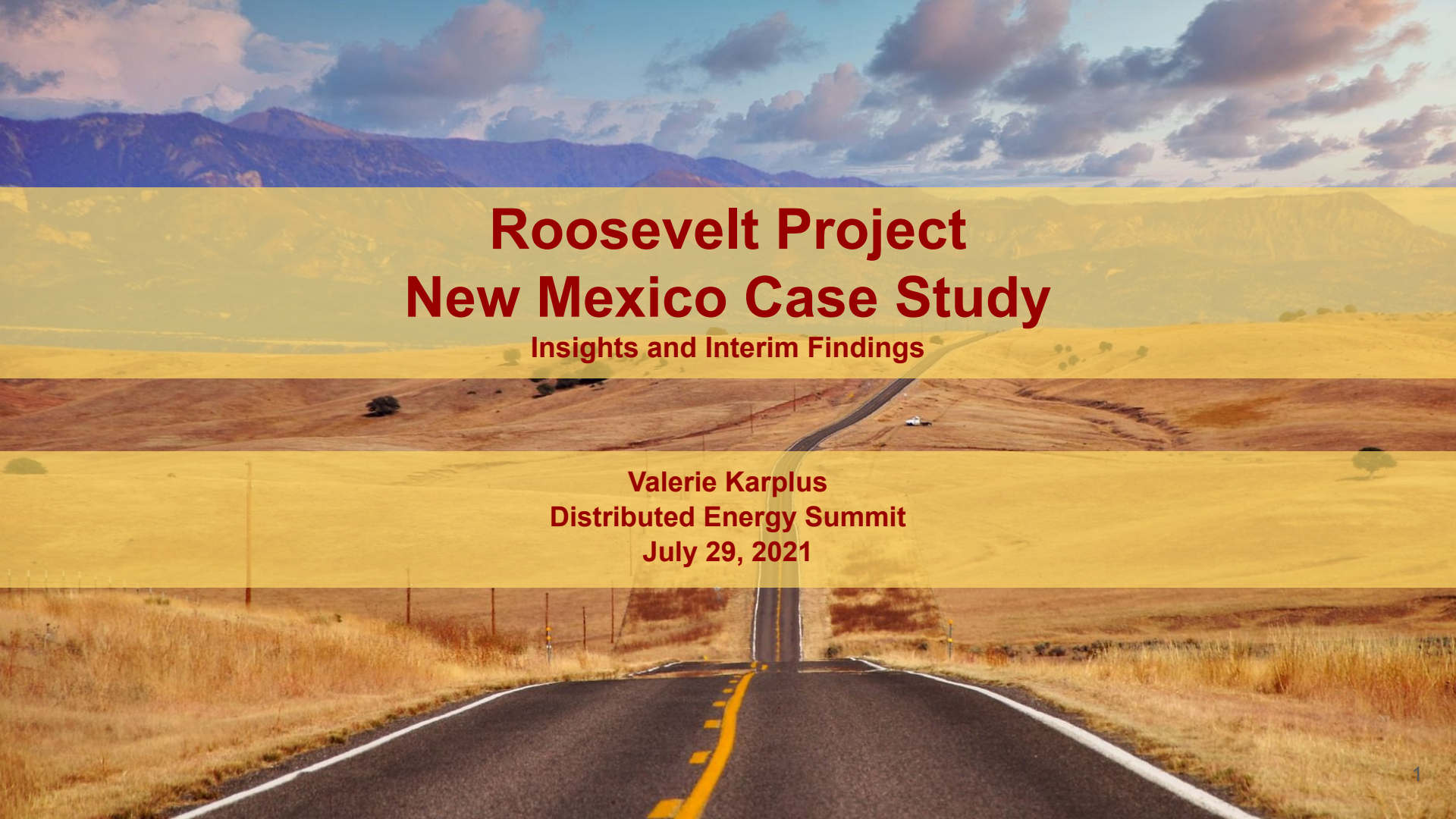
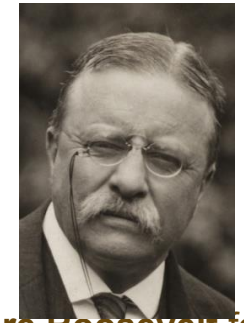


Roosevelt Project
New Mexico Case Study
Insights and Interim Findings

Valerie Karplus
Distributed Energy Summit
July 29, 2021

The Roosevelt Project



Theodore Roosevelt for his stewardship of the environment during his presidency, protecting over 230 million acres of public land

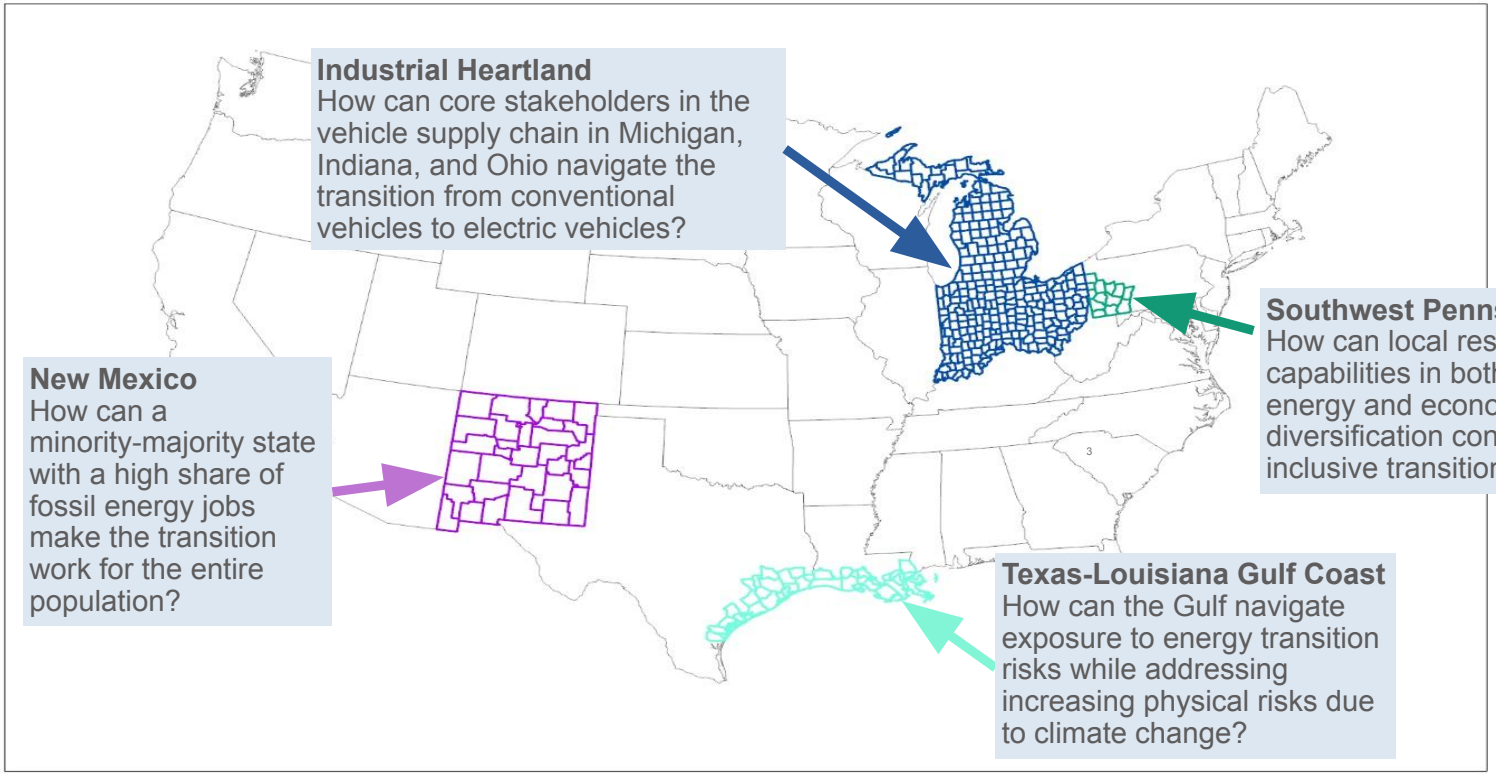
Franklin Roosevelt for his commitment to expanding the middle class in response to the Great Depression and developing America's infrastructure in the New Deal

Eleanor Roosevelt for her support of social justice issues via the UN Commission on Human Rights and Universal Declaration of Human Rights

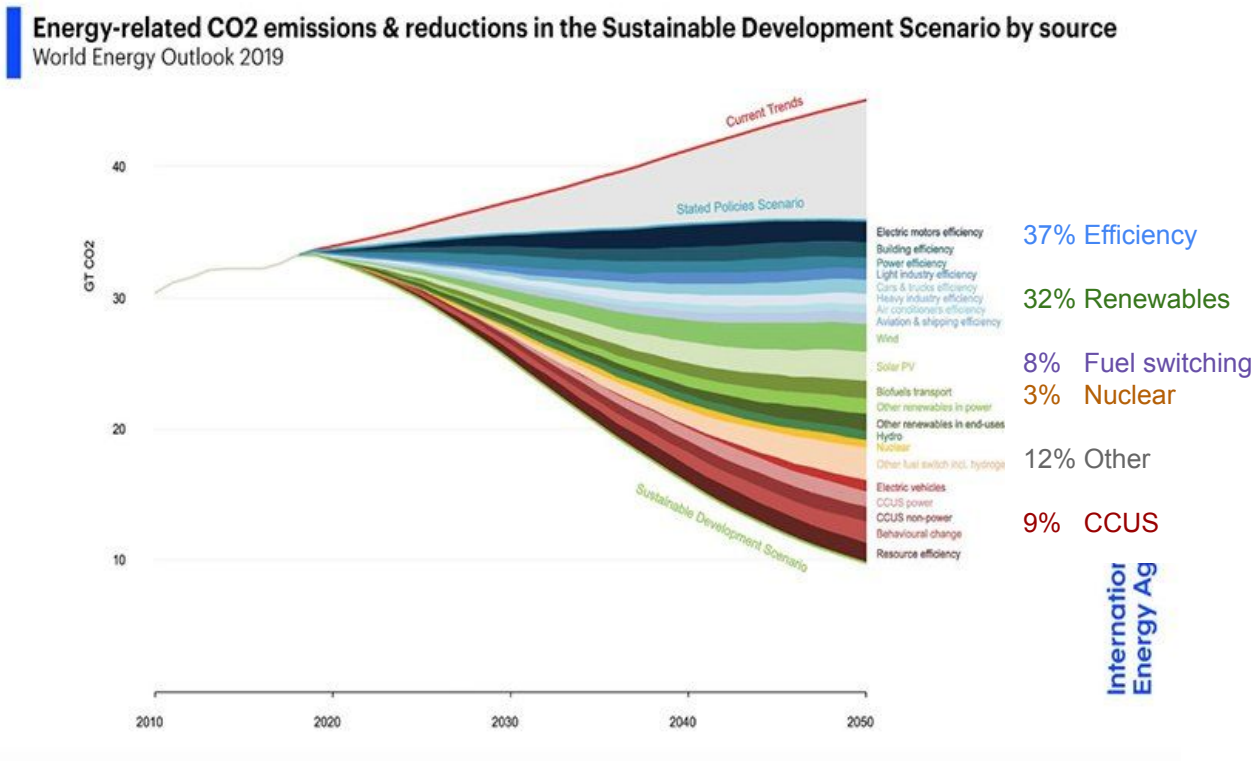
The goal of the Roosevelt Project is to provide an analytical basis for charting a path to a low carbon economy in a way that promotes high quality job growth, minimizes worker and community dislocation, and harnesses the benefits of energy technologies for regional economic development.

New Mexico is one of four case studies

Substantial variation in fossil fuel infrastructure + climate risk + renewable energy potential



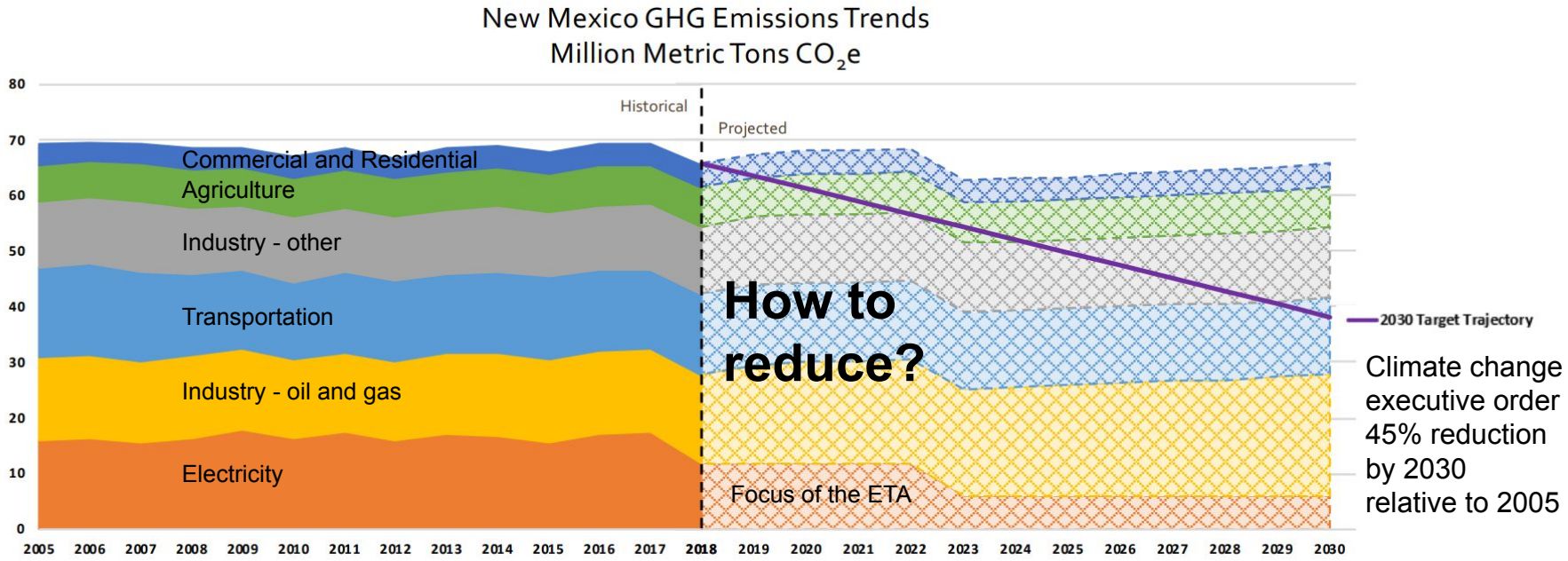
Context: The global energy transition requires “all hands”



Getting from “stated policies” to “sustainable development” will require participation from all sectors – energy and beyond.

Source: IEA, 2019

What is New Mexico's Sustainable Development Scenario?



Climate change executive order 45% reduction by 2030 relative to 2005

Source: EMNRD EPSCoR presentation (July 2020). Projections assume two SJGS units close by 2023 but does not include more recently proposed and enacted policies.

The case evaluates transition pathways on six dimensions

- **Economic efficiency** - for a particular sector or end use, does the pathway reduce GHG emissions at least cost? For non-energy pathways, are the economics attractive?

This study considers more than aggregate cost of low GHG pathways:

- **Total high quality jobs preserved or created** - how many new local jobs are created in the state and how much do they pay?
- **Equity** - do the economic, jobs, and revenue impacts advantage or disadvantage historically underserved, vulnerable, or marginalized populations?
- **Technical and system integration complexity** - to what extent is the pathway's success dependent on broader system changes, and how difficult are these?
- **Builds on existing resources and capabilities** - does the pathway allow the continued use or repurposing of existing assets in economically or at least socially attractive ways?
- **Public revenue generation** - does the pathway preserve and ideally expand public revenues available to tribal, state, and local governments?

Research so far identifies several key issues

(1) Electricity from renewable sources to expand to meet Energy Transition Act targets → **role for "firm power,"** e.g. natural gas with CCS, H_2, geothermal, or biomass?

(2) A transition may strand assets in coal, oil, and gas – are there ways to repurpose and still decarbonize?

(3) Hard to find "equitable" low carbon substitutes for fossil fuel transportation – what policies and technologies ensure rural areas with higher vehicle reliance will benefit?

(4) Reducing GHGs beyond CO_2 will require new policy drivers – building on current methane remediation efforts

(5) How to harness the state's unique innovation assets and ecosystem to generate diversified job opportunities in a transition?

How to broaden beneficiaries of renewable energy growth?

Electric Generation (2020)

Coal: 37.5%
Natural Gas: 35.9%
Wind: 21%
Solar: 5%
Hydro: 0.05%

ETA Goals

2030: 50% renewable
2040: 80% renewable
2045: 100% carbon free

20 federally funded tribal energy projects

Technology

9 solar
6 general RE projects
2 energy efficiency
1 hydro, 1 wind, 1 geothermal

Grant Type

12 feasibility studies
2 planning
6 deployment

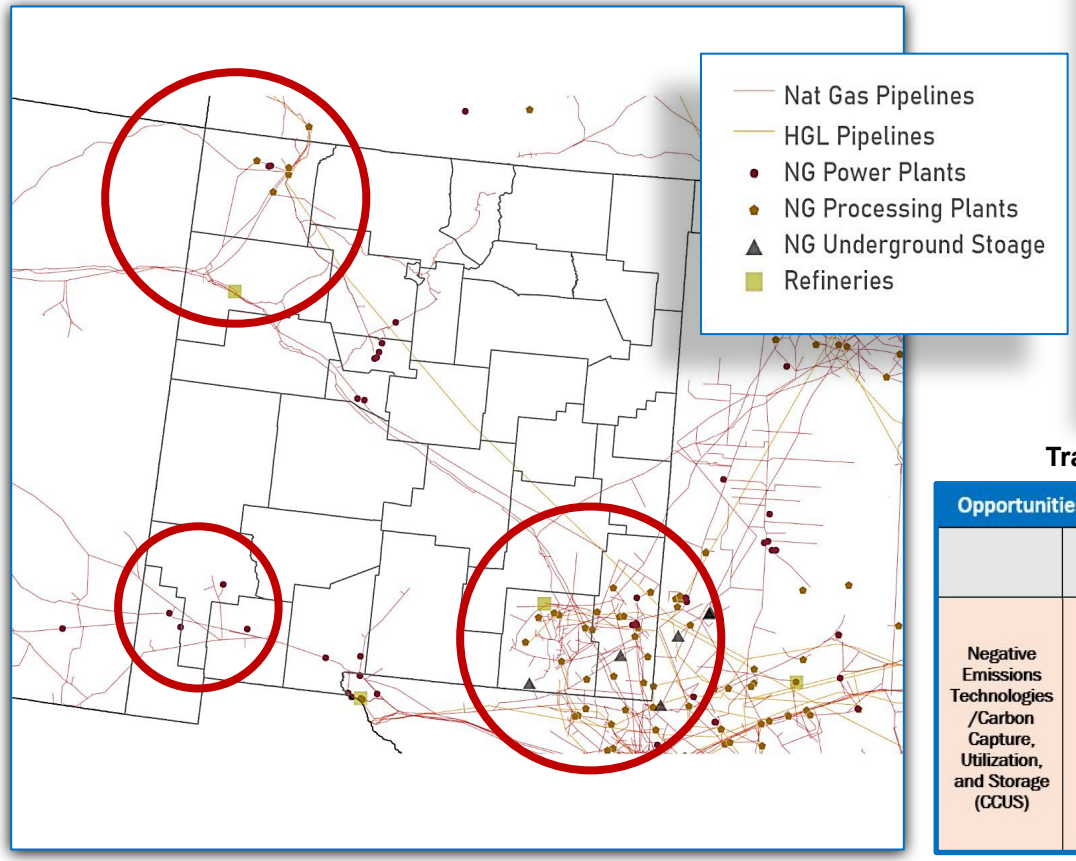
DOE funding: $5,994,328
Awardee funding: $3,960,820
Total funding: $9,905,148
Total Power Generated: 3 MW

10 of 23
NM tribe & pueblo projects funded

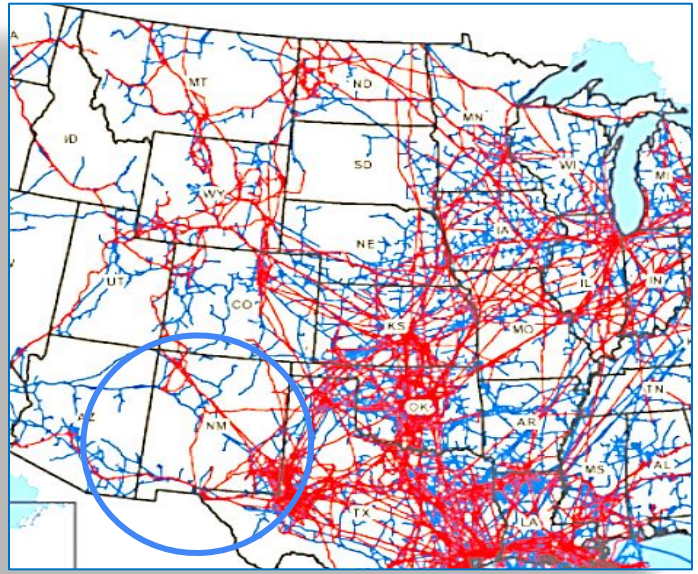
Power sector - 40% of NM CO_2 emissions, increasing share from natural gas as coal plants shut down

Sources: https://www.energy.gov/indianenergy/tribal-energy-projects-database; https://www.energy.gov/node/3538943

CCS/Hydrogen Hubs



Using/Repurposing Existing Oil/Gas Infrastructure and ROWs



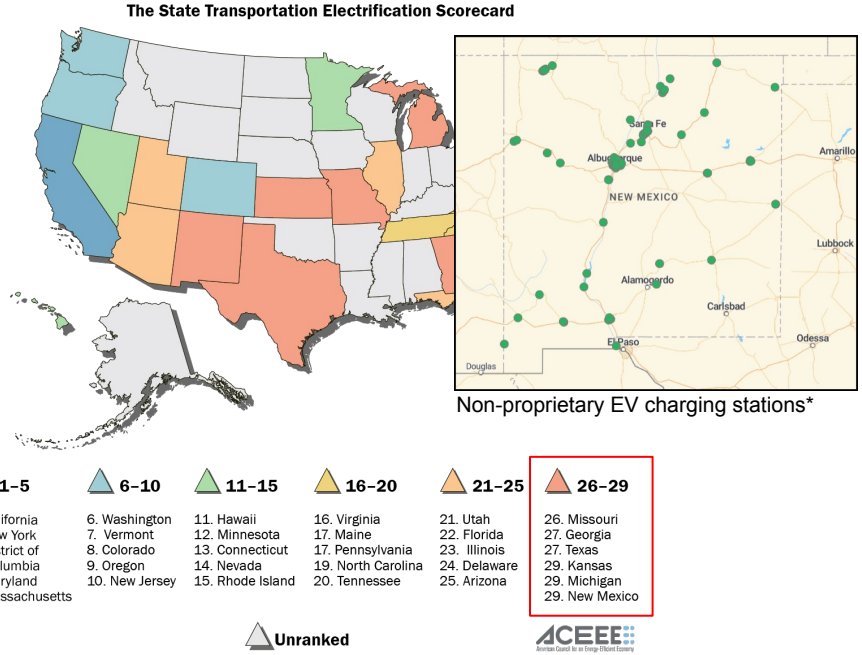
Translating Oil and Gas Skill Sets to CCS Industry Jobs

Opportunities for Using Existing Carbon Infrastructure for Decarbonization

	Oil Refineries & Gas Processing	Natural Gas Generation	Oil & Gas Pipelines	Waterborne Transportation & Ports	Storage
Negative Emissions Technologies /Carbon Capture, Utilization, and Storage (CCUS)	• Applying industry expertise to CCUS technologies for direct-air capture (DAC) and bioenergy with carbon capture and storage (BECCS)	• Applying industry expertise: CCUS technologies for DAC and BECCS	• Using compression technologies similar to those in NG infra-structure for CO_2 • Rail and roadway = existing infrastructure • Leveraging pipeline rights-of-way	• Using industry expertise in lique-faction and trans-port of LPG/LNG for liquid CO_2 • Marine vessels for CO_2 using the same technology as existing LPG or LNG tankers • Port infrastructure for loading • Offshore facilities for subsea injection	• Using saline formations, depleted O&G reservoirs, un-mineable coal seams, basalt formations • Using industry expertise in large-scale CO_2 separation and sequestration • Applying technologies for drilling and injection, subsurface characterization, and site monitoring, same as in the O&G sector • Leveraging similarities with NG storage, acid gas disposal, and CO_2-EOR

Pathways to decarbonize transportation

Beyond EVs, need broad portfolio of low carbon options



American Council for an Energy-Efficient Economy (2021)

- Transportation accounts for 34% of the state's CO_2 emissions.
- Rural and low income households spend a disproportionate share of their income on transportation.
- Efforts to roll out EVs and develop a Low Carbon Fuel Standard should consider how to address these disparaties.
- For example, examine options for generating revenue that can be repurposed to offset costs to low income and/or rural households, expand charging infrastructure, or fund transition assistance.

*Source: Alternative Fueling Data Center, 2021

Models for an equitable decision process

- Our research highlights several opportunities for **more inclusive policymaking**
- Could any of these be **effectively pursued in New Mexico context? How?**
- What **other promising models** exist for more inclusive policy making in New Mexico?

Formalized stakeholder MOUs

Between NM state agencies and **existing clean energy networks**.

Formalize information flows and undertake **ad-hoc consultation**

A People's Transition Assembly

Based on WA Climate Assembly; involves **"ordinary people"** and **proportionally represents all demographics in the state.**

Members learn, discuss, then **recommend** what should happen legislatively on transition policy

More info: WA Climate Assembly 2021

A Just Transition Commission

Modelled after Scotland's JTC; involves **workers, communities, business and industry leaders.**

Provides **independent technical and policy advice** on how to plan and implement transition to clean energy jobs and economies in NM.

More info: Just Transition Commission

Preliminary Recommendations

Energy technology pathways

Examine ways to make renewable energy deployment more inclusive; balance with firm power
Emphasize diverse, locally-suited low carbon transportation options such as vehicle efficiency and transit
Explore potential for hydrogen/CCS hubs in the state to repurpose existing assets

"Beyond energy" opportunities for NM in a clean energy economy

Stimulate entrepreneurship and innovation as a source of jobs aligned with a clean energy economy
Explore potential for environmentally-responsible mining (e.g., copper)

Policy and workforce development

Generate consortia to support development of clean energy curricula for (re)training for energy pathways
Include CCS as an option to meet clean energy goals in the ETA

Equitable processes for reaching policy and technology decisions

Examine and adapt models to make policy processes more inclusive

Thank you! - The NM Case Study Team

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