

CONNECT Toolkit: Carbon Management Projects Database and Explorer



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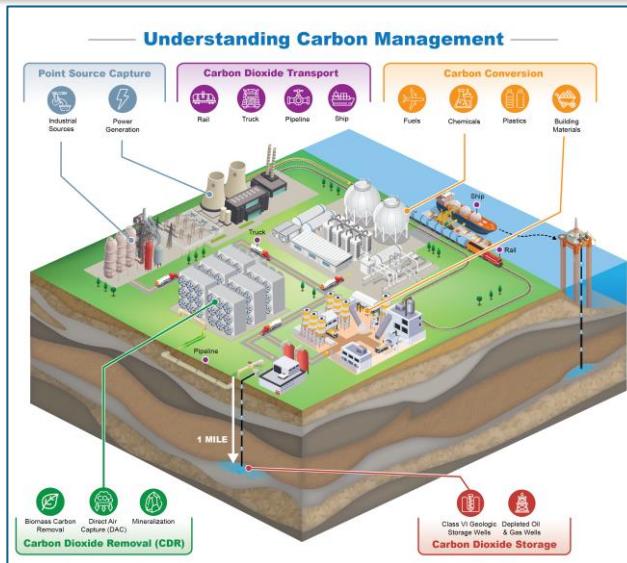
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Carbon Management Projects (CONNECT) Toolkit Value Proposition



Challenge: Lack of authoritative, up-to-date information detailing U.S. federal government's investments in technologies spanning the carbon management value chain in one centralized location; lack of means to view these investments in policy, social, regulatory, infrastructural and natural resource contexts



Value:

- Provide the public with a single-point access to authoritative, integrated, and regularly curated information and analytical capabilities
- Serve as a hub of public information on federally funded technology research, development, and demonstration (RD&D) for carbon management and related federal initiatives, regulatory permits, existing infrastructure, point-source emissions, natural resources, communities, and protected lands in the United States

Objective:

- Build and automate the update of a comprehensive carbon management project database in EDX with information extracted from authoritative sources
- Develop an intuitive and interactive dashboard to accelerate assessment of and inspire data-driven insights into federal investment in carbon management technologies

Ultimate Product:

- CONNECT database available for filtering and download on EDX
- Interactive web mapping application to visualize and analyze carbon management RD&D activities in any desired context, in reference to other existing federal resources
- Tutorial package to improve understanding of carbon management technology development status, evaluate RD&D opportunities against environmental and social justice factors, etc.

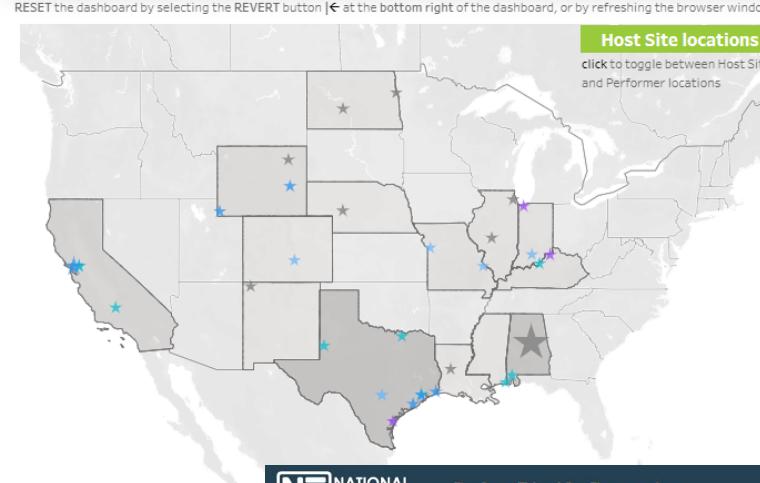


Existing Web-Based Interactive/Static Mapping Tools



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.



CARBON TRANSPORT & STORAGE Interactive Project Map



OCED SELECTIONS & AWARDS



U.S. DEPARTMENT OF
ENERGY

CONNECT Toolkit- Database and Explorer



Integrate data from



Data curation and enrichment

One-stop shop for curated trustworthy data

CONNECT DATABASE

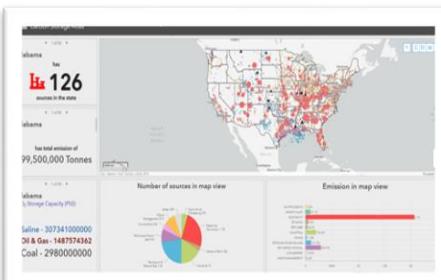


Centralized access

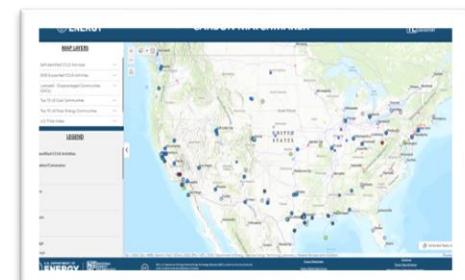
Enable visualization resource



On-Demand Static Maps.



Interactive Exploratory Applications.



Advanced Applications with Spatio-Temporal Analytical Capabilities.

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



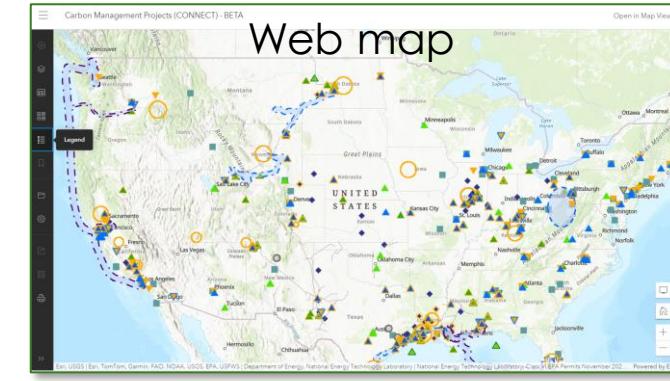
- Database template for key federally funded carbon management projects
- Major categories in database:
 - Technical Details
 - Title, technology area, technology application sector, project ending scale
 - Quantity of CO₂ captured/transported/stored, CO₂ offtake, pipeline length, project start and completion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

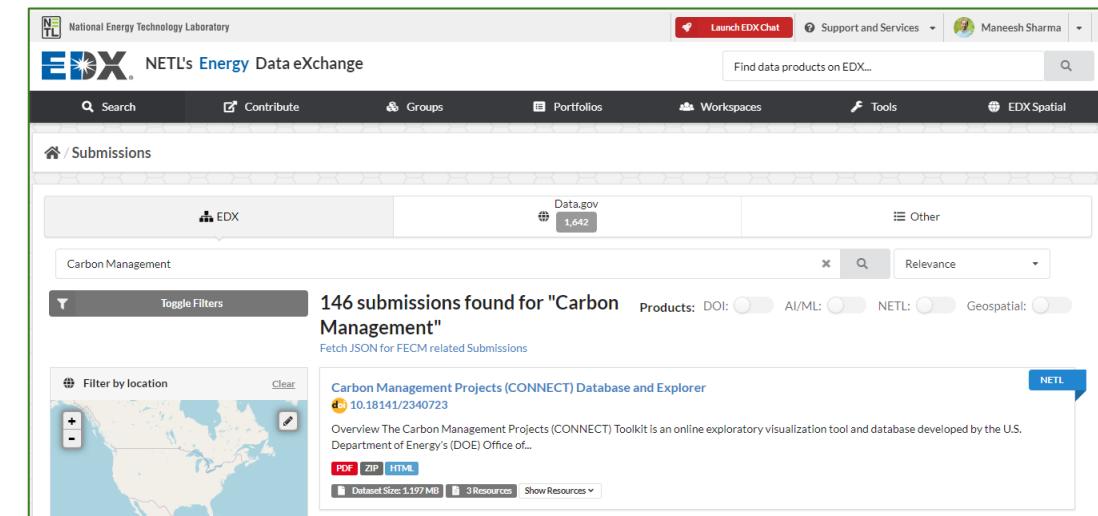


CONNECT Toolkit Access



Available on EDX

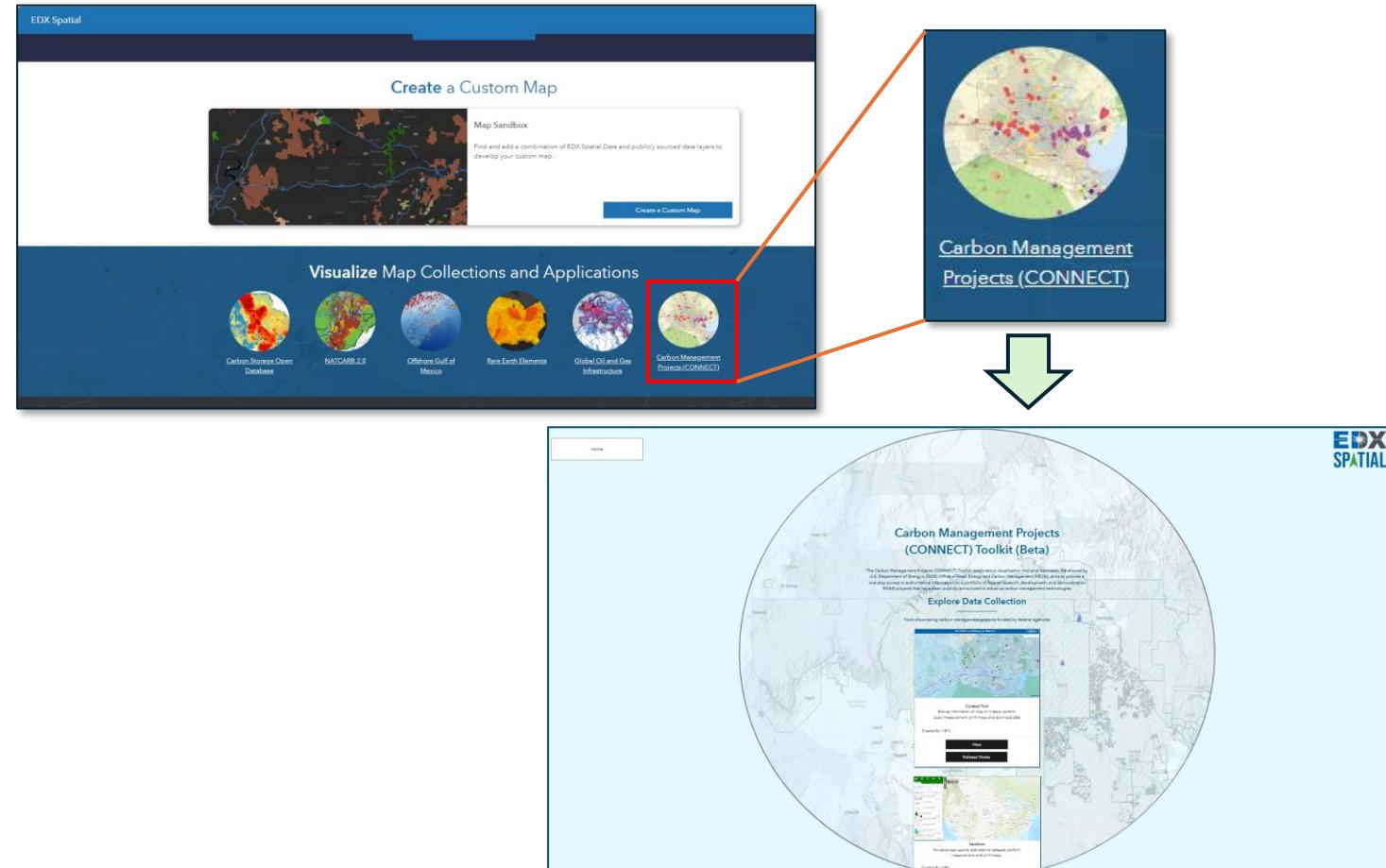
- EDX- Access CONNECT toolkit from EDX landing page
 - Search key word – “Carbon Management” or “CONNECT”
 - [Carbon Management Projects \(CONNECT\) Database and Explorer - Submissions - EDX \(doe.gov\)](#)
 - EDX landing page contains
 - Project information
 - Release notes
 - CONNECT Database
 - Geodatabase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



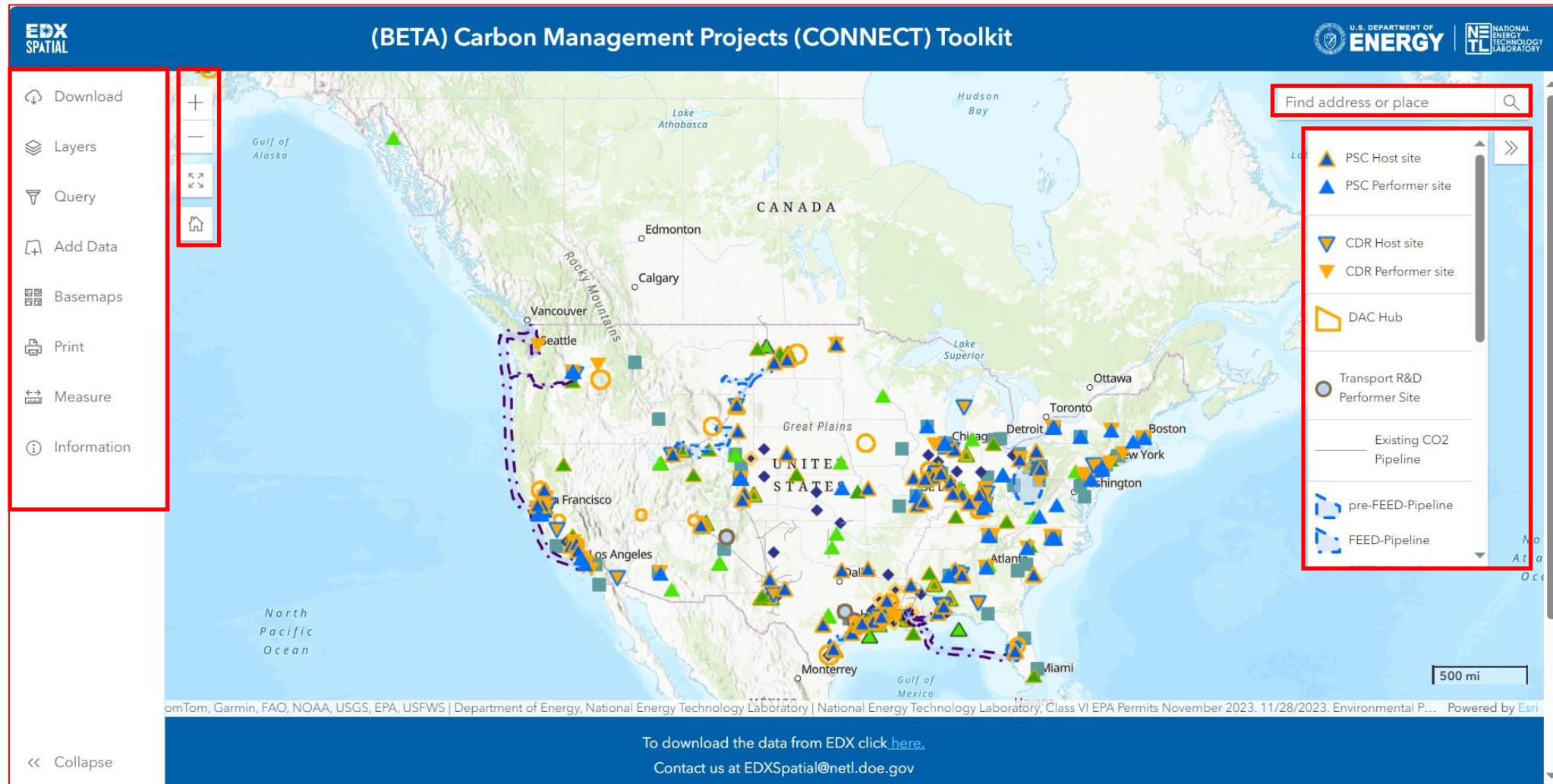
CONNECT Explorer



- 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 includes a left sidebar with various menu items: Download, Layers, Query, Add Data, Basemaps, Print, Measure, and Information. The 'Layers' section is expanded, showing categories like Point Source Carbon Capture (PSC), Carbon Dioxide Removal (CDR), Carbon Transport, Carbon Storage, Carbon Conversion, and others. A green arrow points from the 'Point Source Carbon Capture (PSC)' section to a detailed view of the PSC layer. This detailed view shows a map of the western United States and Canada with several data points marked. A second green arrow points from this detailed view to a right sidebar with options: Zoom To Layer, View Attribute Table, and Information. The 'Information' option is highlighted with a blue circle.



CONNECT Toolkit Explorer



Query Tool

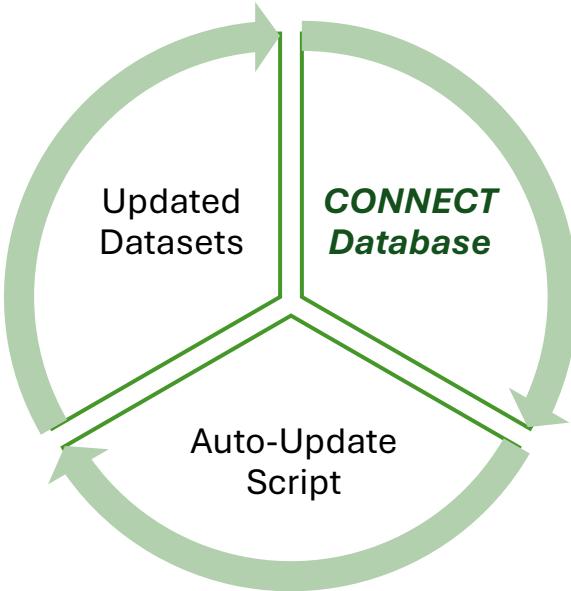
A screenshot of the (BETA) Carbon Management Projects (CONNECT) Toolkit Query Tool. The interface is a spatial query tool with a sidebar and a main content area. The sidebar on the left includes buttons for 'Download', 'Layers', 'Query' (which is selected and highlighted in blue), 'Add Data', 'Basemaps', 'Print', 'Measure', and 'Information'. The main content area has a title 'Query' and a sub-instruction 'Find projects that meet specific criteria by filtering specific layers.' It features two dropdown menus: 'Layer' and 'Attribute'. Below these are two more dropdown menus: 'Operator' and 'Value'. At the bottom of the main content area are 'Query' and 'Reset' buttons. A map of Canada is displayed in the background, showing major cities like Edmonton, Calgary, and Great Falls, and geographical features like Lake Athabasca and the Hudson Bay. A callout box on the right side of the interface highlights the 'Query' button and the 'Reset' button, both of which are outlined with a red border.



What's Next

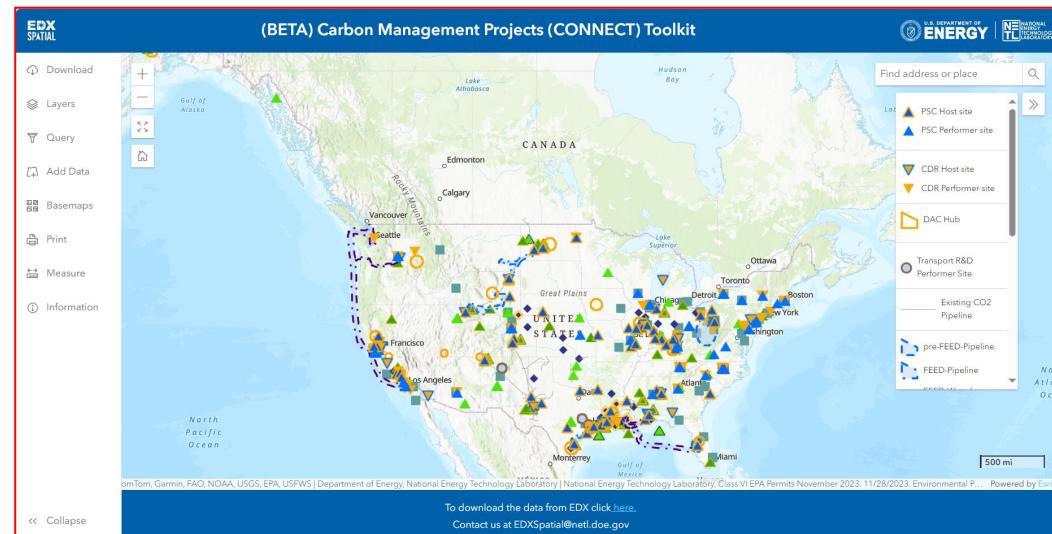


Script- Auto Update Database



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.



Acknowledgments



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