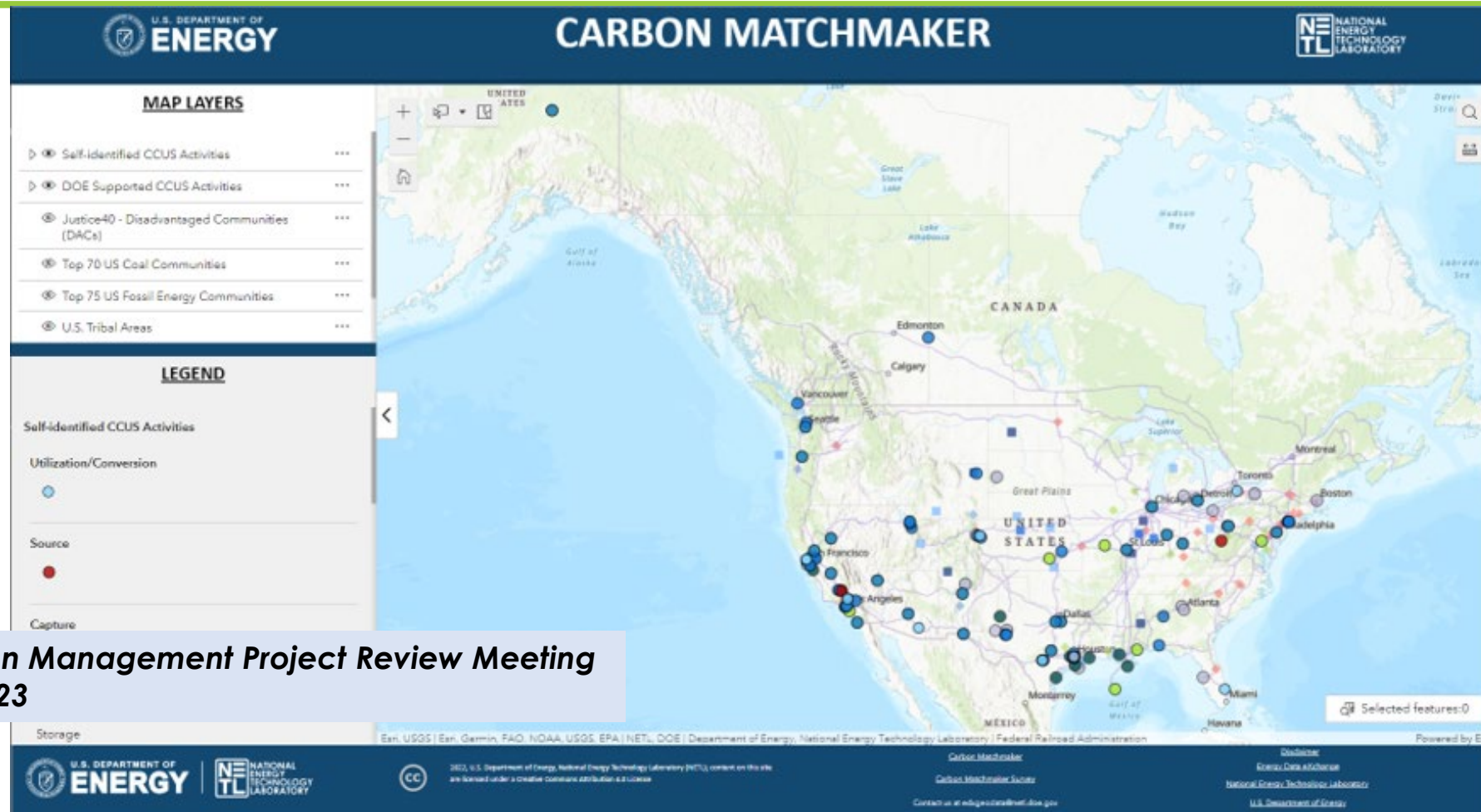


# DOE's Carbon Matchmaker



Maneesh Sharma – NETL, LRST Geospatial Research Scientist

Kevin Dooley – DOE, Carbon Transport Engineer



2023 Carbon Management Project Review Meeting  
Aug. 31, 2023

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*<sup>4</sup>U.S. Department of Energy, Office of Fossil Energy and Carbon Management, 1000 Independence Avenue, Washington, DC 20024, USA*

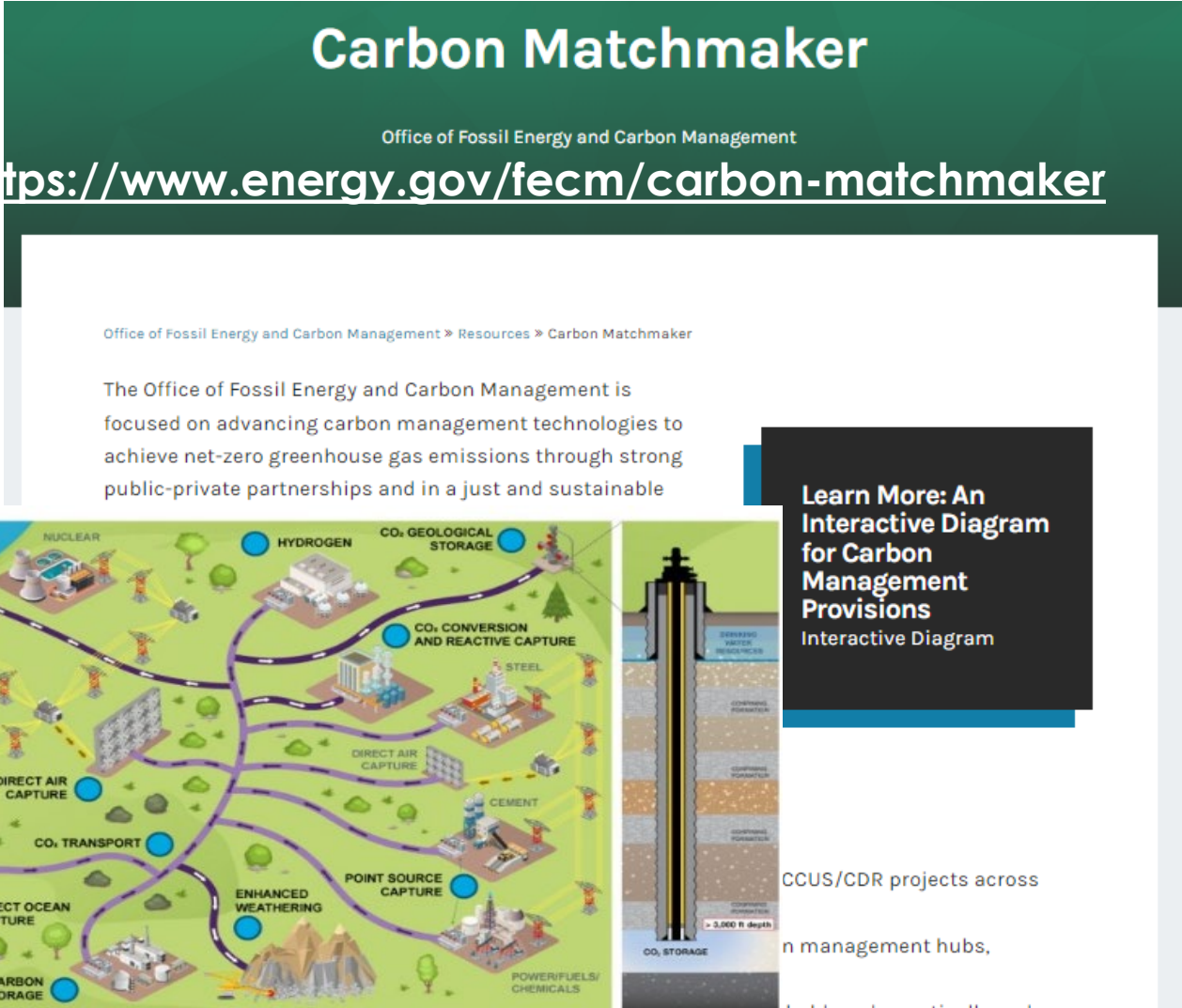
# Disclaimer



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# Carbon Matchmaker (CMM)

- A joint DOE-FECM and NETL application
- Designed to collect self-identified carbon capture, utilization, and storage (CCUS) and carbon dioxide removal (CDR) activities and potential supply chains
- Website published on July 13, 2022



**Carbon Matchmaker**

Office of Fossil Energy and Carbon Management

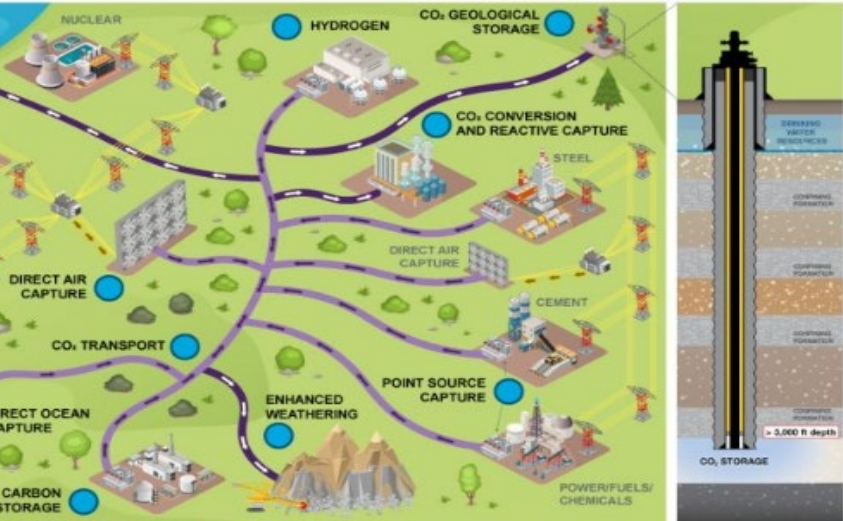
<https://www.energy.gov/fecm/carbon-matchmaker>

Office of Fossil Energy and Carbon Management » Resources » Carbon Matchmaker

The Office of Fossil Energy and Carbon Management is focused on advancing carbon management technologies to achieve net-zero greenhouse gas emissions through strong public-private partnerships and in a just and sustainable

**Learn More: An Interactive Diagram for Carbon Management Provisions**  
Interactive Diagram

CCUS/CDR projects across  
management hubs,  
holders domestically and



# Motivation for Carbon Matchmaker (CMM)

- Offer a mechanism to help support connection and teaming between CCUS/CDR projects and activities
- Increase awareness and help facilitate development of regional carbon management hubs
- Provide domestic and international communities, industries, and technology development stakeholders with carbon dioxide supply and demand maps for current and planned projects
- Highlight past and currently funded DOE carbon management projects

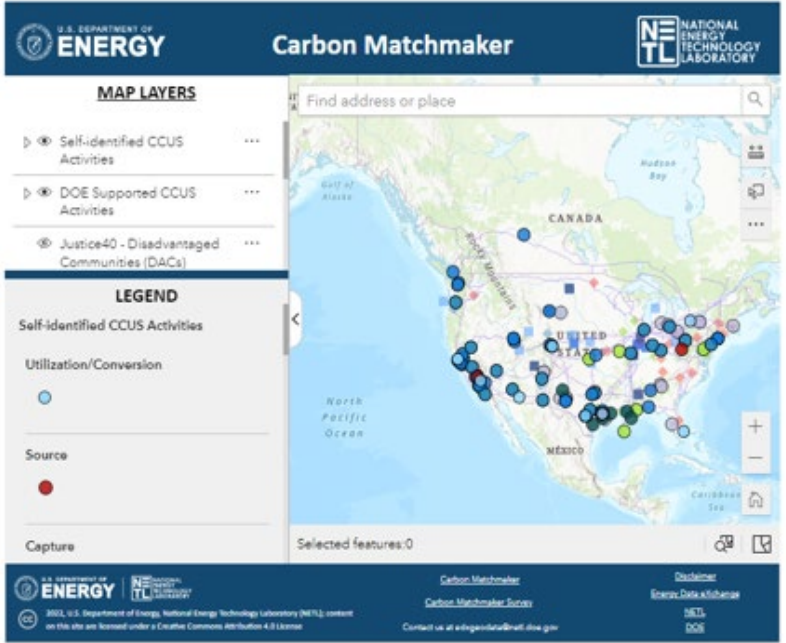
**Carbon Matchmaker Self-Identification Form**

To include your carbon management activity or activities in Carbon Matchmaker, please fill out the [Carbon Matchmaker Form](#).

If your organization has many ongoing or planned activities that would be onerous to enter in the form, or if your activities are difficult to geolocate (such as a transport network), please email the CO2 Matchmaker team at [edxgeodata@netl.doe.gov](mailto:edxgeodata@netl.doe.gov).

This initiative is aligned with the approach of DOE's H2 Matchmaker. Read more information on [H2 Matchmaker](#).

**Carbon Matchmaker Interactive Map (Beta Version)**



The screenshot shows the Carbon Matchmaker Interactive Map interface. It features a search bar at the top right with the text "Find address or place". Below the search bar is a map of the United States with numerous colored markers (blue, green, red, purple) representing different carbon management activities. The map includes labels for "CANADA", "UNITED STATES", and "MEXICO". On the left side, there is a "MAP LAYERS" section with three expandable categories: "Self-identified CCUS Activities", "DOE Supported CCUS Activities", and "Justice40 - Disadvantaged Communities (DACs)". Below the map layers is a "LEGEND" section with three categories: "Self-identified CCUS Activities" (Utilization/Conversion, Source, Capture) and "Selected features: 0". The footer of the map interface includes the U.S. Department of Energy and National Energy Technology Laboratory logos, along with a disclaimer and contact information.

Click [here](#) to open the interactive map in a new browser.

# Designing the Carbon Matchmaker (CMM)

Development included three components:

1. Website

- An energy.gov site that offers context on the project and connects users to items #2 and #3, while ensuring compliance with agency regulations

2. Self Identification Form

- Custom survey form designed to capture self-identified information from organizations with current or near-term carbon capture, source, sink, end-user, infrastructure provider, or other related stakeholder activities

3. Mapping Application

- Pulling from the self identification form responses to populate an interactive map to display activity locations and key information to facilitate user connect and teaming

# Carbon Matchmaker (CMM) Self-Identification Form



- Modeled off DOE's H2 Matchmaker survey
- The CMM form utilizes Survey 123
  - Provides four main sections of questions:
    - Organization Details
    - Activity Specific Questions
    - Activity Details
      - Number of questions based off prior answers
    - Optional Questions
- Once submitted, each record undergoes a QA/QC process by NETL and DOE FECM staff for approval and is uploaded to CMM map

Organization Information

1. Organization Name\*

2. Organization Website\*

3. Organization e-mail address\*  
Generalized e-mail address for your company (i.e., info@company.com or about@company.com)

4. Optional: Provide a Primary Point of Contact Name

5. Optional: Primary Point of Contact e-mail address

# Carbon Matchmaker (CMM) Self-Identification Form



- Modeled off DOE's H2 Matchmaker survey
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**Organization Information**

1. Organization Name\*

2. Organization Website\*

3. Organization e-mail address\*  
Generalized e-mail address for your company (  )

4. Optional: Provide a Primary Point of Contact

5. Optional: Primary Point of Contact

**Activity Specific Questions**

6. What type(s) of carbon capture, use, and storage (CCUS) activities is your organization engaged in within the U.S., focusing on active projects or those that will be by 2027?\*

CO2 Sources/Host Site  CO2 Capture Technology  CO2 Utilization/Conversion

CO2 Storage  Carbon Dioxide Removal (CDR)  CO2 Transport/Infrastructure

Other

**How many sources/host site activities?\*** note: based off your response, you will be asked to answer 8 questions, plus 3 optional questions, for each activity you denote

**How many capture technology activities?\*** note: based off your response, you will be asked to answer 7 questions, plus 4 optional questions, for each activity you denote

**How many utilization/conversion activities?\*** note: based off your response, you will be asked to answer 10 questions, plus 2 optional questions, for each activity you denote



# Carbon Matchmaker (CMM) Self-Identification Form



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    - Organization Details
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    - Activity Details
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**Organization Information**

1. Organization Name\*

2. Organization Website\*

3. Organization e-mail address\*   
Generalized e-mail address for your company (e.g., info@yourcompany.com)

4. Optional: Provide a Primary Point of Contact

5. Optional: Primary Point of Contact Email

**Activity Specific Questions**

6. What type(s) of carbon capture, use, and storage (CCUS) activities is your organization engaged in within the U.S., focusing on active projects or those that will be by 2027?\*

CO2 Sources/Host Site  CO2 Capture Technology  CO2 Utilization/Conversion  
 CO2 Storage  Carbon Dioxide Removal (CDR)  CO2 Transport/Infrastructure  
 Other

How many sources/host site activities?\* note: based off your response, you denote 3 optional questions, for each activity you denote

8. What is the name of the activity or storage site?

9. What is the current status of this activity? (select one)\*  
 Active  Planned  Completed Injection, Active Monitoring  Completed

10. Location of Activity\* Please use the map to represent the location of your activity. To add the location, click the search bar to type an address (can type a street address or a county name) or click on the map (after moving to the right location) to mark your activity's location on the map. This location will be generalized to the county and visualized in the CO2 Matchmaker tool as this activity's location.

11. Optional: Activity specific website (if applicable)

12. How many metric tons per year of CO2 are currently being injected?

activities?\* note: based off your response, plus 4 optional questions, for each activity you denote

on activities?\* note: based off your response, plus 2 optional questions, for each activity you denote

# Carbon Matchmaker (CMM) Self-Identification Form



- Modeled off DOE's H2 Matchmaker survey
- The CMM form utilizes Survey123
  - Provides four main sections of questions:
    - Organization Details
    - Activity Specific Questions
    - Activity Details
      - Number of questions based off prior answers
    - Optional Questions
- Once submitted, each record undergoes a QA/QC process by NETL and DOE FECM staff for approval and is uploaded to CMM map

The image displays four overlapping screenshots of the Carbon Matchmaker Self-Identification Form, showing various sections:

- Organization Information:** Includes fields for Organization Name, Organization Website, Organization e-mail address, and an optional Primary Point of Contact.
- Activity Specific Questions:** Section 6 asks about CCUS activities. It includes checkboxes for CO2 Sources/Host Site, CO2 Capture Technology, CO2 Utilization/Conversion, CO2 Storage, Carbon Dioxide Removal (CDR), CO2 Transport/Infrastructure, and Other. It also asks for the number of sources/host site activities.
- CO2 Storage:** Section 8 asks for the name of the activity or storage site. Section 9 asks for the current status (Active, Planned, Completed Inj). Section 10 asks for the location of the activity. Section 11 asks for activity specific weight. Section 12 asks for the number of metric tons per year injected.
- Additional Optional Questions:** Section 13 asks if the organization identifies as any of the following: Small Disadvantaged Business (SDB), Minority-Owned Business, Women-Owned Small Business, Service-Disabled Veteran-Owned Small Business (SDVOSB), Federally Recognized Tribe, Tribally-Owned Entity, Located within a Historically Underutilized Business Zone (HUBZone), Located within a community with less than 10,000 residents, or Located within a disadvantaged community (DAC). A link is provided for determining DAC status.

# Carbon Matchmaker (CMM) Utilization

<https://www.energy.gov/fecm/carbon-matchmaker>

Over the past year:

9,700+  
webpage  
visits

15,000+  
map visits

120+  
Organizations  
represented

350+  
Self-identified  
carbon  
activities

8  
Sources

92  
Capture

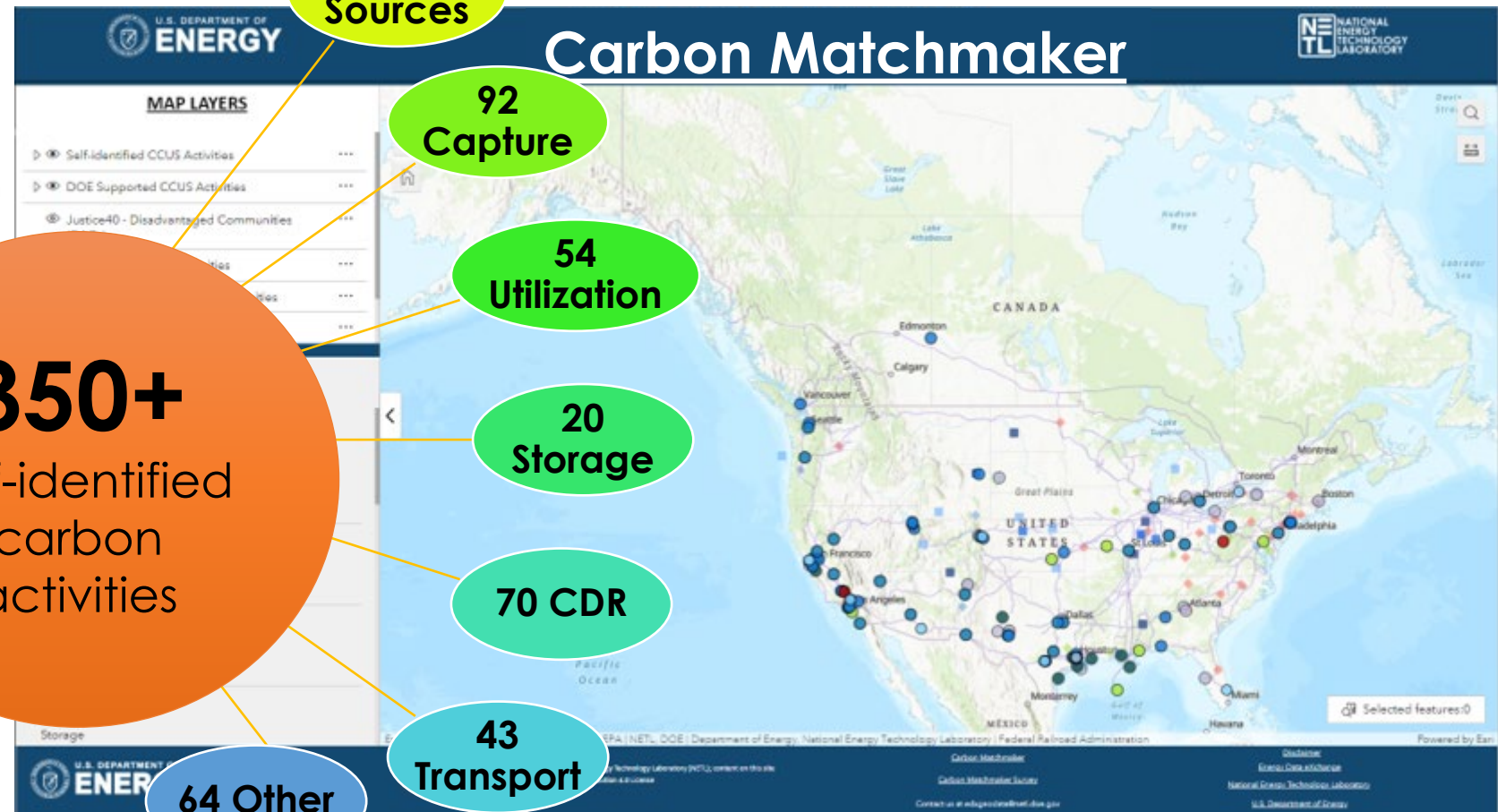
54  
Utilization

20  
Storage

70 CDR

43  
Transport

64 Other

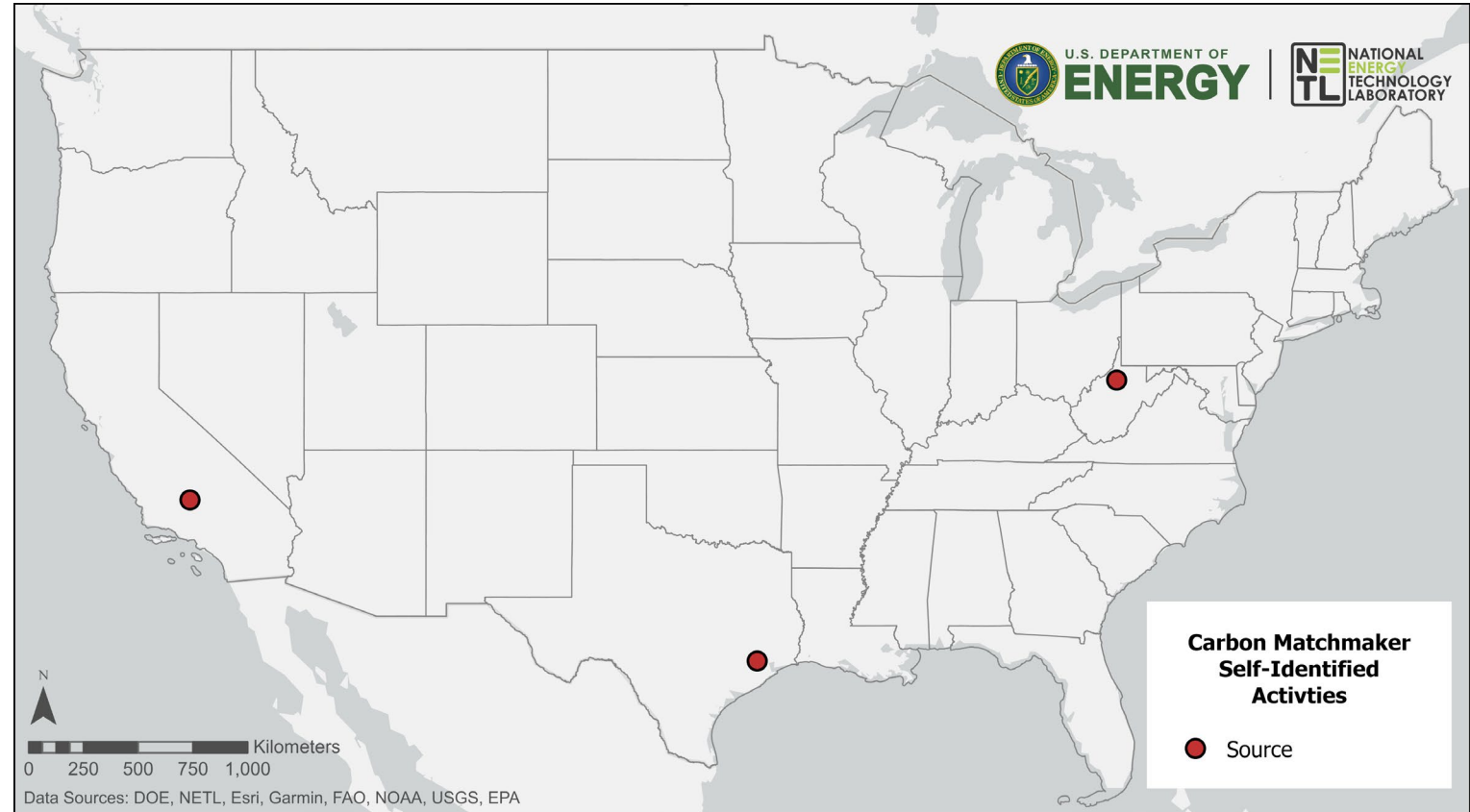
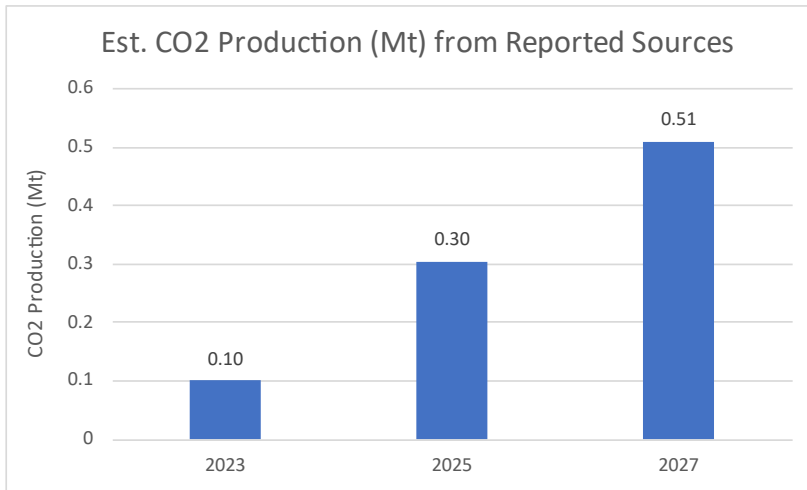


Since release on July 13, 2022, as of 8/1/2023

# Summary of Self-Identified Sources\*

\*Approved, released activities

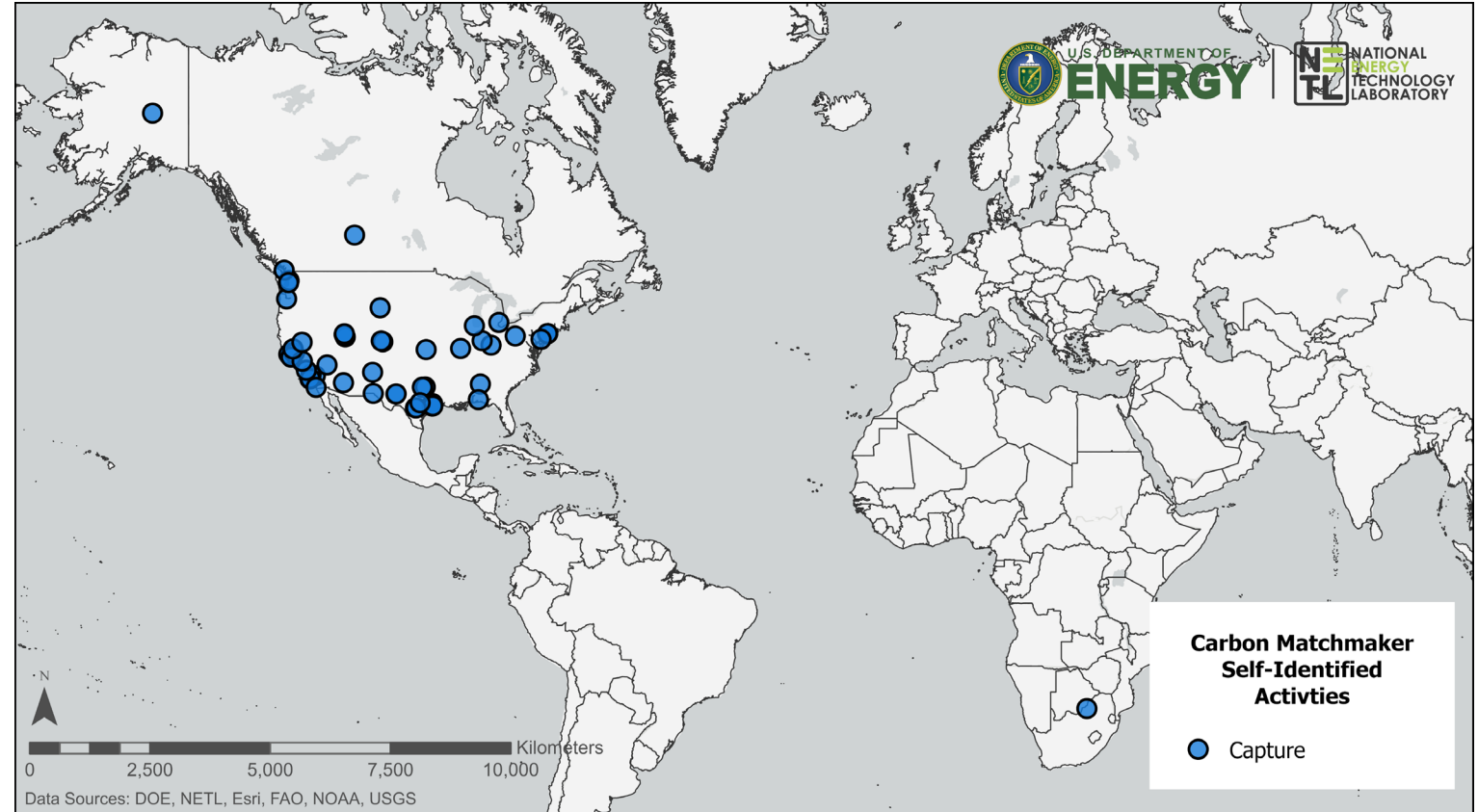
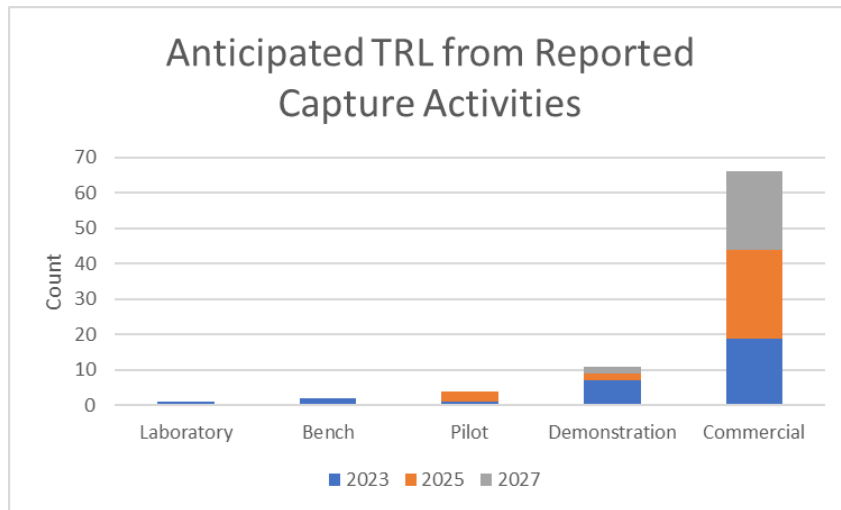
- Three organizations reporting two planned and one active project
- CO<sub>2</sub> production reported from waste (landfills and woody biomass) and power plant industry sources



# Summary of Self-Identified Capture Activities

*\*Approved, released activities*

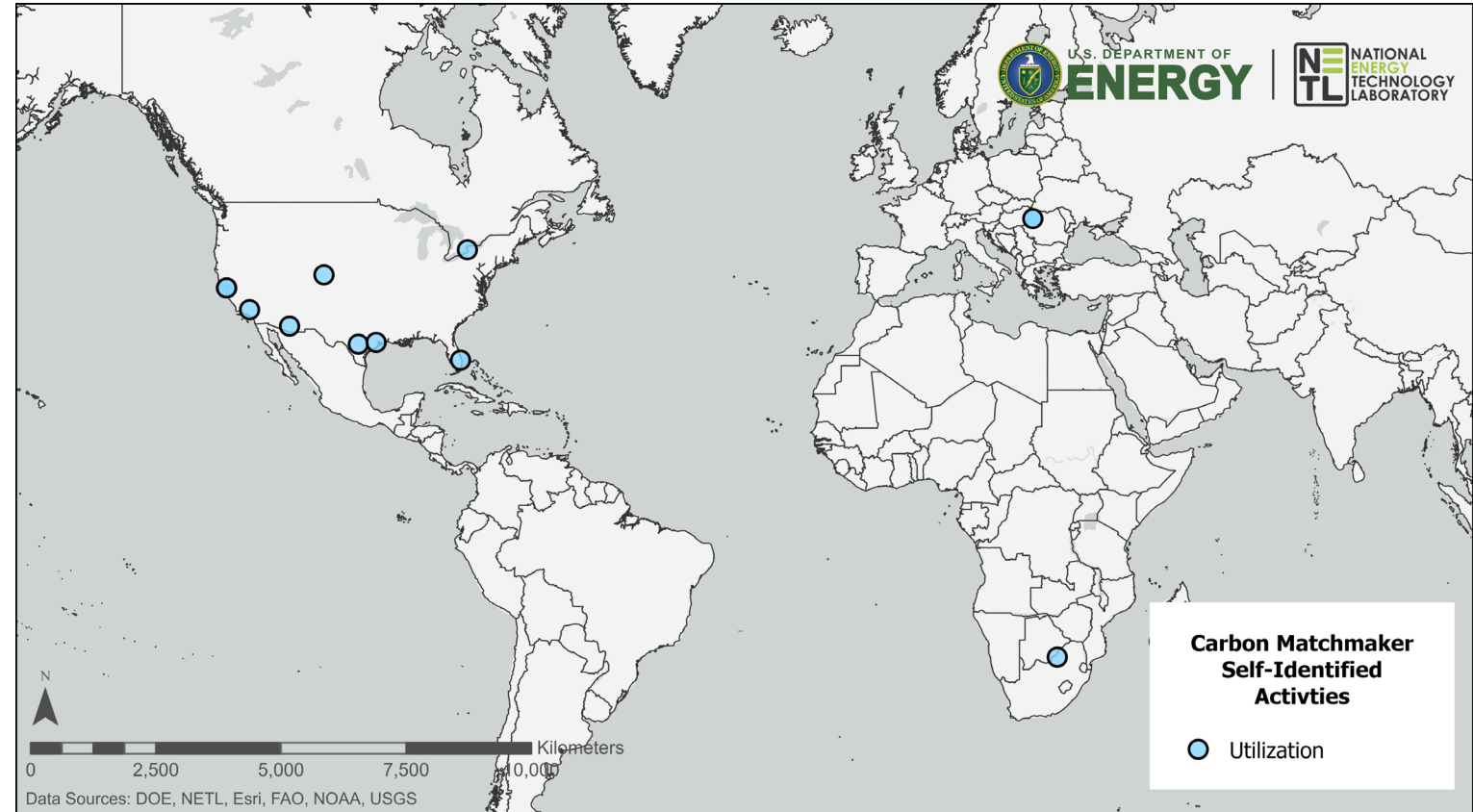
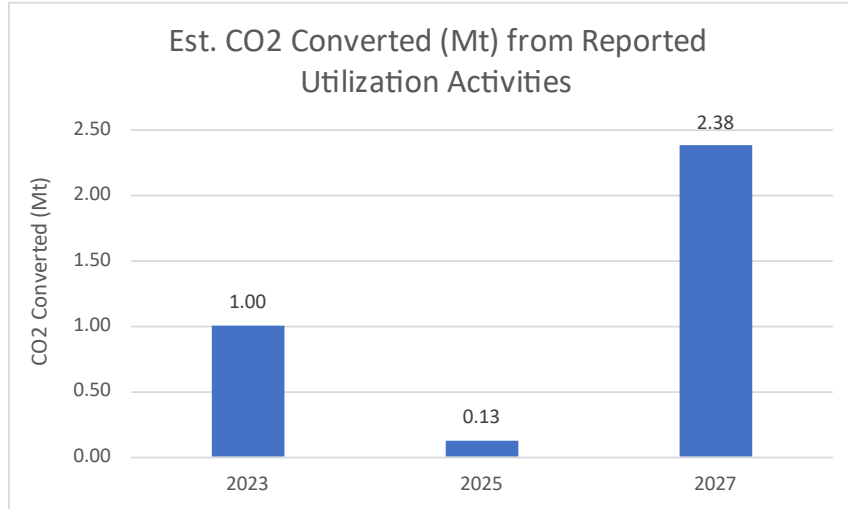
- Nineteen organizations reporting 33 planned, 22 active projects, and two completed projects
- Majority of project report using sorbents and solvents as their technology



# Summary of Self-Identified Utilization Activities\*

\*Approved, released activities

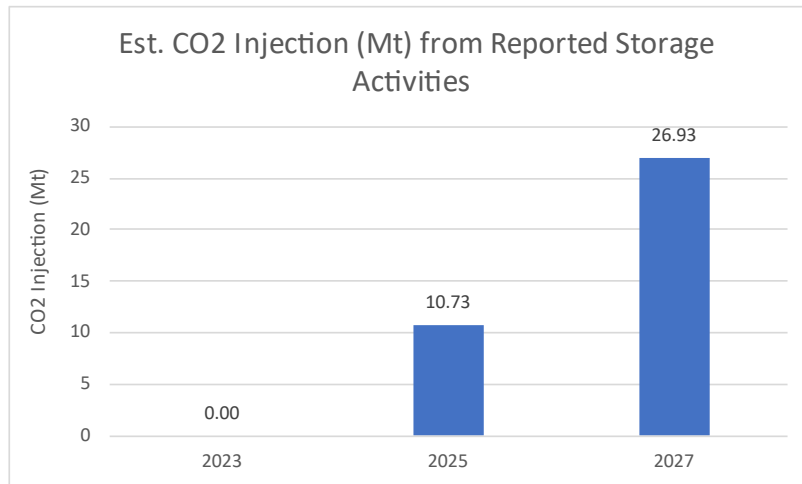
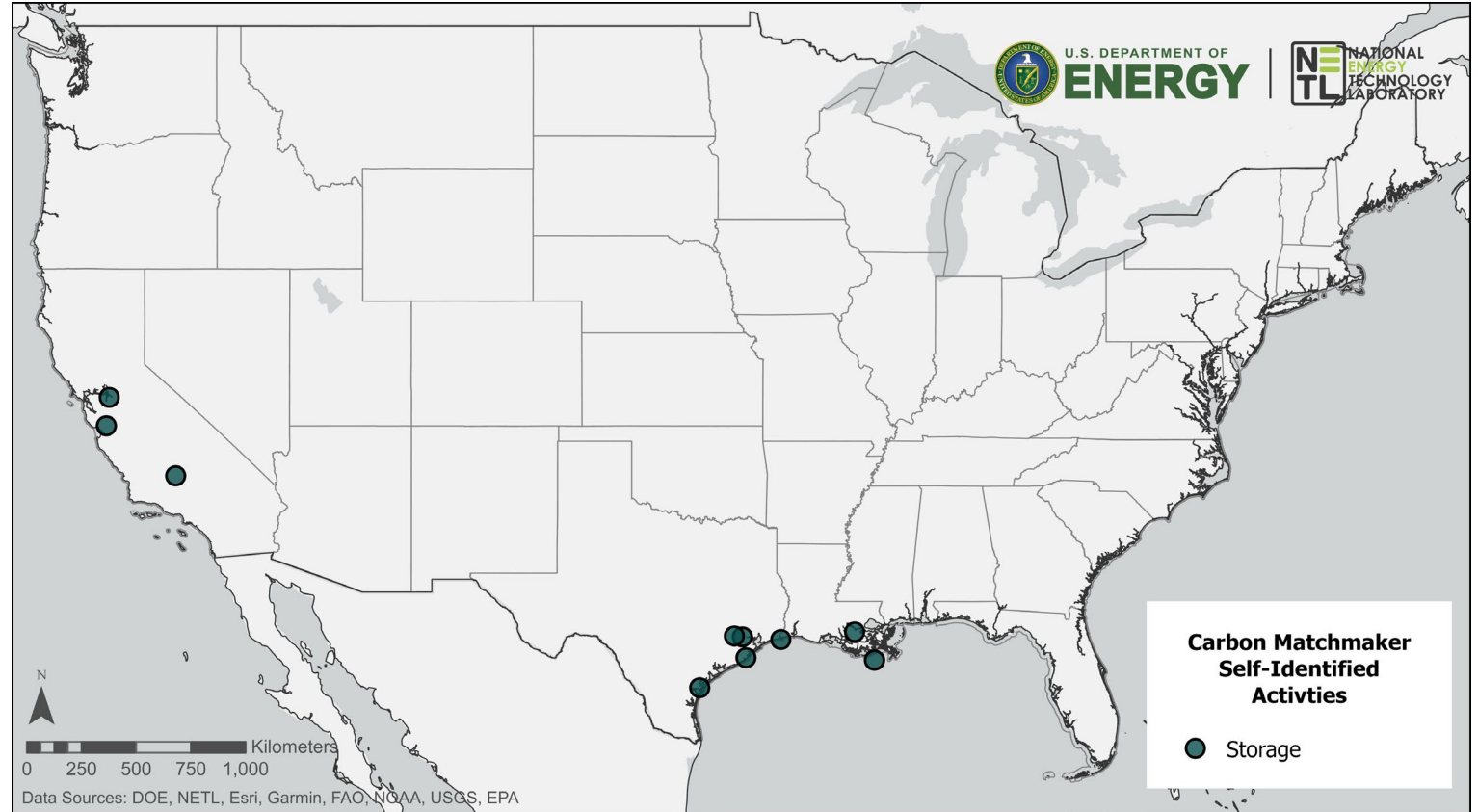
- Eight organizations reporting 10 planned and four active projects
- Twelve projects report utilizing catalytic conversion; two mineralization; and one with biological uptake as their conversion pathway



# Summary of Self-Identified Storage Activities\*

\*Approved, released activities

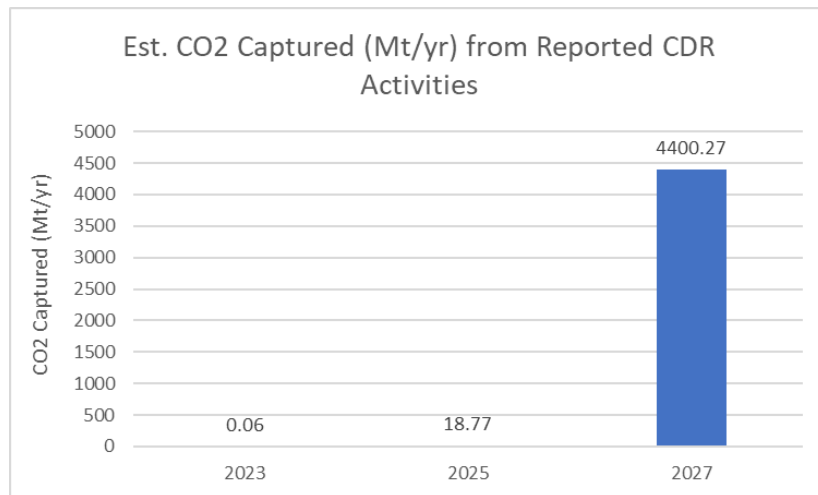
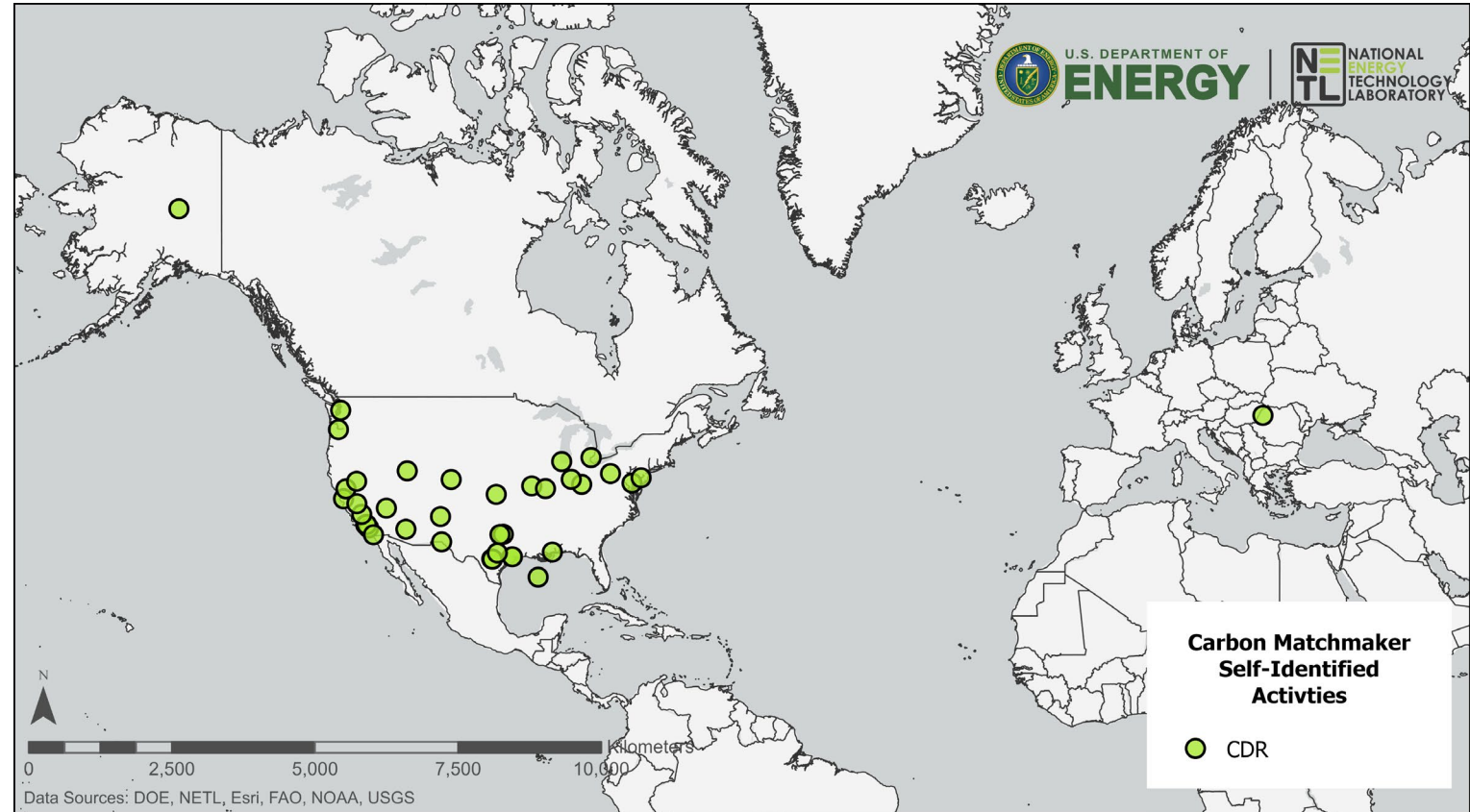
- Six organizations reporting eight planned, one completed injection and active monitoring, and one completed project
- Details show an average of 15 years of planned injection and 15.6 years of planned post-injection site care (PISC) across the 10 projects reported



# Summary of Self-Identified CDR Activities\*

\*Approved, released activities

- Eleven organizations reporting 28 planned, nine active, and one completed project
- Most projects report they will use Direct Air Capture with Storage (DACs), but a few have reported they will use Ocean-based CDR and Biomass Carbon Removal and Storage

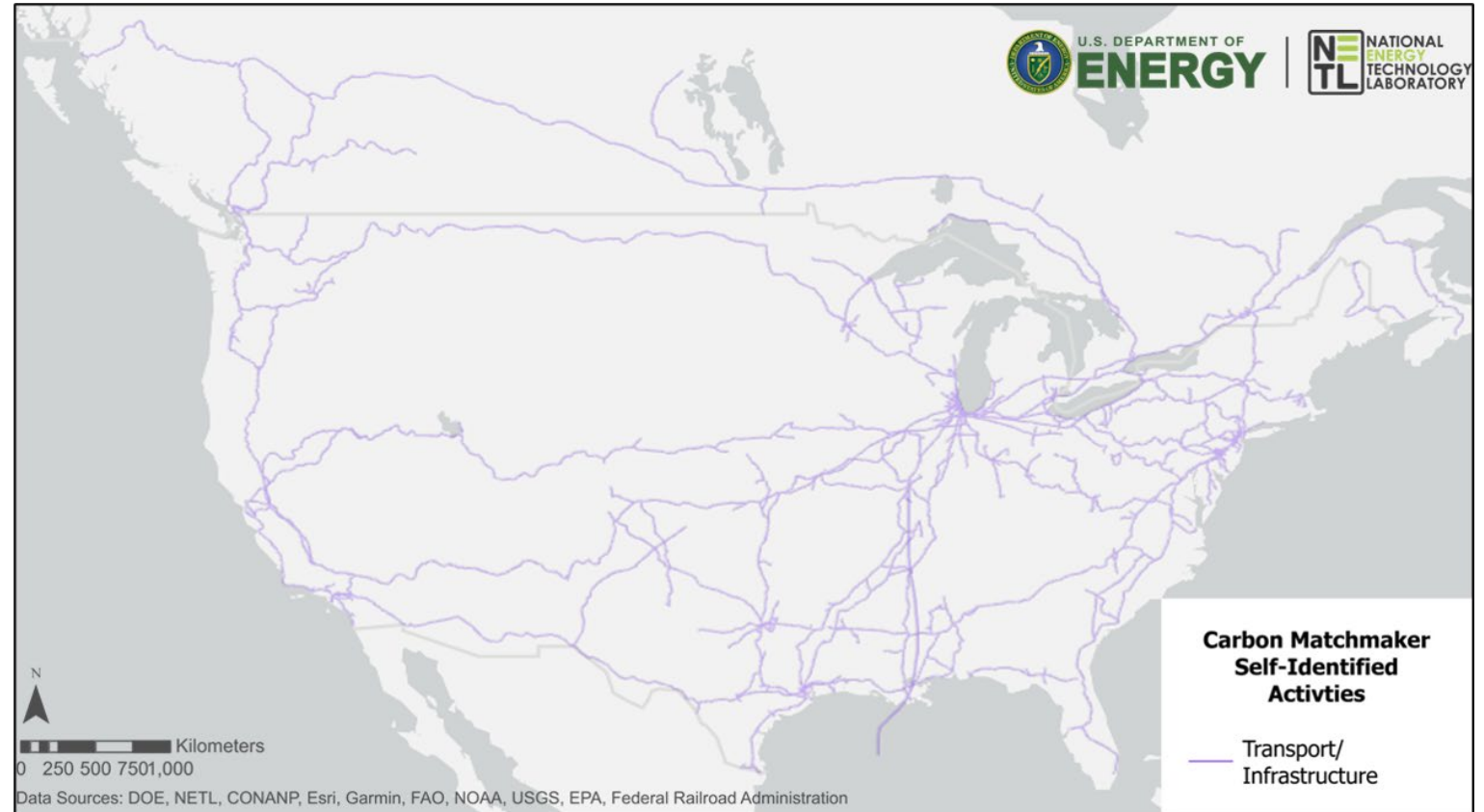




# Summary of Self-Identified Transport Activities\*

\*Approved, released activities

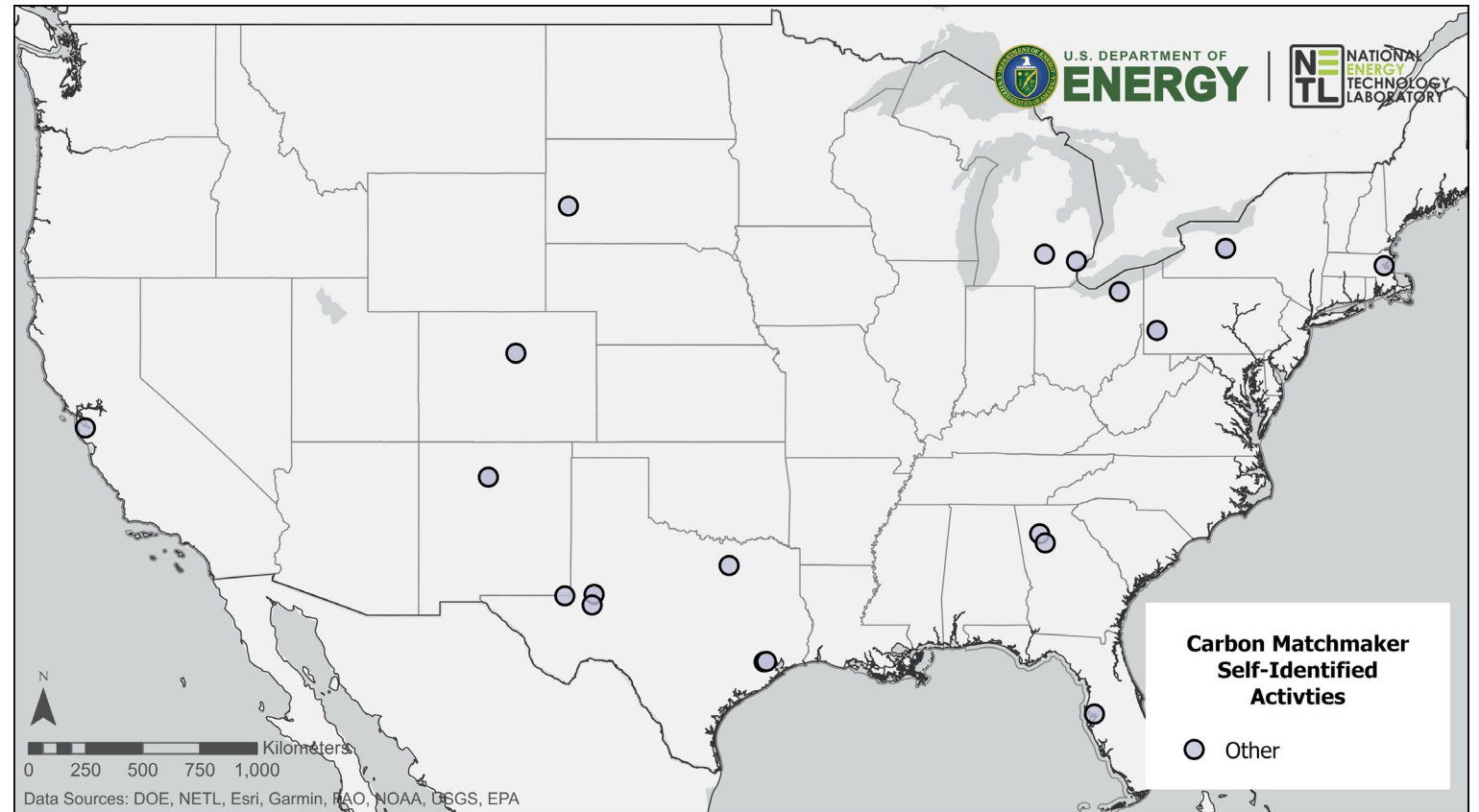
- Five organizations reporting five planned and two active projects
- Include projects with Vessels, Rail, and Pipelines as the listed transport mode
- Reported CO<sub>2</sub> transport capacity totals 890 Mt/yr



# Summary of Self-Identified Other Activities\*

\*Approved, released activities

- Eighteen organizations reporting 33 other types of CCUS and CDR related activities
- Includes a mix of academia, research, government, engineering, procurement, and construction (EPC) companies, financiers, project developers/managers, service companies, landowners, workforce development, and environmental justice communities



- Application Updates
  - Add pre-defined map filters
  - Provide high-level summaries for each CMM activity type
  - Update information on DOE-funded projects
  - Enhance visualizations and symbology
    - Representation for wide-spread activities
    - Leverage feature services and data caches to reduce load times
- Further enhance the QA/QC process
  - Move away from static excel files for individual review to a more dynamic, shared reviewer approach
  - Finalize scripts to automate upload of new records to public CMM

# Acknowledgments

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This work was performed in support of the U.S. Department of Energy's (DOE) Fossil Energy and Carbon Management's Geo-Analysis and Monitoring Team and was developed jointly through the U.S. DOE Office of Fossil Energy and Carbon Management's EDX4CCS (FWP DE-FE 1025007) Project, in part, from the Bipartisan Infrastructure Law.

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# NETL RESOURCES

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