

CONNECT Toolkit: Carbon Management Projects Database and Explorer



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Carbon Management Projects (CONNECT) Toolkit

Value Proposition

Challenge: Lack of a centralized repository of authoritative information detailing government investments in technologies spanning the carbon management value chain; lack of means to view these investments with zoom-in/out capabilities and in policy, social, regulatory, infrastructural and natural resource contexts

Value:

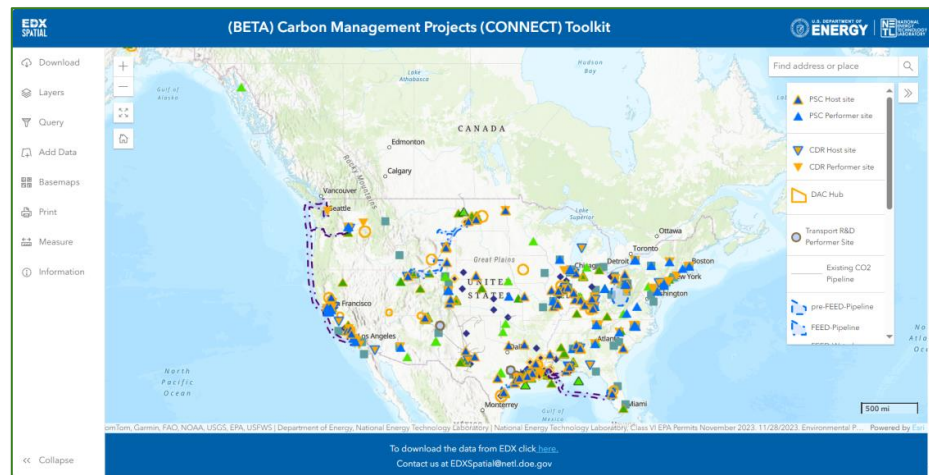
- Provide the public with a single-point access to integrated and regularly curated information on federally funded carbon management research, development, and demonstration (RD&D) projects in the United States
- Enable users to drill down into project details, generate national/regional/county-level maps, and perform other analytics
- Serve as a hub of public information on these projects and related federal initiatives, Class VI permits/applications, existing infrastructure, point-source emissions (EPA's FLIGHT), natural resources, communities, and protected lands

Objective:

- Build and automate the update of a comprehensive carbon management project database in EDX with authoritative information
- Develop intuitive and interactive dashboards to accelerate assessment of federal investment in carbon management technologies; inspire data-driven insights

Ultimate Product:

- Database for filtering and download on EDX
- Web application for visualizing/exploring carbon management RD&D activities in user desired context
- Tutorial package for better understanding of technology development status, RD&D opportunities against environmental and social justice factors, etc.



Existing Web-Based Interactive/Static Mapping Tools

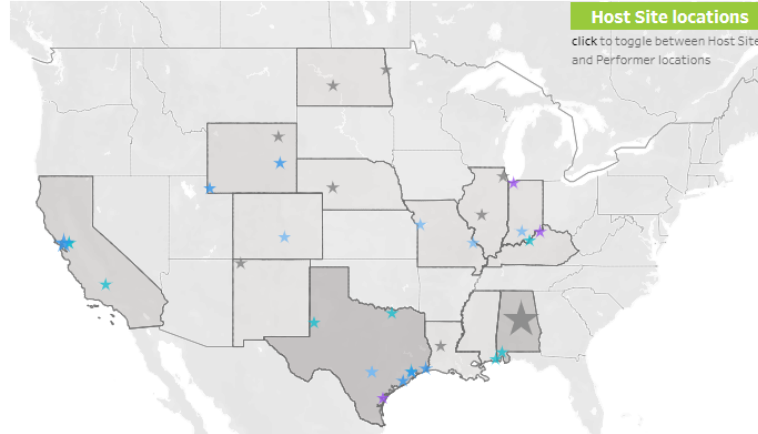


CARBON CAPTURE Interactive Project Map

This interactive map displays active and inactive NETL's Point Source Carbon Dioxide Reduction projects across the United States.

Data as of 4/2/2024

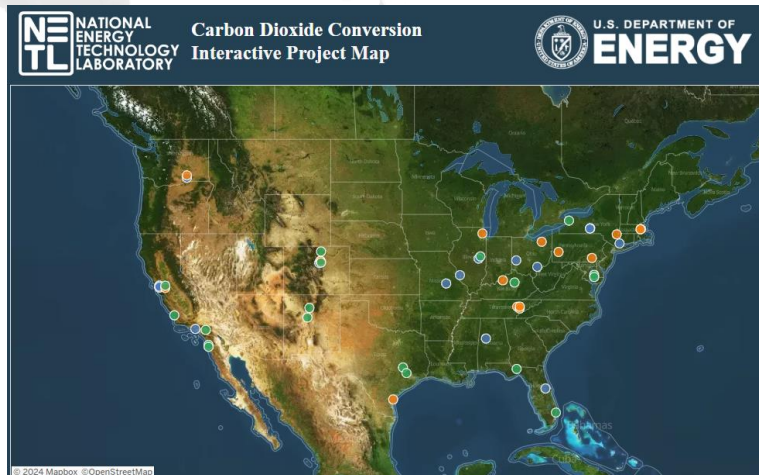
RESET the dashboard by selecting the REVERT button at the bottom right of the dashboard, or by refreshing the browser window



© 2024 Mapbox © OpenStreetMap

Project Status
(All)

Ending Scale
(All)

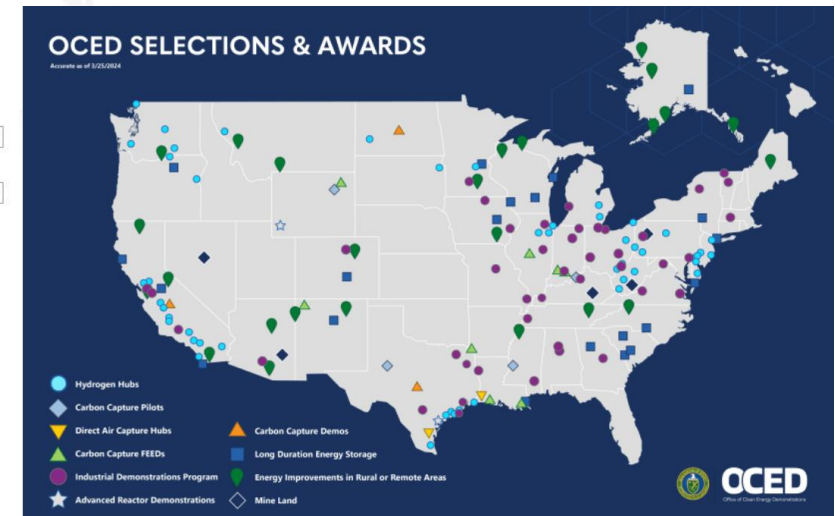


CARBON TRANSPORT & STORAGE Interactive Project Map

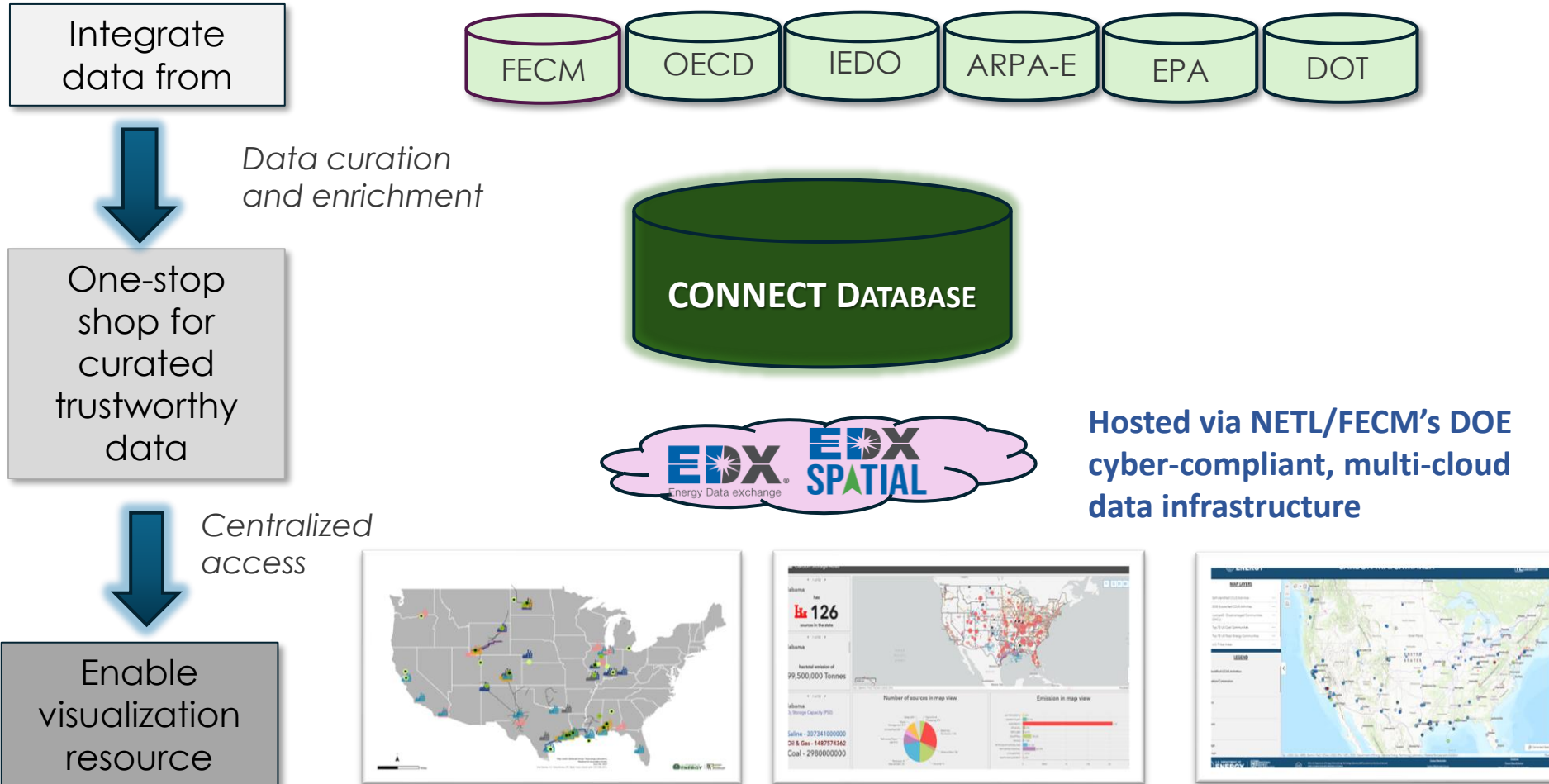


-Hover over bar graphs and map to for additional information.

Technology Area (All)	Location Type (All)
Key Technology (All)	Applicant Type (All)



CONNECT Toolkit- Database and Explorer

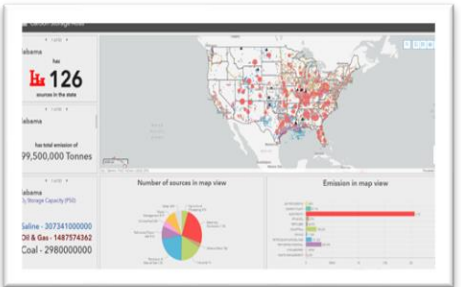


BENEFITS:

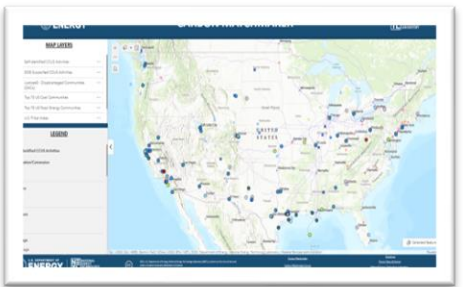
- Saves time and money for collecting desired information from multiple sources
- Access to authoritative data and links to more details
- Quick customized maps for presentations and reports
- Interactive applications for advanced analysis
- Evaluate in relation to other federal initiatives, environmental justice-social justice (EJ-SJ), etc.



On-Demand Static Maps.



Interactive Exploratory Applications.

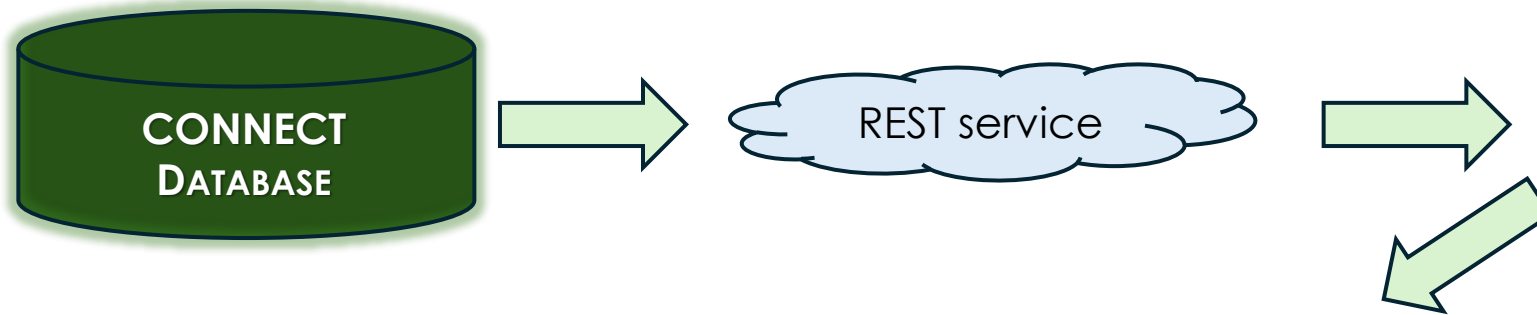


Advanced Applications with Spatio-Temporal Analytical Capabilities.

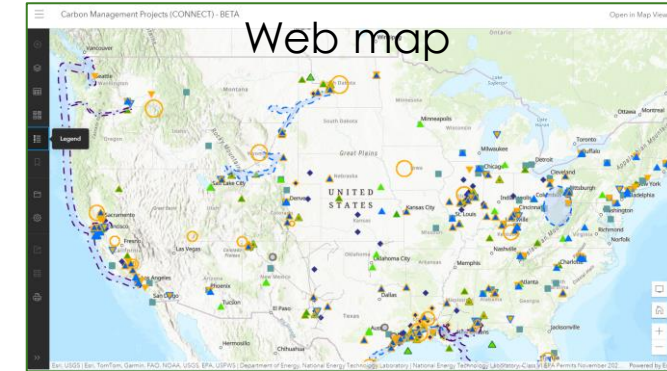
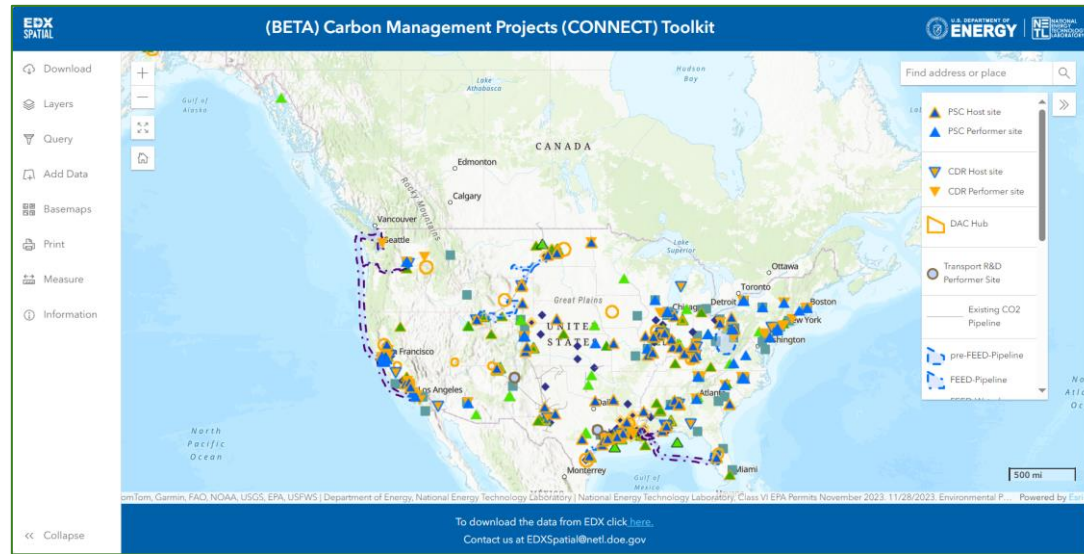
- Database template for key federally funded carbon management projects
- Major categories in database:
 - Technical Details
 - Title, technology area, technology application sector, project ending scale
 - Quantity of CO₂ captured/transported/stored, CO₂ offtake, pipeline length, project start and completion date
 - Organizations and Locations
 - Prime performer and project host site names and locations
 - Funding
 - Program office, funding source, award status, total project cost, federal and performer share
 - Project Description

Workflow

Database to CONNECT Explorer



CONNECT
Explorer

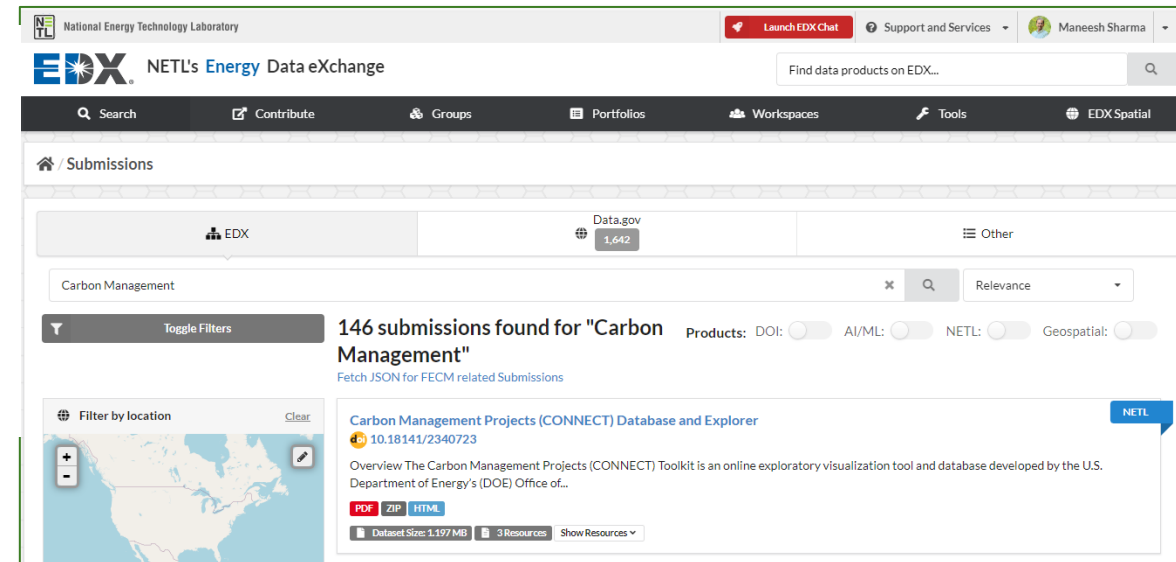
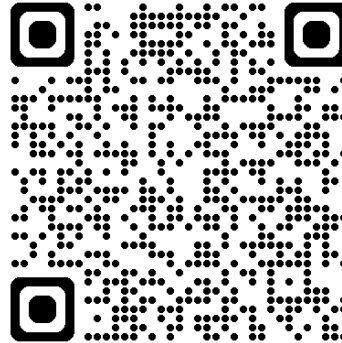


- Web application developed on ESRI platform
- Custom web application using Calcite programming language
 - Allows more flexibility for custom web application
 - Custom tool development
- Allows for consumption of REST services in other applications based on their needs

CONNECT Toolkit Access

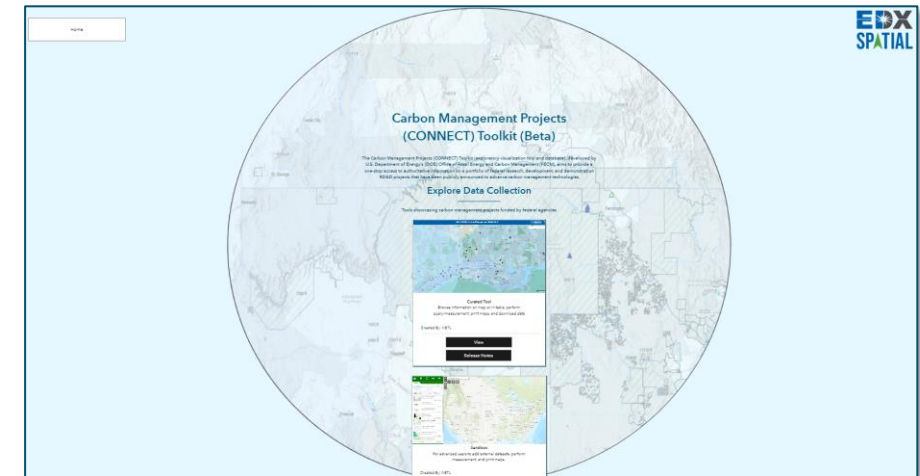
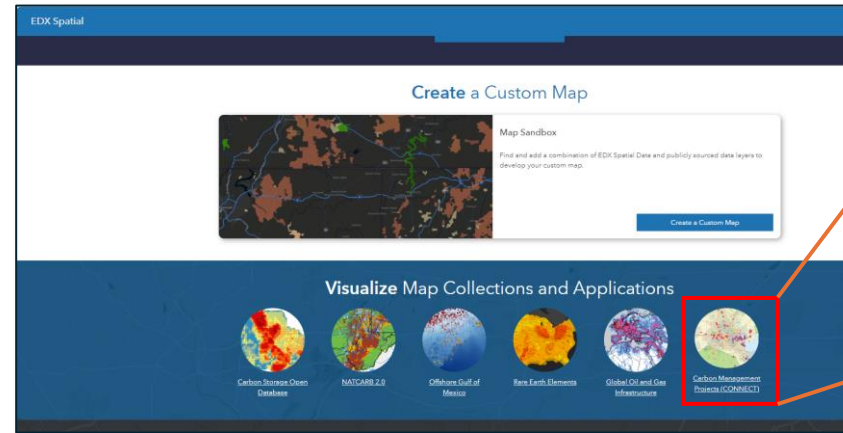
Available on EDX

- EDX- Access CONNECT toolkit from EDX landing page
 - Search key word – “Carbon Management” or “CONNECT”
 - [Carbon Management Projects \(CONNECT\) Database and Explorer - Submissions - EDX \(doe.gov\)](https://www.doe.gov)
- EDX landing page contains
 - Project information
 - Release notes
 - CONNECT Database
 - Geodatabase
 - Csv files
 - CONNECT Explorer
 - Link directs user to EDX Spatial landing page



CONNECT Explorer

- EDX Spatial
 - Hosted on EDX Spatial (edxspatial.doe.gov)
 - Landing page contains
 - CONNECT explorer
 - Training videos
 - Link to EDX



CONNECT Toolkit Explorer

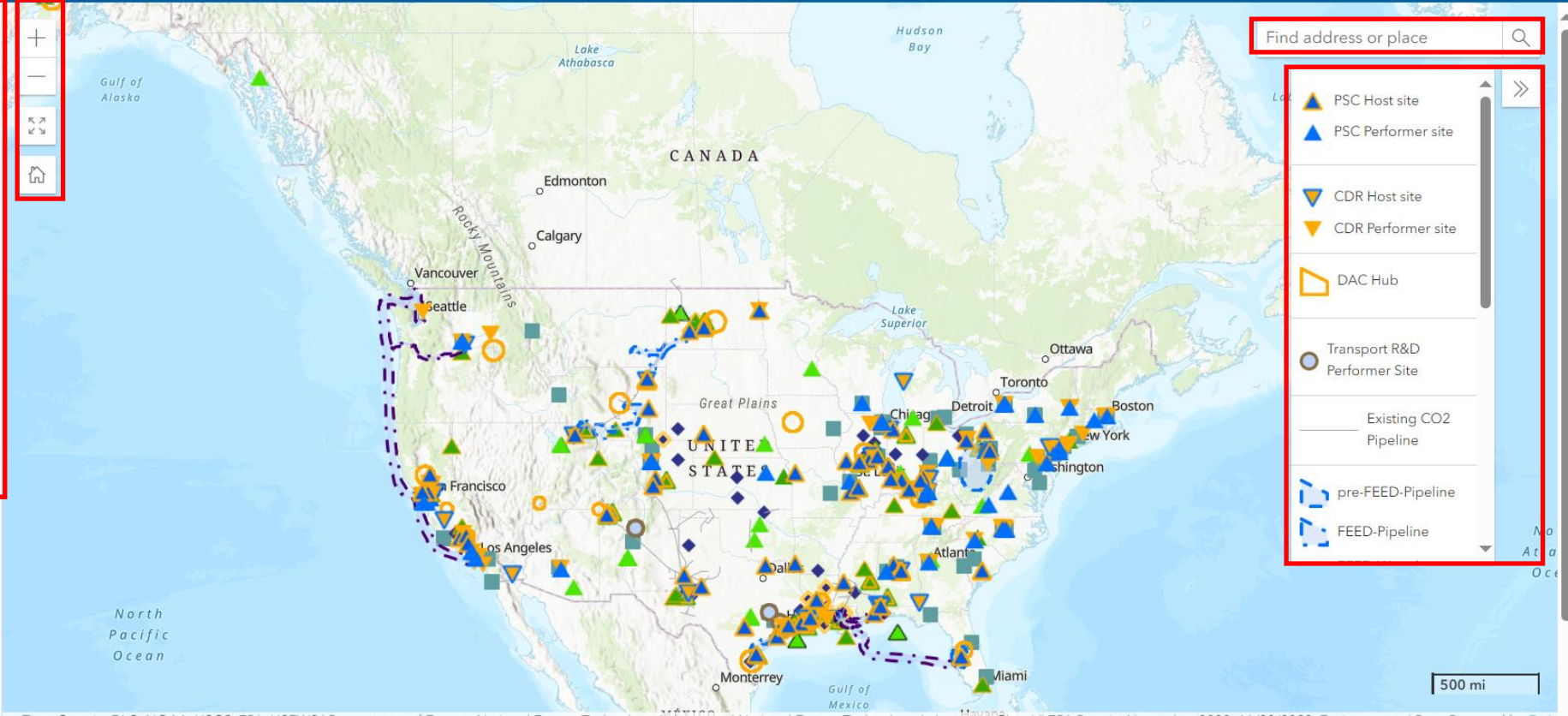
EDX SPATIAL (BETA) Carbon Management Projects (CONNECT) Toolkit

U.S. DEPARTMENT OF ENERGY | NATIONAL ENERGY TECHNOLOGY LABORATORY

Find address or place

- PSC Host site
- PSC Performer site
- CDR Host site
- CDR Performer site
- DAC Hub
- Transport R&D Performer Site
- Existing CO2 Pipeline
- pre-FEED-Pipeline
- FEED-Pipeline

Download
Layers
Query
Add Data
Basemaps
Print
Measure
Information

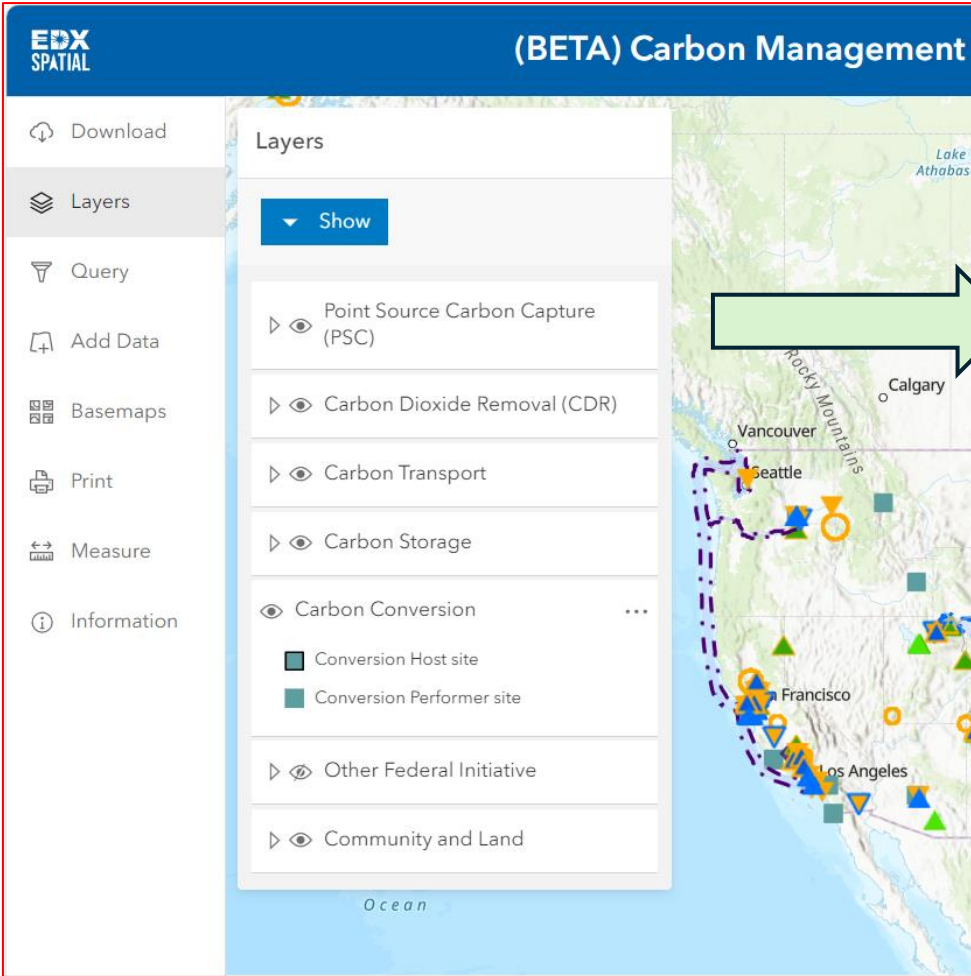


500 mi

TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS | Department of Energy, National Energy Technology Laboratory | National Energy Technology Laboratory, Class VI EPA Permits November 2023. 11/28/2023. Environmental P... Powered by Esri

To download the data from EDX click [here](#).
Contact us at EDXspatial@netl.doe.gov

CONNECT Toolkit Explorer



EDX SPATIAL (BETA) Carbon Management

Download

Layers

Query

Add Data

Basemaps

Print

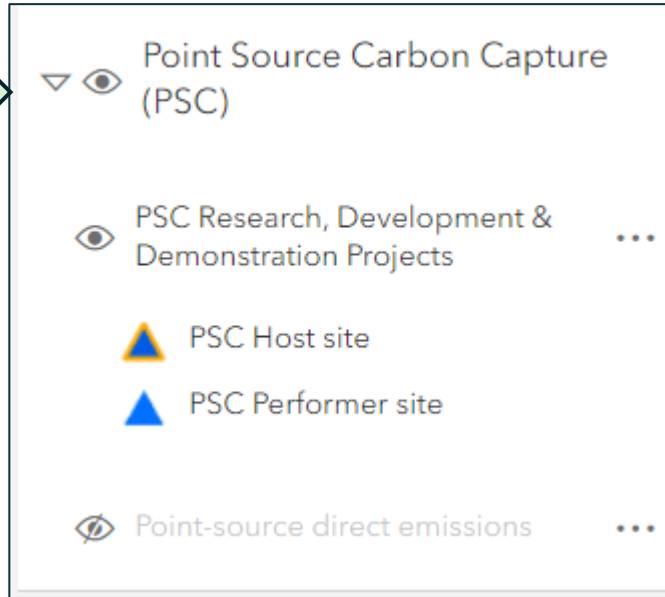
Measure

Information

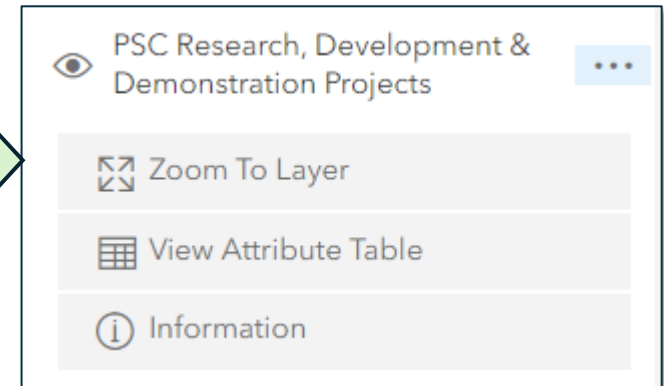
Layers

Show

- Point Source Carbon Capture (PSC)
- Carbon Dioxide Removal (CDR)
- Carbon Transport
- Carbon Storage
- Carbon Conversion ...
 - Conversion Host site
 - Conversion Performer site
- Other Federal Initiative
- Community and Land



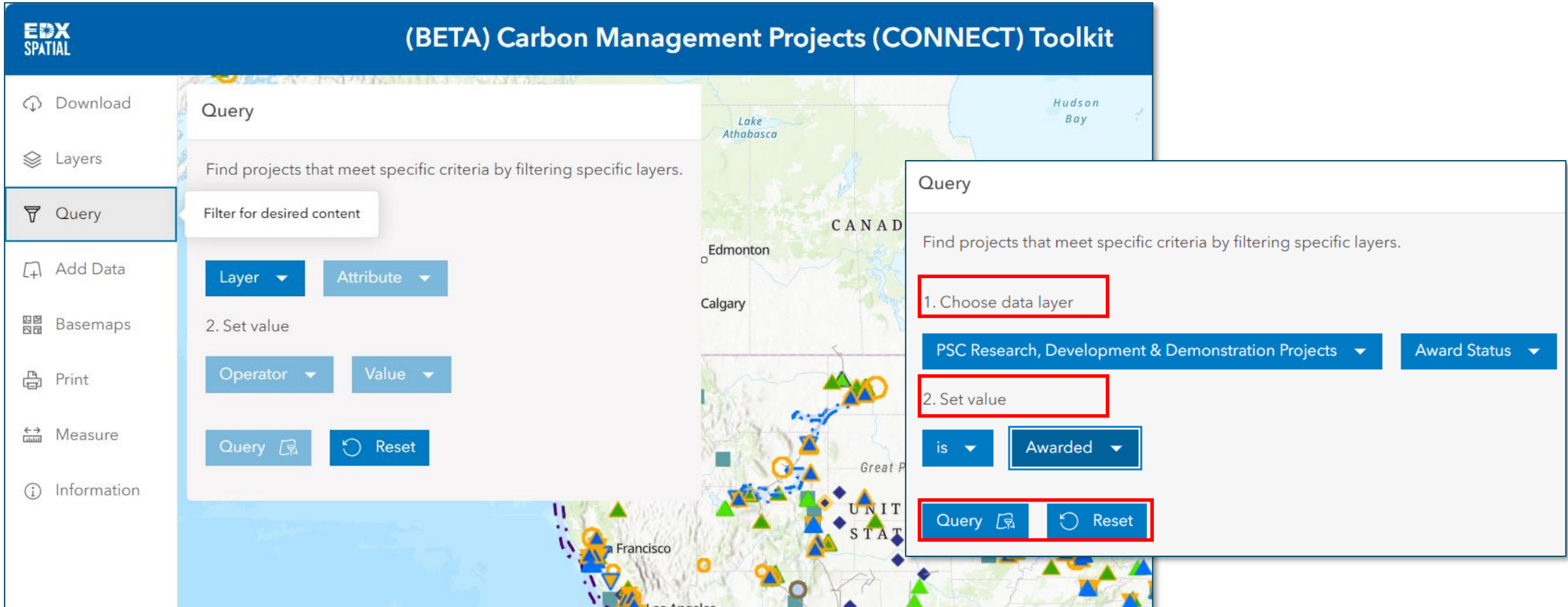
- Point Source Carbon Capture (PSC)
- PSC Research, Development & Demonstration Projects ...
- PSC Host site
- PSC Performer site
- Point-source direct emissions ...



- PSC Research, Development & Demonstration Projects ...
- Zoom To Layer
- View Attribute Table
- Information

CONNECT Toolkit Explorer

Query Tool



EDX SPATIAL (BETA) Carbon Management Projects (CONNECT) Toolkit

Query


Find projects that meet specific criteria by filtering specific layers.

Filter for desired content

Layer ▾ Attribute ▾

2. Set value

Operator ▾ Value ▾

Query  Reset

Query


Find projects that meet specific criteria by filtering specific layers.

1. Choose data layer

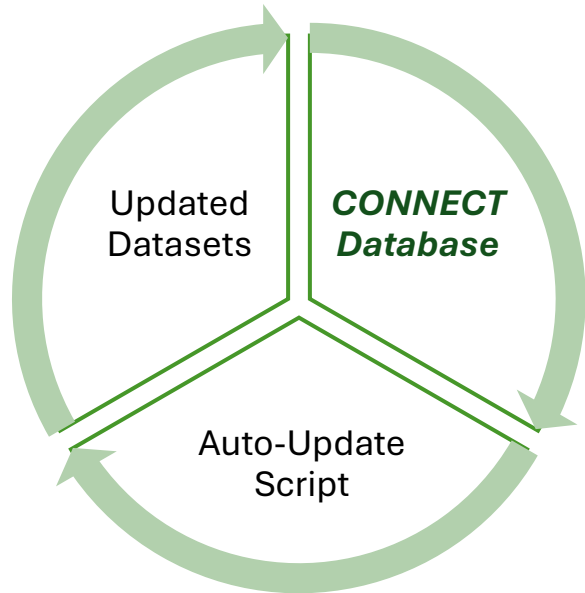
PSC Research, Development & Demonstration Projects ▾ Award Status ▾

2. Set value

is ▾ Awarded ▾

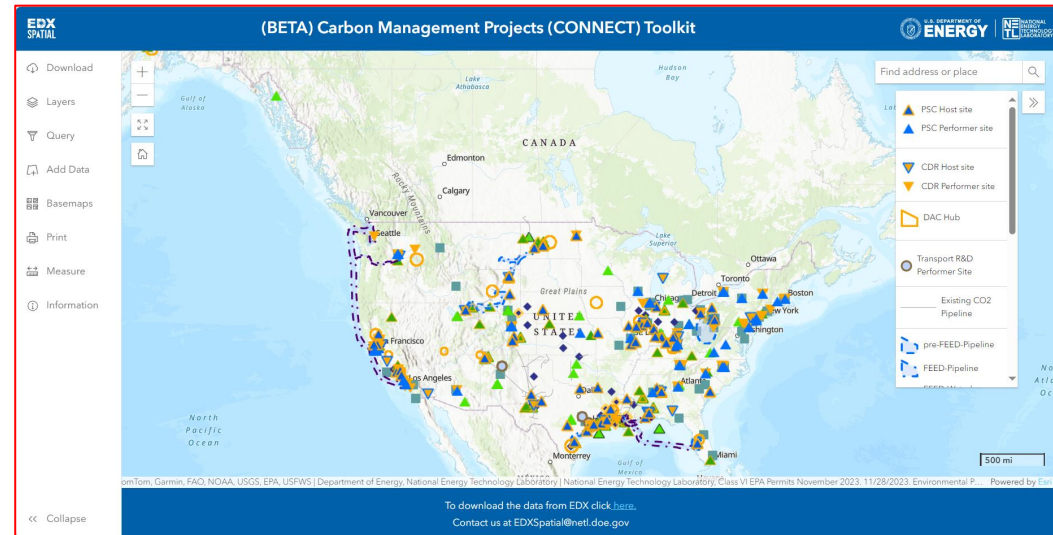
Query  Reset

Script- Auto Update Database



Auto-Update Script for various data sources.

CONNECT Explorer



Update Explorer - Advanced functionality; including support for advanced data queries and output of stylized reports.

Integrate data and dashboard into EDX DisCO₂ver Platform for user access.



Demo Session



DEMO & POSTER SESSION

TUESDAY, AUGUST 6, 2024

5:45 PM - 7:45PM

BALLROOM GALLERY

CONNECT Toolkit Carbon Management Projects Database and Explorer



CARBON TRANSPORT & STORAGE DATA AND
INNOVATION TO BRIDGE THE DIGITAL DIVIDE



Acknowledgments



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The Office of Fossil Energy and Carbon Management

Achieving Net-Zero Emissions



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