

EDD

ECONOMIC DEVELOPMENT DEPARTMENT

Hydrogen Market Outlook

Presented to the Legislative Finance Committee

June 15, 2022

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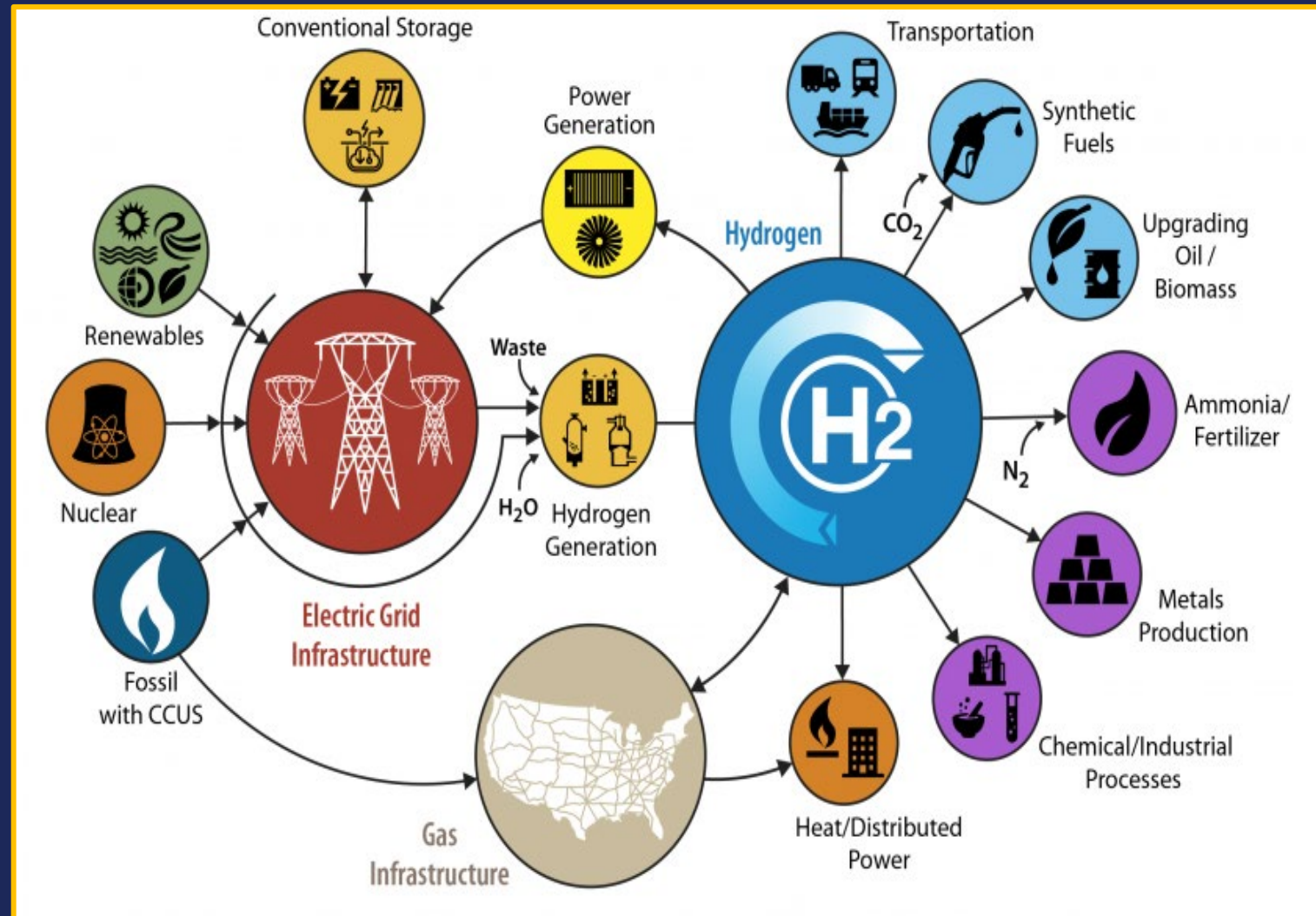
Sarah Cottrell Propst, Cabinet Secretary, Energy, Minerals & Natural Resources Department

James C. Kenney, Cabinet Secretary, Environment Department

Goals

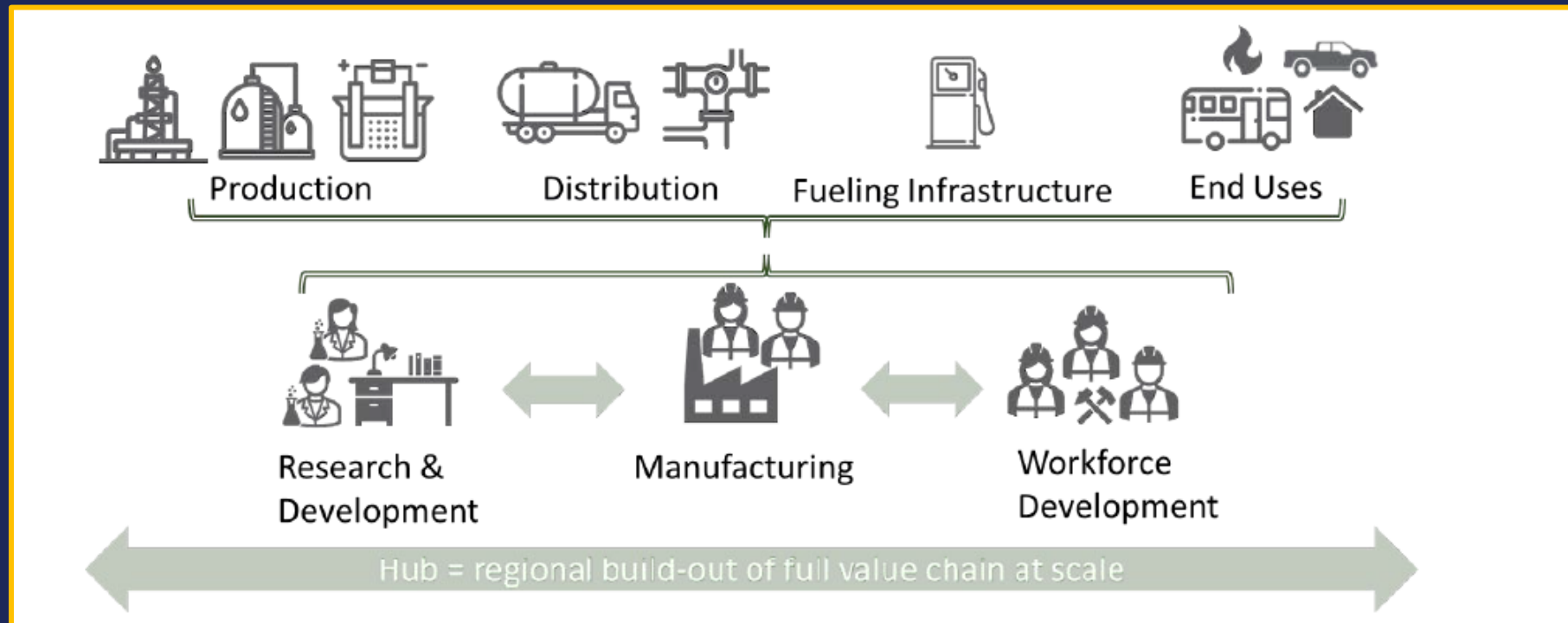
- Climate: Net-Zero to avoid tipping point above 2-degree delta
 - U.S: Net-zero by 2050 (50% reduction by 2030)
 - NM: Net-zero by 2050 (45% reduction by 2030 from 2005 levels)
- Economic: Opportunities
 - Production
 - Storage
 - Transportation
 - Infrastructure (interoperability)
 - End-uses

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Hydrogen Hub

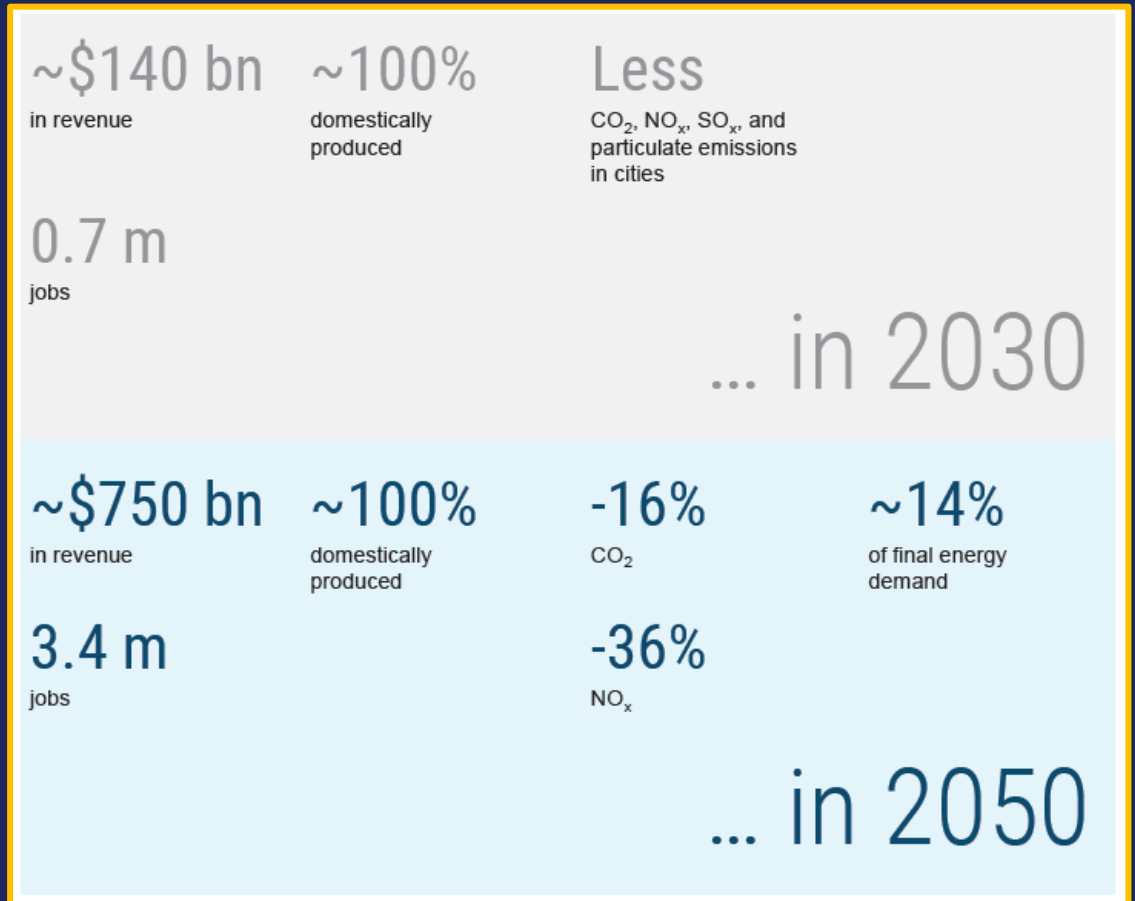
- The hydrogen hub concept has been used frequently in hydrogen strategies globally as a method to achieve scale across the hydrogen supply chain in a region.
- Jobs Act: “the term ‘regional clean hydrogen hub’ means a network of clean hydrogen producers, potential clean hydrogen consumers, and connective infrastructure located in close proximity.”
 - Funding Opportunity: \$8B from DOE for 4 Hubs.



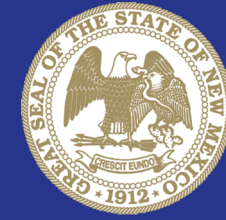
Hydrogen Hub Application

- WISHH (MOU)
 - Western Interstate Hydrogen Hub
 - NM, CO, UT, WY
 - 10 working groups. 3 reps/state
- National Technology & Engineering Solutions of Sandia and Triad National Security (MOU)
 - With NM EDD, NM ED, NM EMNRD

Hydrogen Economy in U.S



New Mexico Clean Hydrogen Approach



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Four State
MOU

Prime Contractor/
Principal
Investigator (TBD)

Capacity building:
Broad theoretical policy-based
problem solving across the Region

Inventory of assets

Workforce development

Equity and Environmental Justice

NM DOE
MOU

Executive
Agencies/Labs

Capacity building:
Broad theoretical policy-based problem solving
across the State

NRGCC

Advancing technology to market:
Applied problem solving for broader hydrogen
implications

- Education and Outreach
- Socio/Techno/Economic/Enviro Analysis
- Inventory of assets
- Industry cost sharing for the RFP

NM
EO

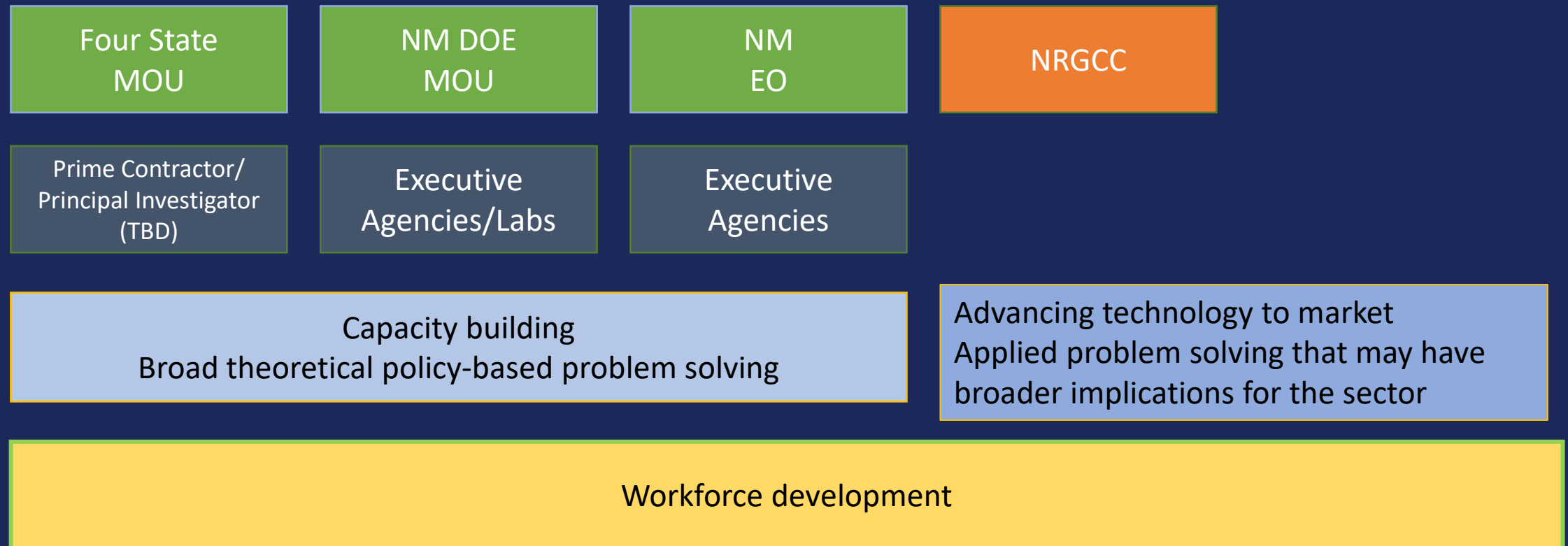
Executive
Agencies

DOE Evaluation Criteria

- DOE HUB Diversity guidelines
 - Feedstock
 - One Fossil Fuel
 - One Nuclear
 - One Renewable
 - End-use
 - Electrical Power generation
 - Industrial
 - Residential/Commercial heating
 - Transportation
- At least two hubs in Natural Gas Producing Regions
- Justice40: At least 40% of overall benefits to SEDI

Evaluation Criteria





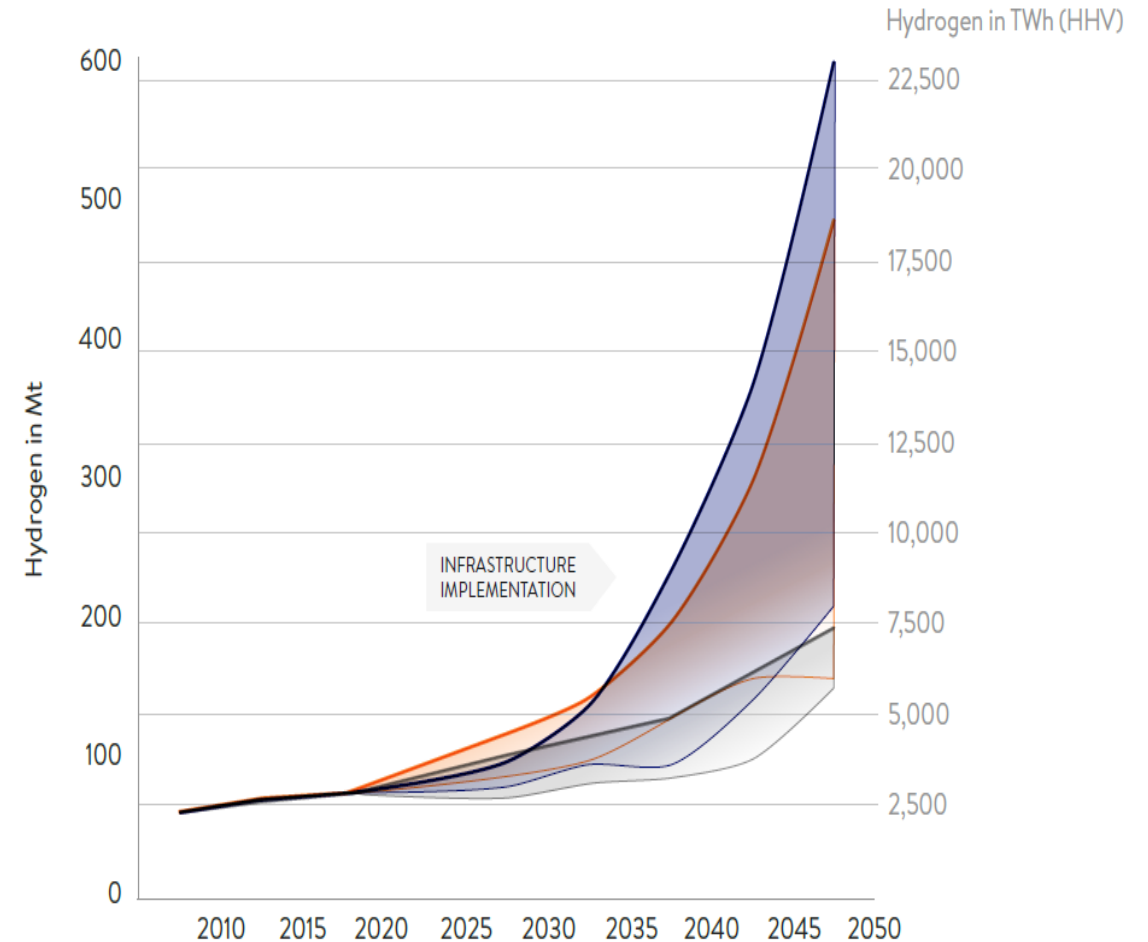
NM Hydrogen Advantages (Statewide Plan)



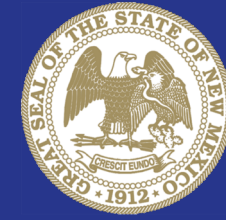
- NM well positioned to benefit from surge in Hydrogen demand
 - Natural gas advantage
 - Significant renewable energy capacity/potential
 - Carbon-capture technology - nat'l labs
 - Knowledge capital core competencies
 - Existing infrastructure
 - Significant opportunity for economic revitalization
- Developing hydrogen economy will lead to business recruitment & retention

JK & SCP

Figure 1. Range Of Hydrogen Demand Assessment By 2050



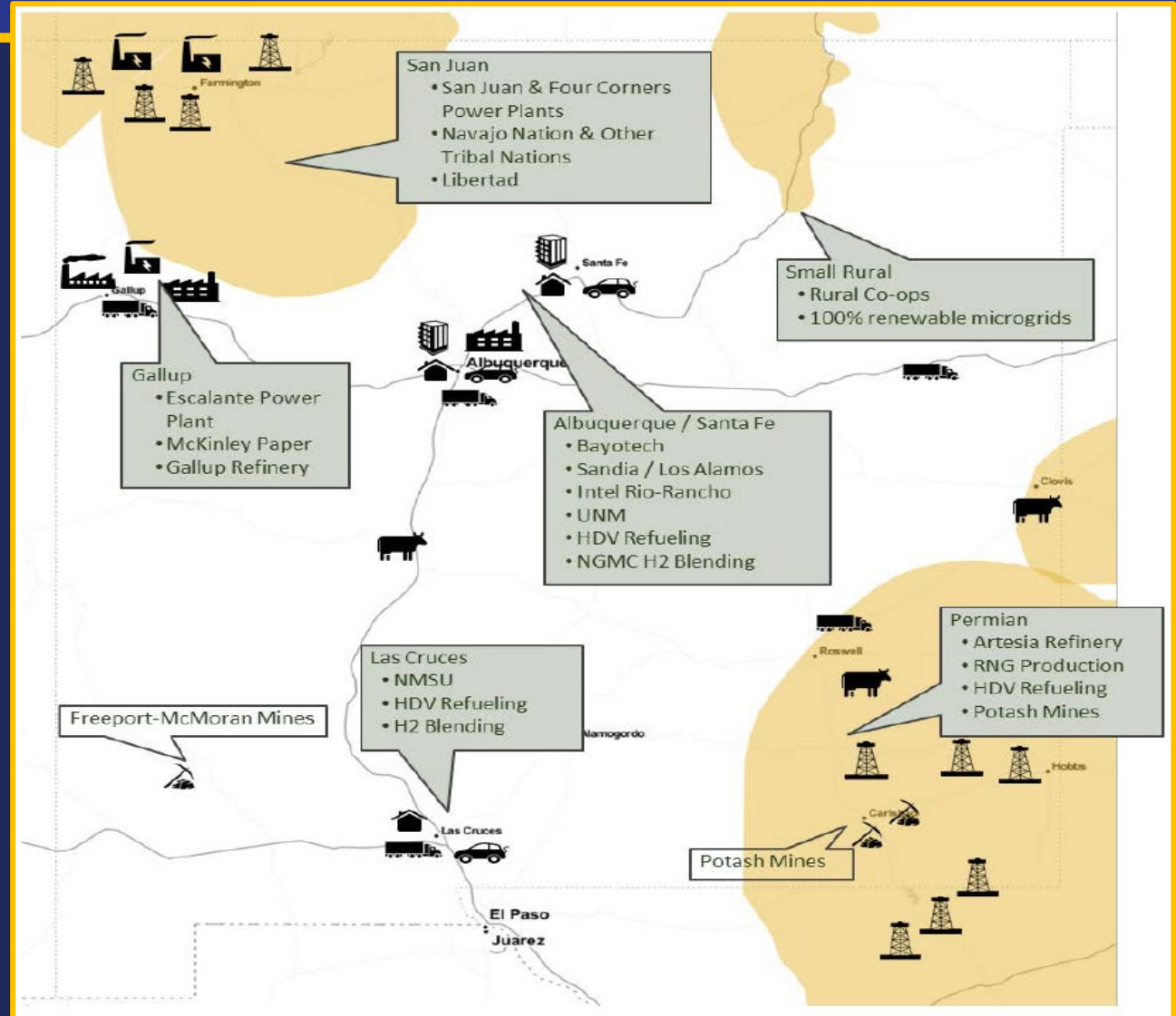
Hydrogen in NM



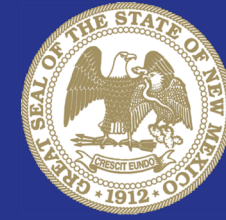
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- New Mexico
 - Can lead nation in Carbon Capture, Utilization and Sequestration (CCUS)
 - Intrinsic geographic and infrastructure advantages
 - Can leverage opportunities to pair hydrogen production and renewable energy development
- Opportunities for EDD
 - Dedicate staff through an Office of Clean Energy Development
 - Serve as conduit between agencies
 - Consolidated with other offices

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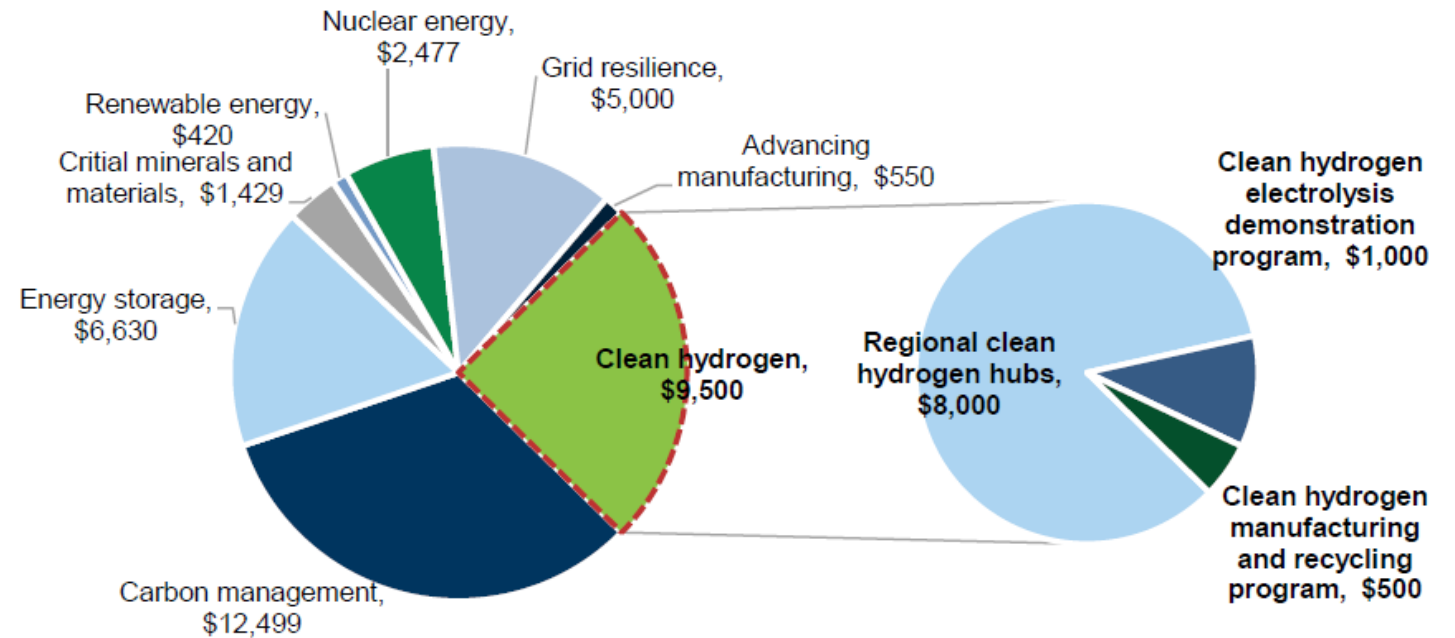
Hydrogen Market



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- Global hydrogen demand:
 - 2030: **\$250B**
 - 2050: **\$1T**
- Department of Energy investment: **\$9.5B**
 - Investment in 4 Hydrogen Hubs: **\$8B**
- DOE hydrogen cost goals within 10 years: **\$1/1 kg**

United States Infrastructure Investment and Jobs Act selected energy R&D programs (US\$m) with a focus on clean hydrogen



Source: United States Infrastructure Investment and Jobs Act, data compiled by Goldman Sachs Global Investment Research

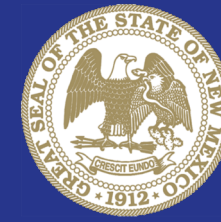
Defining the Vision

Economic Development Opportunities

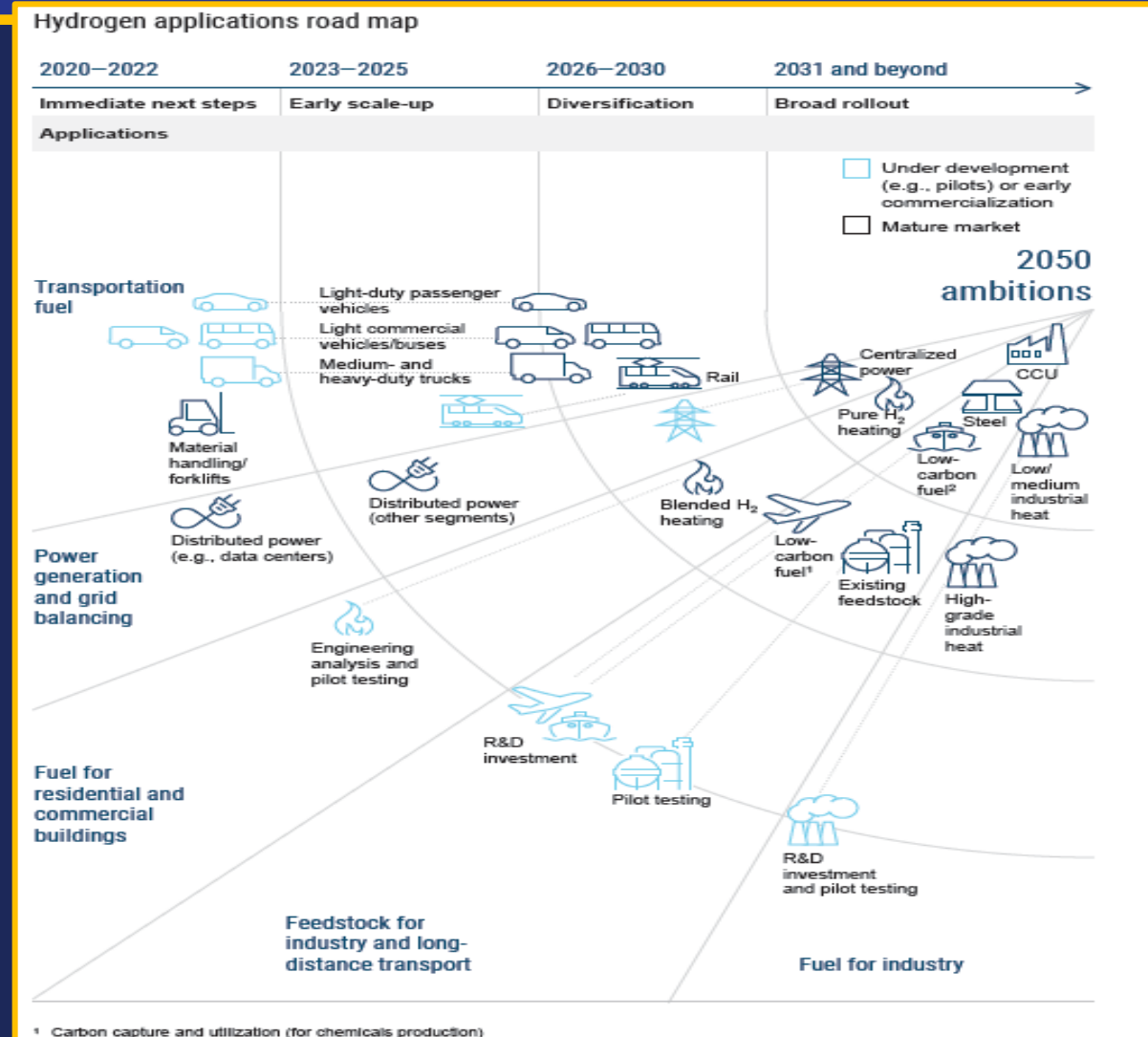
- Production
- Distribution
- End-Uses (Top 3)
 - Power-to-Gas
 - Freight
 - Industry



Industry Applications Include



- Aerospace
- Value-Added Agriculture
- Fuel-cell development
- Transportation



EDD Opportunities



Support mechanisms

Local Economic Development Act
Job Training Incentive Program
Sustainable Economy Task Force
Office of Science and Technology



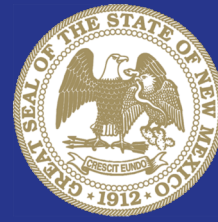
Workforce Development Goals

Identify opportunities and barriers
Develop recommendations
Identify and prioritize SEDI communities

Universal Hydrogen

- Major manufacturing hub on 50 acres
- Anticipated economic impact:
 - Capital expenditure: **\$254M**
 - New jobs: **500+**
 - Average salary: **\$51,500**
 - Annual payroll: **\$25.7M**
 - LEDA: **\$10M**
 - Additional investment from CABQ
 - Construction project alone: **1,200+ jobs**
 - Economic impact over 10 years: **\$700M**





NM Hydrogen Projects

BayoTech

- Technology from SNL
- Partnership with San Juan College
- Programs focused on post-graduates



Hydrogen production, transport,
storage and fueling solutions

NM Hydrogen Projects (cont.)

- Escalante
- Tall Grass
- Libertad
- Lucid
- Enchant Energy
- Wagner Equipment
- Companies (under NDA)
 - Producers of Blue and Green
 - International companies interested in Pilot Projects in NM
 - Filling stations with major corporate partnerships
 - Recent conversations with major market players
- Opportunity for Tribal Nations
 - Navajo Nation refinery
 - Santa Ana engagement

Executive Order progress

- Hydrogen E.O. (2022-013) Items 5a and 5b relate to EDD:

*“5a. Include Hydrogen in the State’s key economic sectors and support the development of clean and zero-carbon hydrogen production; and
5b. Review, with support from other of state executive agencies, its existing programs and authorities to identify those that can be used to support the economic development of an environmentally responsible hydrogen sector”*

- Progress

- EDD website supporting Hydrogen development
- Language indicating EDD programs (LEDA, JTIP) can be used for Hydrogen-related projects





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