

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:

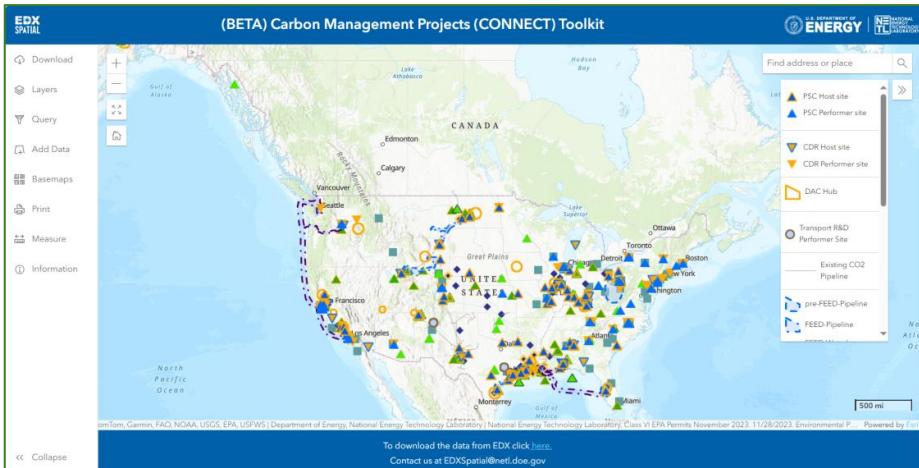
- Provide the public with a single-point access to integrated and regularly curated information on federally funded carbon management research, development, and demonstration (RD&D) projects in the United States
- Enable users to drill down into project details, generate national/regional/county-level 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.

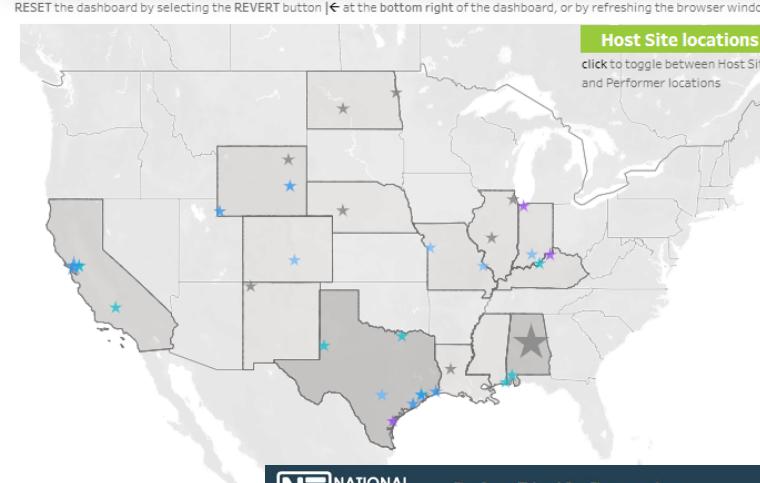


Existing Web-Based Interactive/Static Mapping Tools



CARBON CAPTURE Interactive Project Map

Data as of 4/2/2024



This interactive map displays active and inactive NETL's Point Sour Carbon Dioxide Re却捕集 projects across the United States.



CARBON TRANSPORT & STORAGE Interactive Project Map



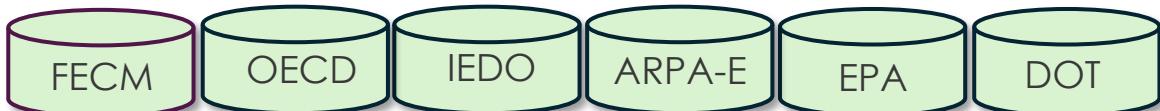
OCED SELECTIONS & AWARDS



CONNECT Toolkit- Database and Explorer



Integrate data from



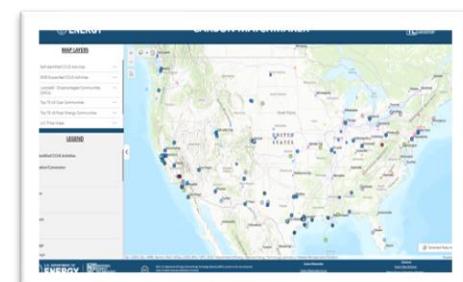
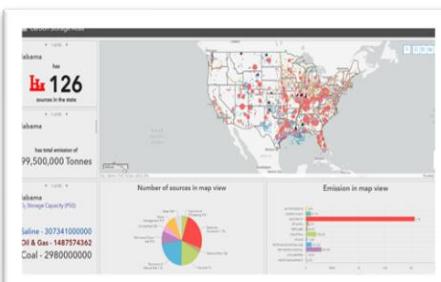
Data curation and enrichment

One-stop shop for curated trustworthy data

CONNECT DATABASE



Hosted via NETL/FECM's DOE cyber-compliant, multi-cloud data infrastructure



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.

CONNECT Database – Project Information Template



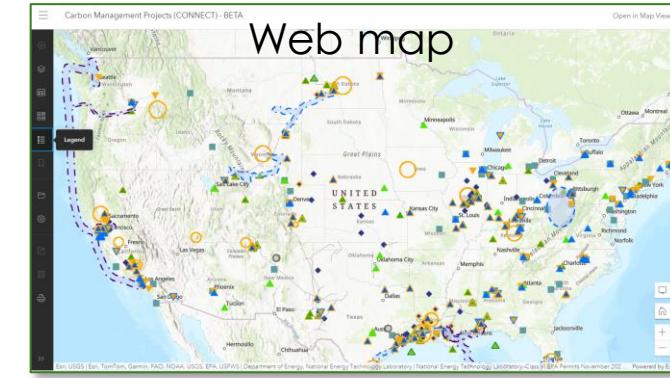
- Database template for key federally funded carbon management projects
- Major categories in database:
 - Technical Details
 - Title, technology area, technology application sector, project ending scale
 - Quantity of CO₂ captured/transported/stored, CO₂ offtake, pipeline length, project start and completion 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

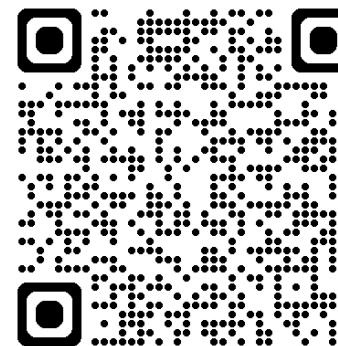


CONNECT Toolkit Access



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 \(doe.gov\)](#)
- EDX landing page contains
 - Project information
 - Release notes
 - CONNECT Database
 - Geodatabase
 - Csv files
 - CONNECT Explorer
 - Link directs user to EDX Spatial landing page



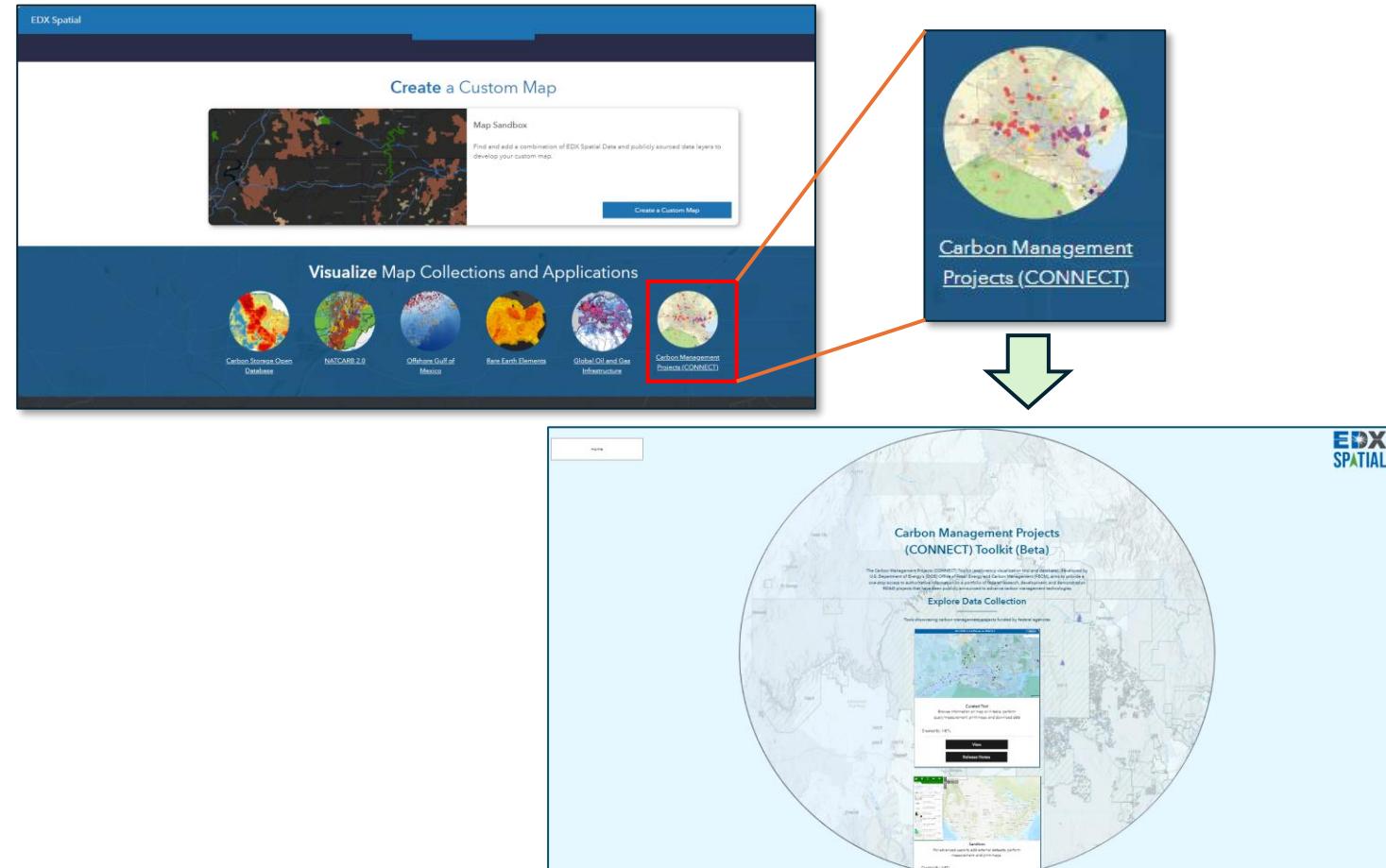
The screenshot shows the EDX interface with the following details:

- Header:** National Energy Technology Laboratory, EDX (NETL's Energy Data eXchange), Launch EDX Chat, Support and Services, Maneesh Sharma.
- Search Bar:** Find data products on EDX...
- Breadcrumbs:** / Submissions
- Filters:** EDX, Data.gov (1,642), Other, Carbon Management, Toggle Filters.
- Results:** 146 submissions found for "Carbon Management".
- Overview:** Carbon Management Projects (CONNECT) Database and Explorer, DOI: 10.18141/2340723, Overview: The Carbon Management Projects (CONNECT) Toolkit is an online exploratory visualization tool and database developed by the U.S. Department of Energy's (DOE) Office of...
- Download Options:** PDF, ZIP, HTML.
- Dataset Info:** Dataset Size: 1.197 MB, 3 Resources, Show Resources.

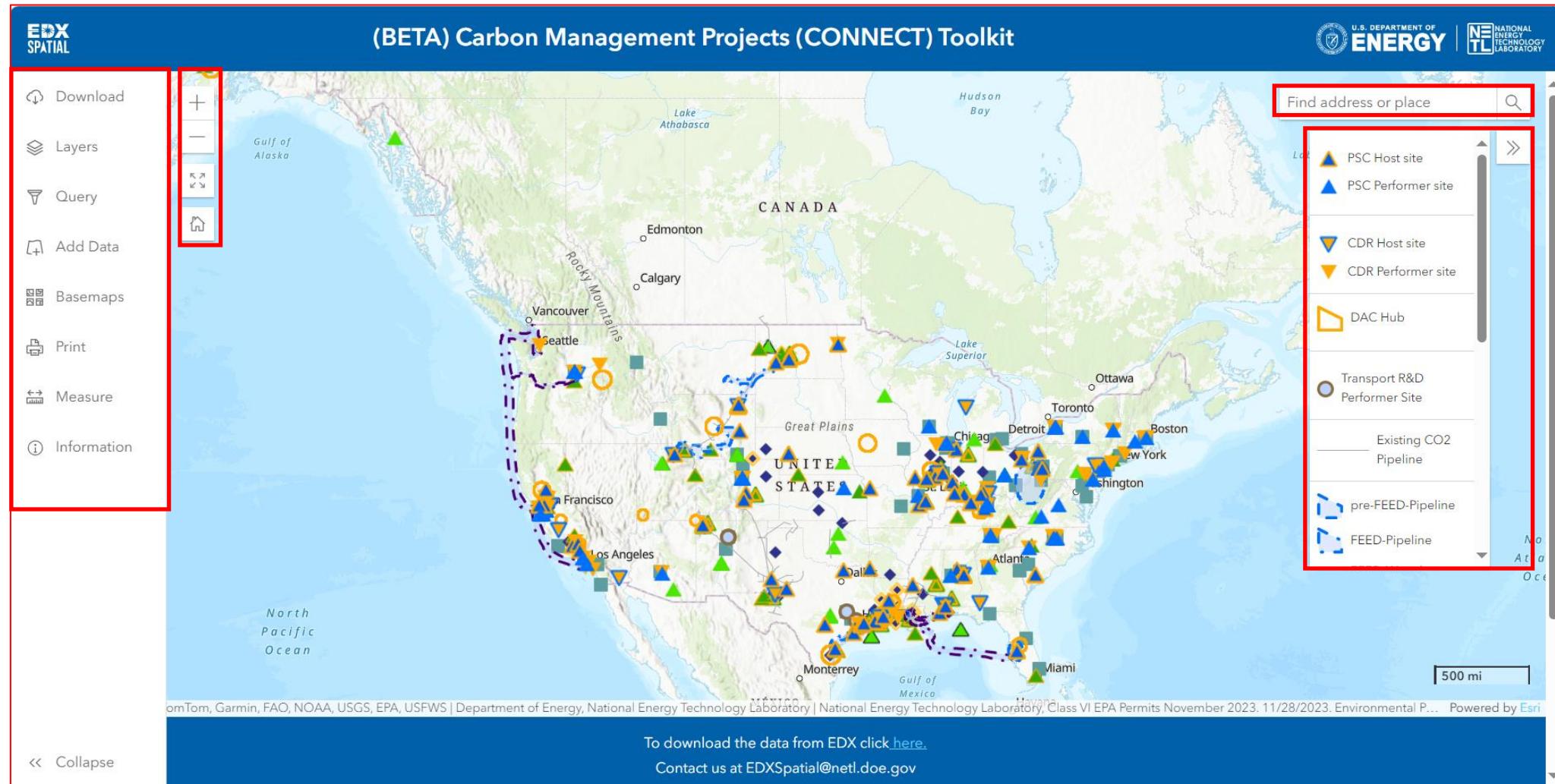
CONNECT Explorer



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



CONNECT Toolkit Explorer



CONNECT Toolkit Explorer



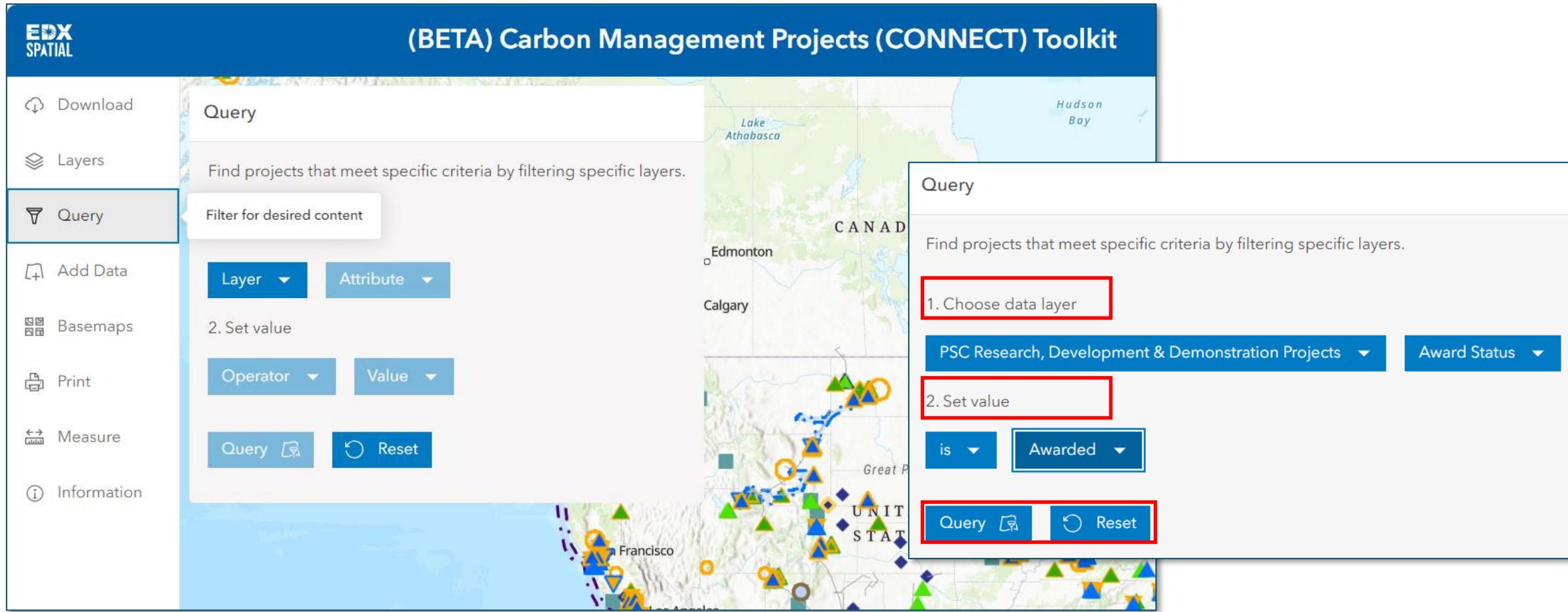
A screenshot of the EDX Spatial (BETA) Carbon Management tool. The interface is divided into several sections: a left sidebar with various tools like 'Download', 'Layers', 'Query', 'Add Data', 'Basemaps', 'Print', 'Measure', and 'Information'; a central map showing the Western United States and Canada with various carbon management site markers; and a detailed view pane on the right. The detailed view pane is currently focused on 'Point Source Carbon Capture (PSC)' and includes sub-sections for 'PSC Research, Development & Demonstration Projects', 'PSC Host site', 'PSC Performer site', and 'Point-source direct emissions'. A large green arrow points from the map area to the 'Point Source Carbon Capture (PSC)' section. Another green arrow points from the 'PSC' section to a smaller pane on the far right containing 'Zoom To Layer', 'View Attribute Table', and 'Information' buttons.



CONNECT Toolkit Explorer



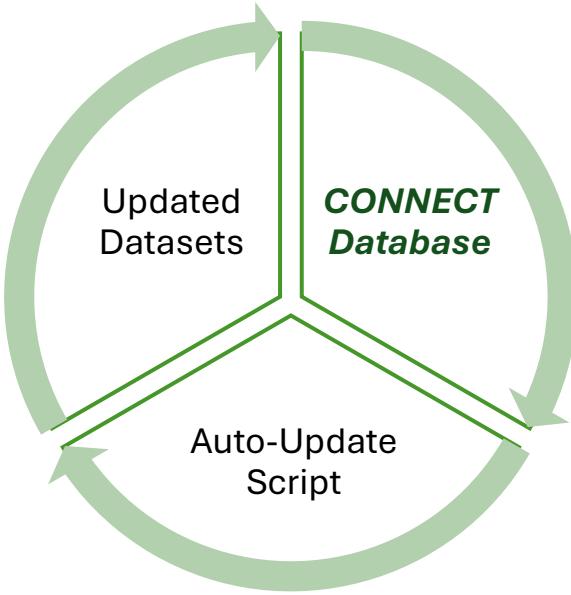
Query Tool

A screenshot of the 'Query Tool' interface for the 'Carbon Management Projects (CONNECT) Toolkit'. The interface is divided into several sections: a left sidebar with 'EDX SPATIAL' branding and various tools like 'Download', 'Layers', 'Query' (which is selected and highlighted in blue), 'Add Data', 'Basemaps', 'Print', 'Measure', and 'Information'; a central map showing Canada with a focus on Alberta and the Great Plains, with numerous project markers; and two large 'Query' boxes on the right. The top 'Query' box is for filtering by 'Layer' and 'Attribute'. The bottom 'Query' box is for filtering by 'PSC Research, Development & Demonstration Projects' and 'Award Status'. Both boxes include 'Operator' and 'Value' dropdowns, and 'Query', 'Reset', and 'Advanced' buttons. Red boxes highlight the 'Layer' dropdown in the top query box, the 'PSC Research, Development & Demonstration Projects' dropdown in the bottom query box, and the 'Query' and 'Reset' buttons in the bottom query box.

What's Next

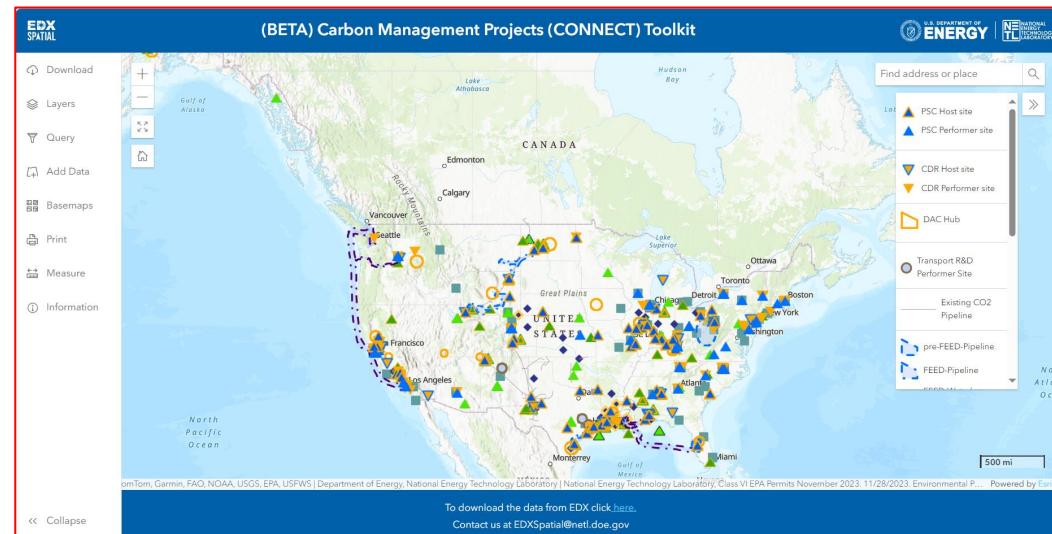


Script- Auto Update Database



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



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ENERGY

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The Office of Fossil Energy and Carbon Management

Achieving Net-Zero Emissions



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