



the **ENERGY** lab

## R&D FACTS

Geological & Environmental Sciences

# EDX, NETL's Data-Driven Tool for Science-Based Decision Making

*Data Exchange for Energy Solutions*



## Background and Benefits

The Energy Data Exchange (EDX; [edx.netl.doe.gov](http://edx.netl.doe.gov)) is an online platform developed by NETL's intramural research program to support internal coordination and collaboration as well as timely tech transfer of data-driven products across NETL's portfolios. Efficient and timely research has always been driven by access to existing information, the ability to quickly share and coordinate data with collaborators, and the ability to disseminate the results of work products as they develop. EDX supports these needs, offering reliable access and coordination to data for NETL-associated researchers that require information associated with fossil energy sources.

EDX builds on NETL's experience in online tools such as the Knowledge Management Database (KMD) and "NatCarb". KMD is a platform for disseminating results from DOE's oil and gas programs, including past technical reports and data. "NatCarb" is a platform for coordinating information on both CO<sub>2</sub> sources and potential CO<sub>2</sub> storage reservoirs, growing out of the efforts of the Regional Carbon Sequestration Partnership program. EDX extends these platforms in two ways:

- EDX incorporates a broad set of subsurface information common to CO<sub>2</sub> storage and other subsurface energy needs (e.g. shale gas, tight oil, deepwater and ultra-deepwater, and unconventional fossil resources). This set of information includes reservoir data, fluids properties, wellbore data, fault/fracture data, and groundwater data. Although some of the information resides in EDX as data derived from NETL research, much of the information exists online distributed in external databases. In these cases, EDX serves as a clearinghouse, allowing NETL-associated researchers to locate data rapidly by serving as a portal to these other datasets. Through this coordinated approach, EDX addresses one of the key lessons learned during DOE's work on the Deepwater Horizon oil spill--namely that locating and accessing data across a range of sources is challenging and often inefficient with currently available resources.
- EDX serves as an online system to facilitate internal access to research that crosscuts multiple NETL projects/programs, and external access to technical products and data published by NETL research teams. In this role, EDX facilitates coordination of both restricted-access and open-access research data. NETL-affiliated researchers can use EDX's collaborative workspaces to coordinate and share work with a variety of organizations and institutions in a secure environment.

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Ultimately, EDX seeks to ensure improved access to data and resources from a range of sources, offering a venue for the “publication” and dissemination of new datasets as well as historical, often inaccessible, assets ensuring their use for future, yet-to-be envisioned purposes.

Primary users of EDX are NETL researchers (NETL research teams) actively engaged in work relevant to subsurface, near surface, atmospheric, and environmental risk issues relating to subsurface CO<sub>2</sub> storage, unconventional and conventional hydrocarbons, and ground water and air emission impacts. EDX provides this access to evaluate and predict what happens in engineered-natural systems, while helping accelerate further research.

## Functionality:

Core elements of EDX functionality are:

- An online platform for rapid and efficient access to priority datasets,
- Ability for NETL-affiliated researchers to share and “publish” online their data-driven products,
- A secure environment for NETL-affiliated research teams (including member researchers from DOE National Laboratories and other organizations) to share, build, and collaborate in a common workspace, and
- Online tool to disseminate data, information, and results from DOE’s Fossil Energy intramural research portfolios (e.g., the DOE EPart Complementary Program, CO<sub>2</sub> Storage Program, National Risk Assessment Partnership (NRAP), National Methane Hydrates Program, etc.).

Datasets physically housed within EDX are provided by users either as links to external websites or when appropriate as standalone files such as Microsoft® Excel, .jpg, .zip, etc. Datasets can be “published” in their original and complete form in EDX and accompanied by associated reports, dissertations,

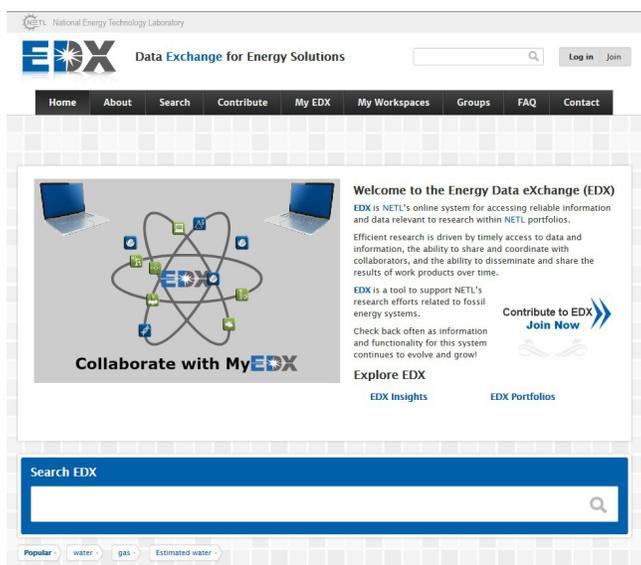
or appropriate metadata. EDX also recognizes that there are significant established online resources and offers the ability to store links to external online data, thus improving coordination with existing resources to EDX users.

Contributing to EDX is quick, easy, and streamlined. The process begins by completing the online submission form where users can describe attributes, characteristics, and keywords of the submission. This information serves as the building blocks of EDX and is utilized to compile search results. Providing thorough and accurate information about the submission will enhance its visibility.

## EDX Version 2:

- EDX Version 2 provides advanced coordination, collaboration, and data visualization functionality.
- EDX supports *Group* functionality that enables researchers to share data and information about a common theme, discipline, or interest in an open-access environment.
- The *Collaborative Workspace* is an extension of the group functionality and allows NETL-affiliated researchers a secure and dedicated work space to quickly and efficiently share data, ideas, and research techniques.
- The *Data Visualization Tool* displays files within EDX and assists in determining if the user would like to download those files.
- The *Rapid Response Tool* will be utilized in the event of a natural disaster, man-made catastrophe, or any other energy related event where news and data must be quickly coordinated and exchanged.

EDX continues to evolve so check back often as information grows and functionality for this system improves. Registered users interested in options for specialty datasets and customized solutions can contact EDX Support at [EDXsupport@netl.doe.gov](mailto:EDXsupport@netl.doe.gov).



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