CONNECT Toolkit: Carbon Management Projects Database and Explorer

Maneesh Sharma
Geospatial Research Scientist/NETL Support Contractor

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Authors and Contact Information

Maneesh Sharma[1,2]; Ayaka Jones[5]; Jennifer Pramuk[1,2]; Zachary Jackson[3,4]; Jay Oliver[1,2]; Olivia Marcelli[1,2]; Caleb Malay[1,2]; Casey Cleaveland[3,4]; Jacob Darrah[1,2]; Kevin Kuhn[1,2]; Chad Rowan[1]; Kelly Rose[3]; Jennifer Bauer[3]; Dan Hancu[5]

[1]National Energy Technology Laboratory, 3610 Collins Ferry Road, Morgantown, WV 26505, USA

[2]NETL Support Contractor, 3610 Collins Ferry Road, Morgantown, WV 26505, USA

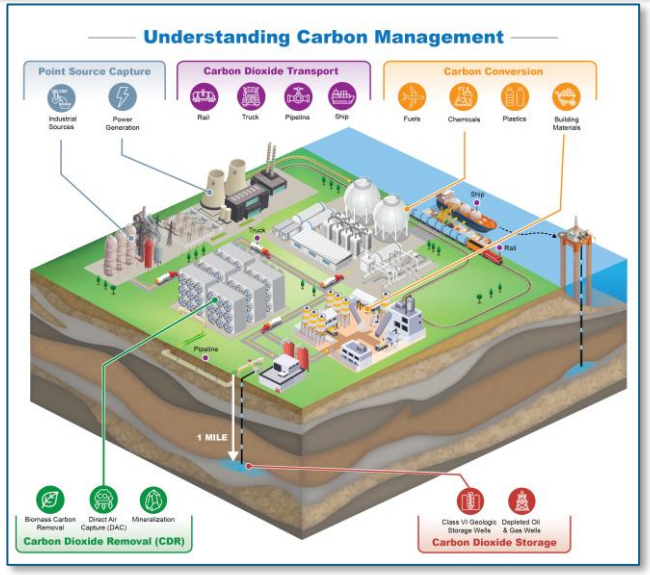
[3]National Energy Technology Laboratory, 1450 Queen Avenue SW, Albany, OR 97321, USA

[4]NETL Support Contractor, 1450 Queen Avenue SW, Albany, OR 97321, USA

[5]U.S. Department of Energy, 1000 Independence Avenue SW, Washington DC 20585, USA

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

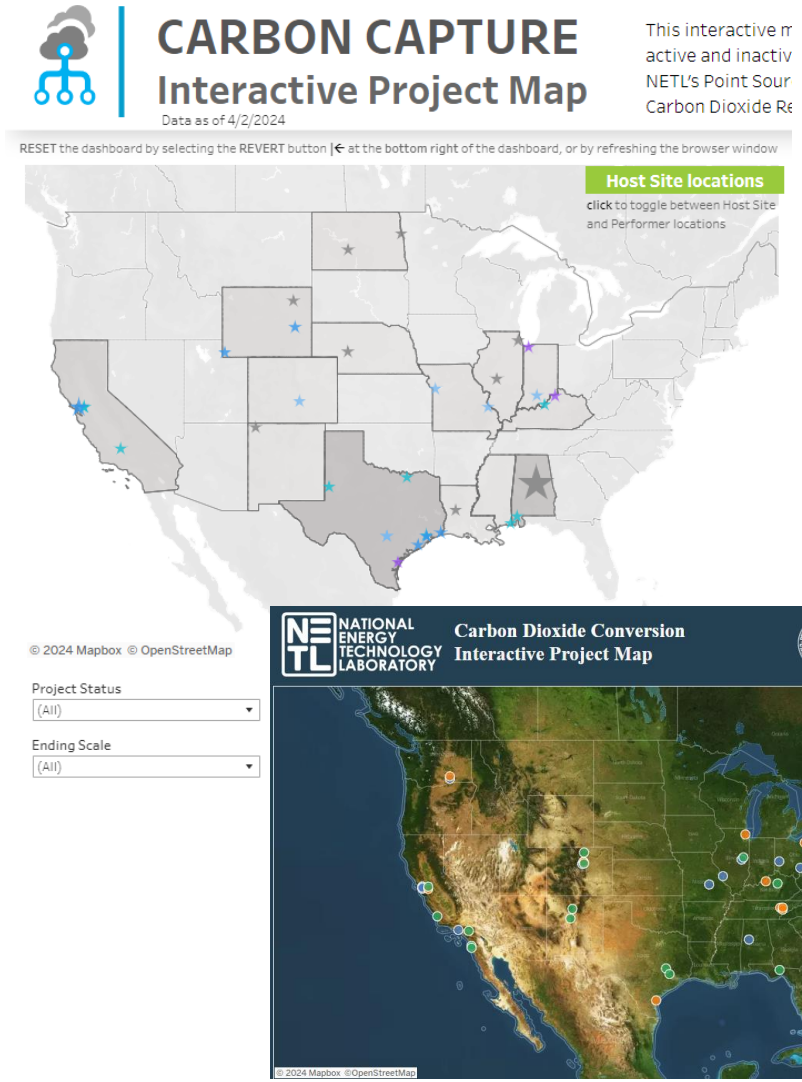
Objective:

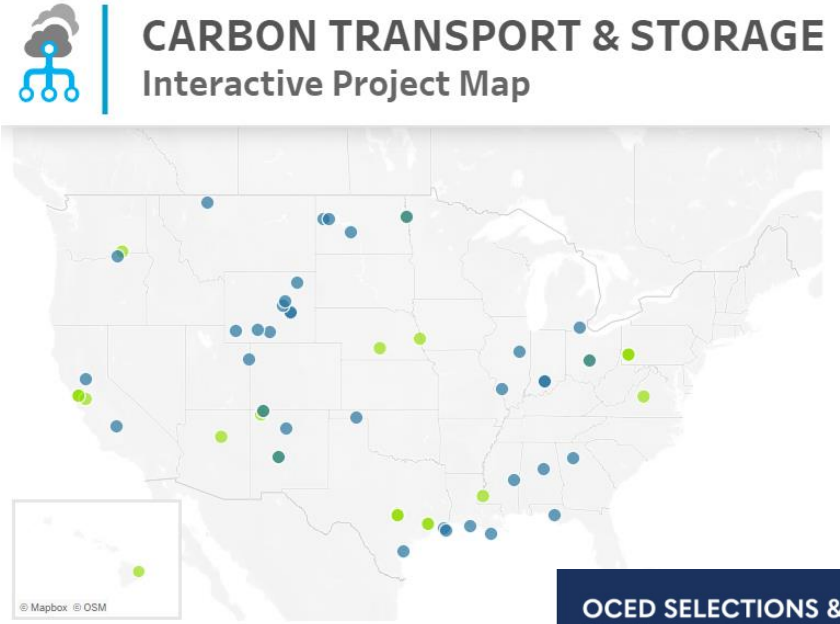
- Build and automate the update of a comprehensive carbon management project database in EDX with information extracted from authoritative sources
- Develop an intuitive and interactive dashboard to accelerate assessment of and inspire data-driven insights into federal investment in carbon management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





CONNECT Toolkit- Database and Explorer

Integrate data from

FECM | OECD | IEDO | ARPA-E | EPA | DOT

Data curation and enrichment

One-stop shop for curated trustworthy data

CONNECT DATABASE

Centralized access

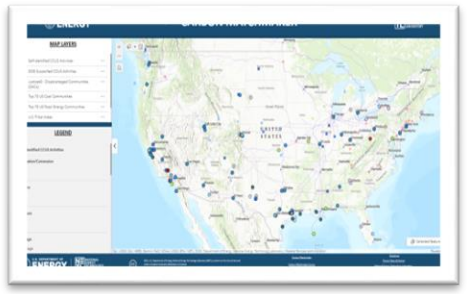
Enable visualization resource

EDX Energy Data eXchange | EDX SPATIAL

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

On-Demand Static Maps.

Interactive Exploratory Applications.



Advanced Applications with Spatio-Temporal Analytical Capabilities.

BENEFITS:

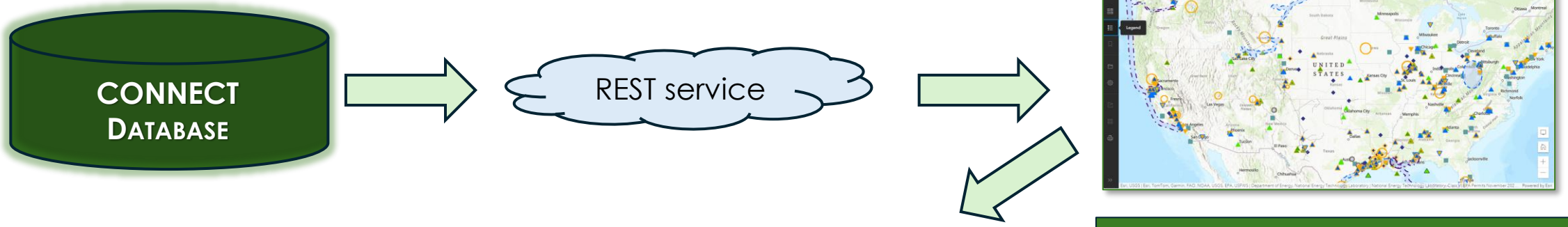
- Saves time and money for collecting desired information from multiple sources
- Access to authoritative data and links to more details
- Quick customized maps for presentations and reports
- Interactive applications for advanced analysis
- Evaluate in relation to other federal initiatives, environmental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

CONNECT Database – Project Information Template

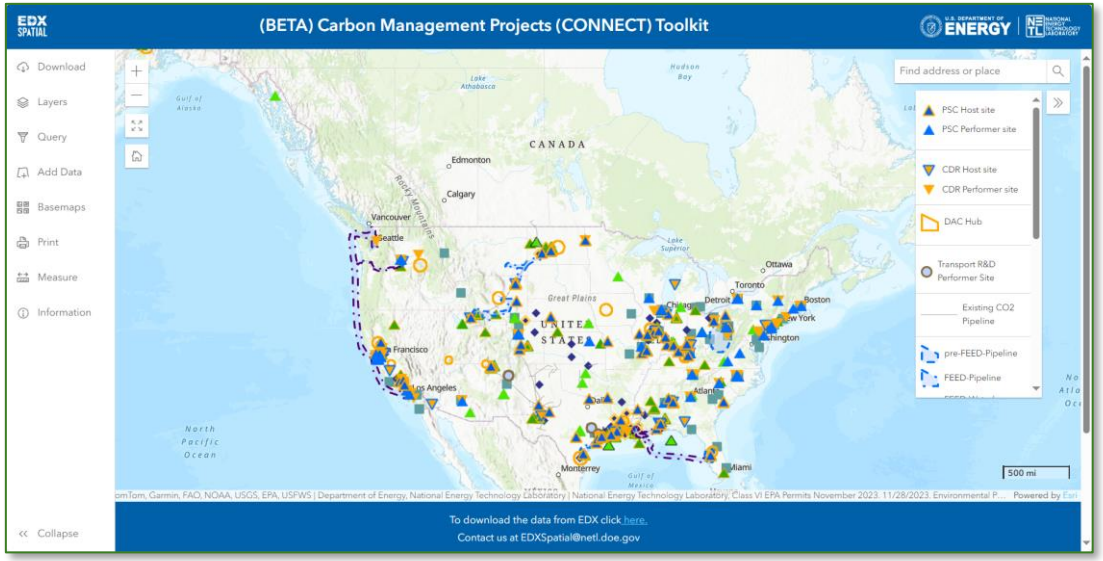
- Database template for key federally funded carbon management projects
- Major categories in database:
  - Technical Details
    - Title, technology area, technology application sector, project ending scale
    - Quantity of CO_2 captured/transported/stored, CO_2 offtake, pipeline length, project start 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

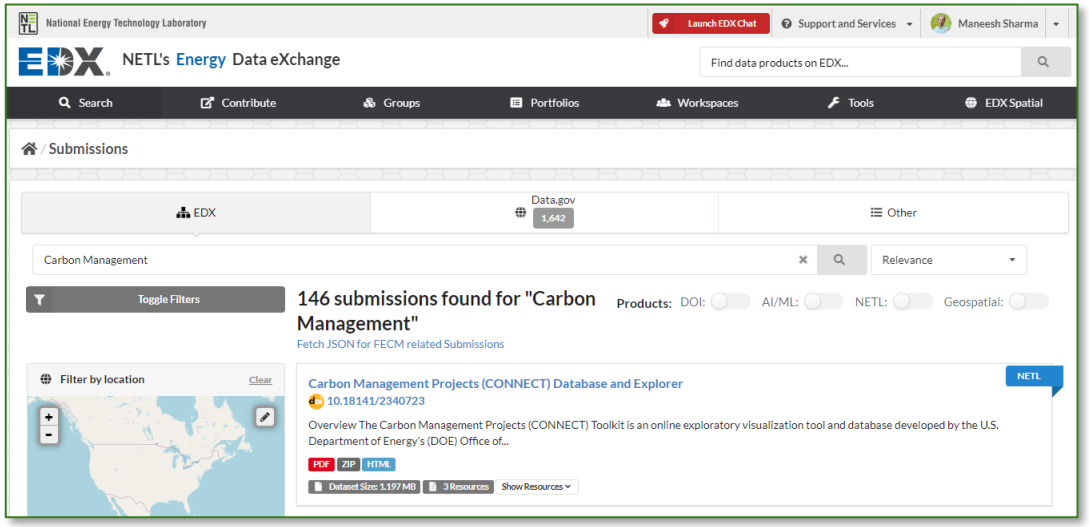


- Web application developed on ESRI platform
- Custom web application using Calcite programming language
  - Allows more flexibility for custom web application
  - Custom tool development
- Allows for consumption of REST services in other applications based on their needs

CONNECT Toolkit Access

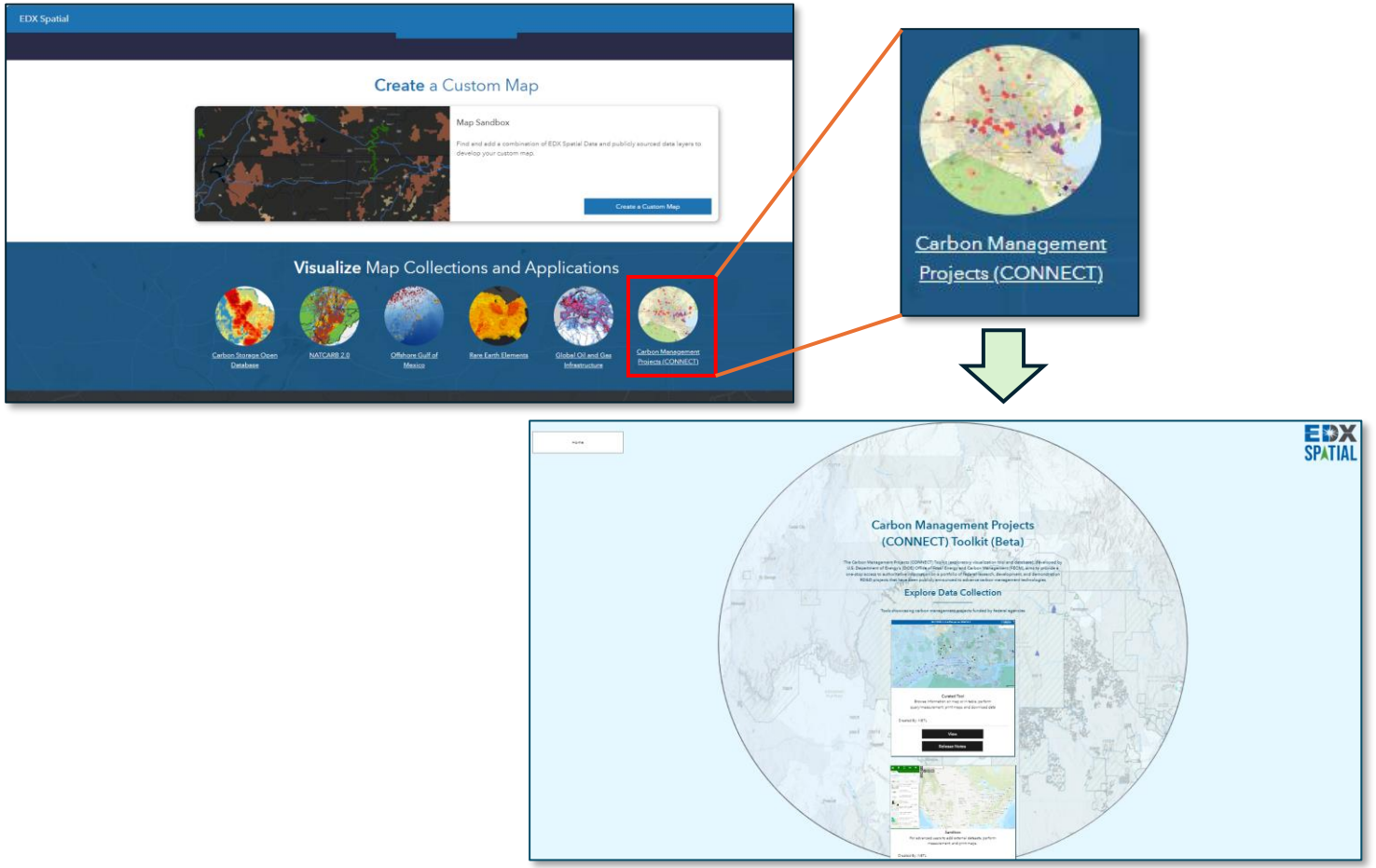
Available on EDX

- 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

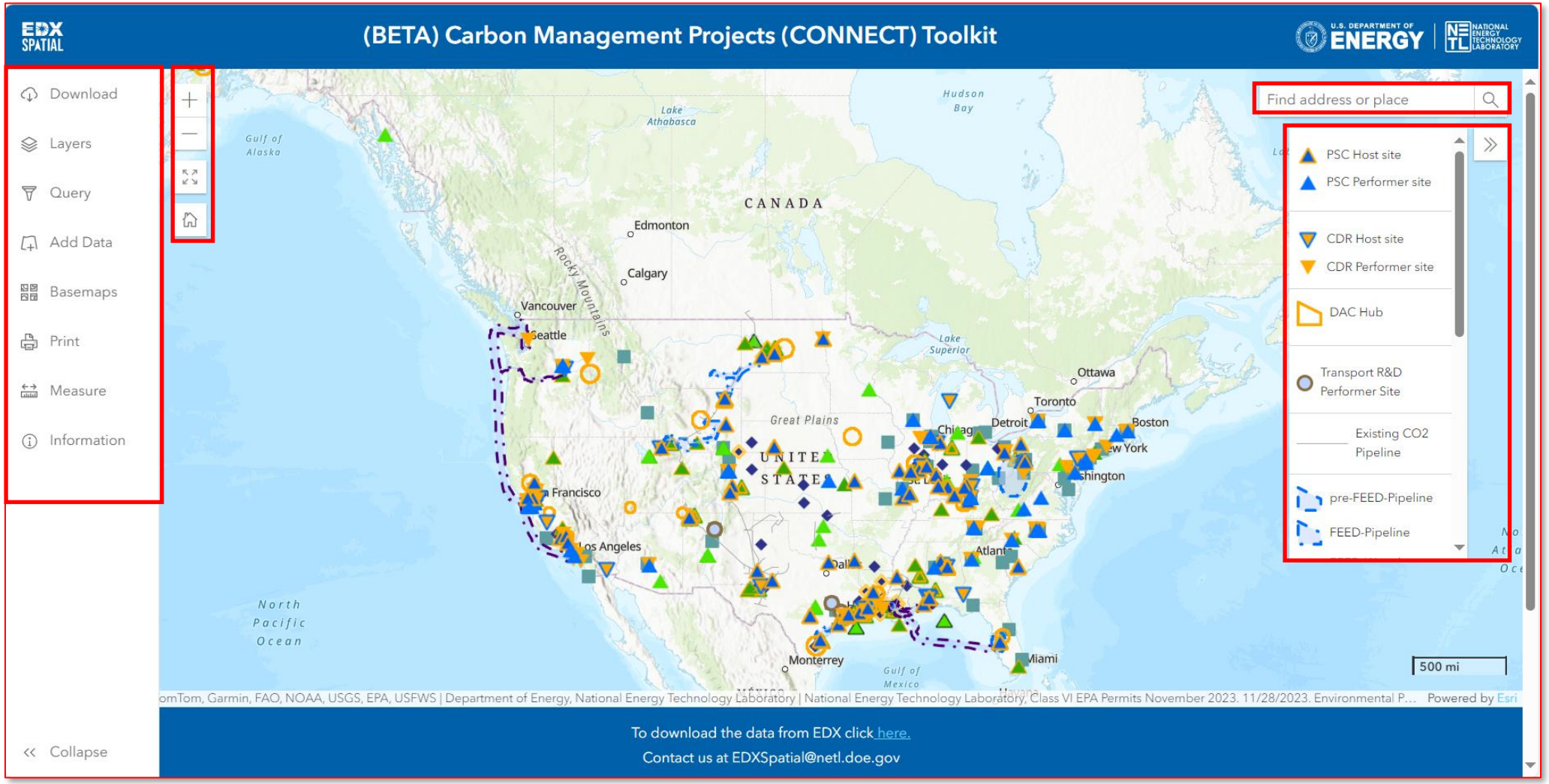


CONNECT Explorer

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



CONNECT Toolkit Explorer



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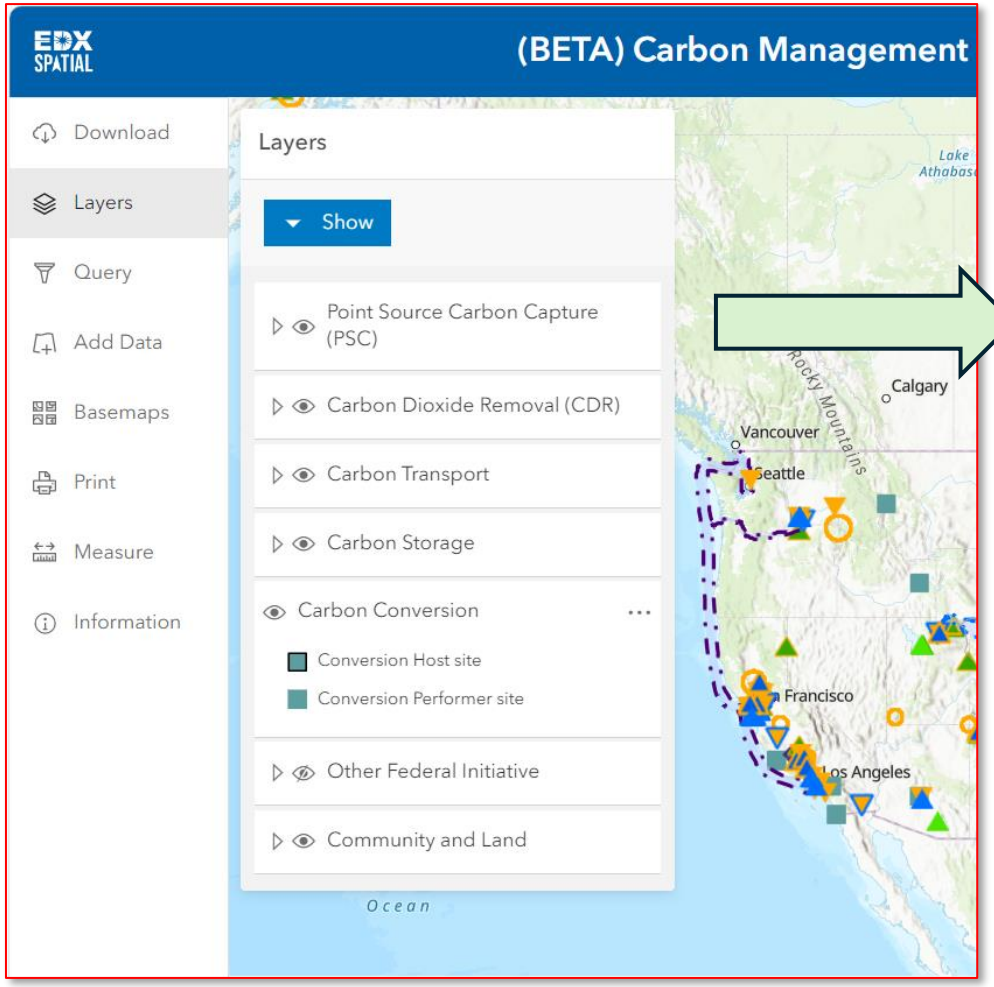
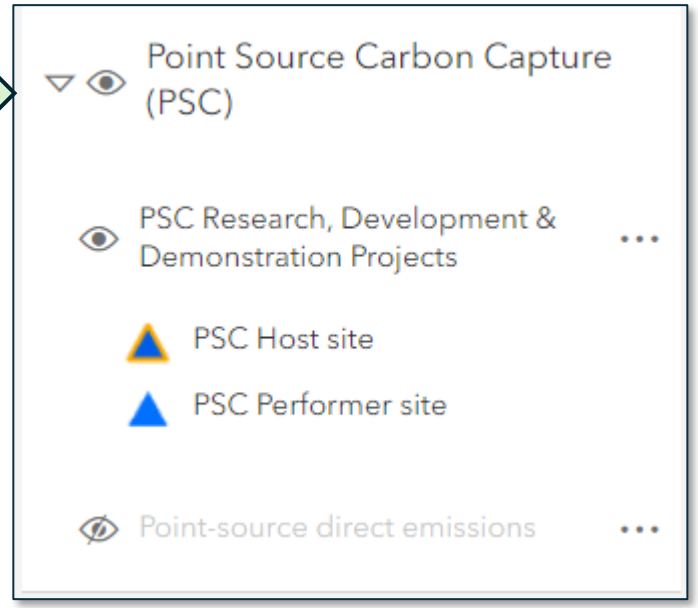
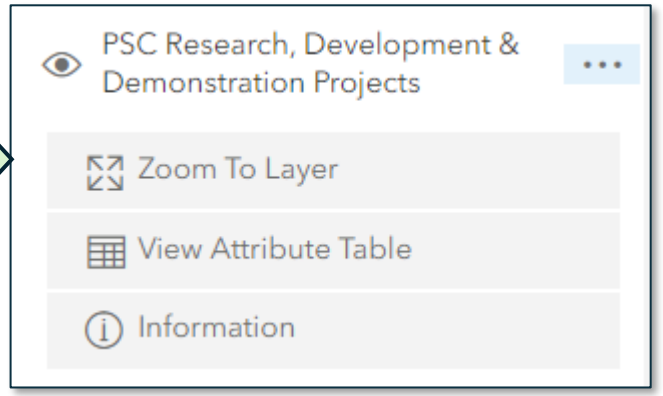
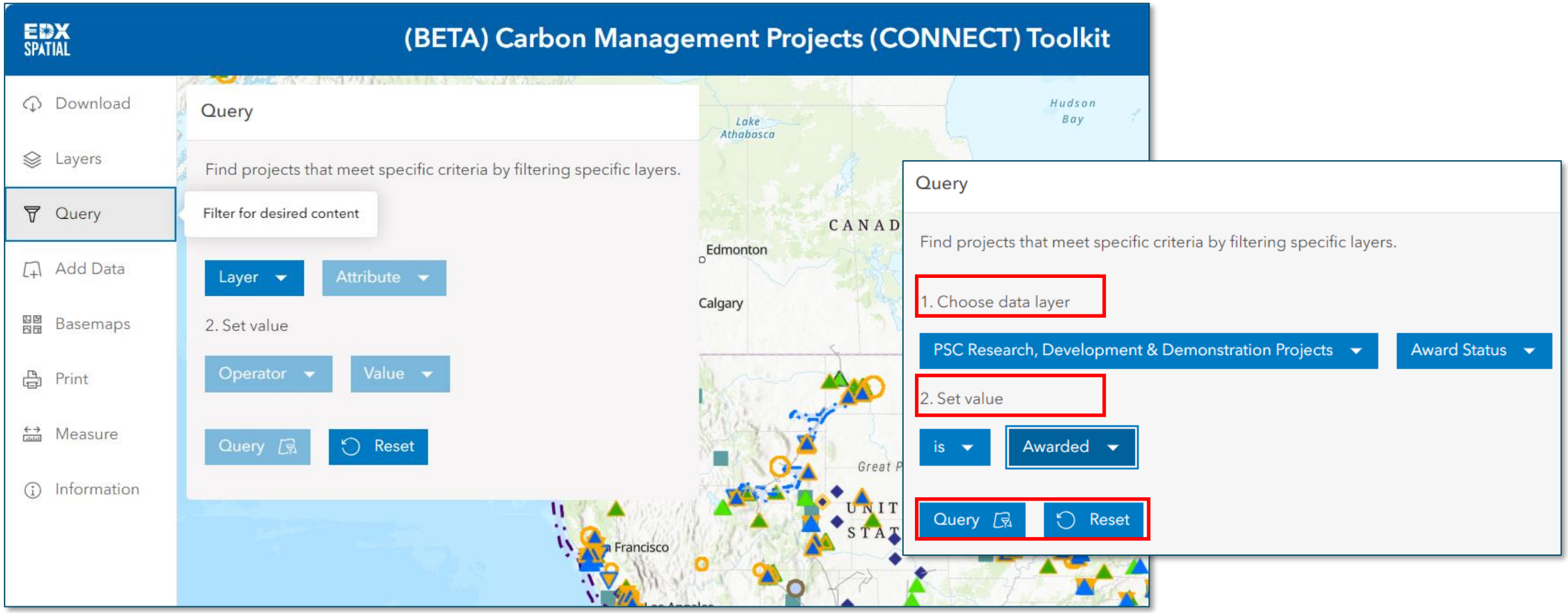






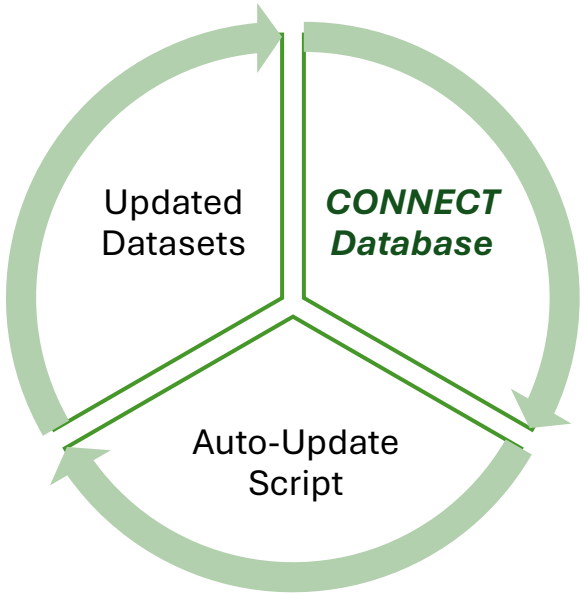
CONNECT Toolkit Explorer

Query Tool



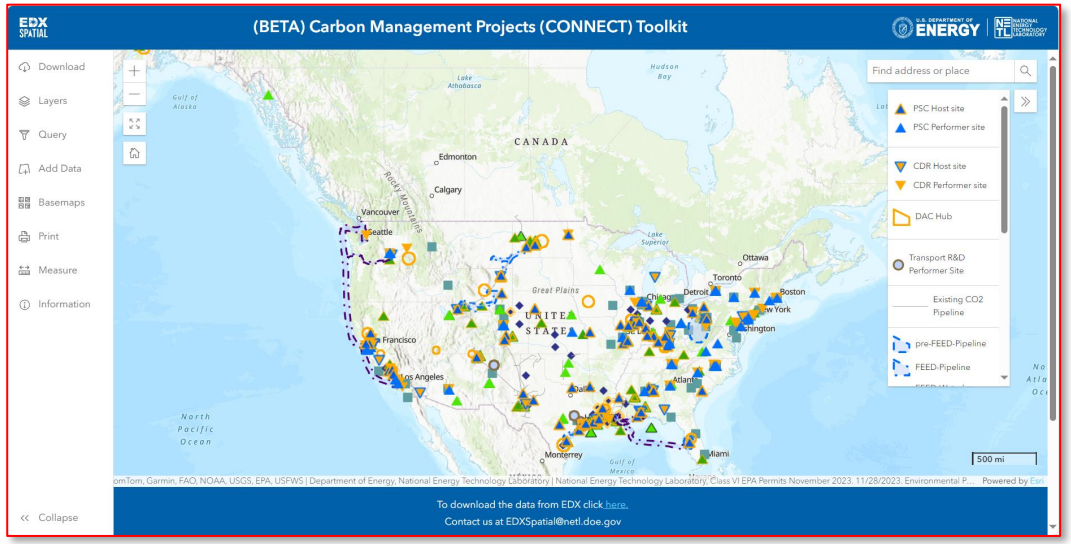
What's Next

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.

DisCO$_2$ver

Data Infrastructure to Accelerate CCS

Integrate data and dashboard into EDX DisCO$_2$ver Platform for user access.

Acknowledgments

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CONTACT:
Maneesh Sharma
Maneesh.Sharma@netl.doe.gov
Ayaka Jones
Ayaka.Jones@hq.doe.gov