



Pacific Northwest
NATIONAL LABORATORY

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DR POWER

Data Repository for Power system Open models With Evolving Resources

Stephen Elbert, Mark Rice, Olga Kuchar, Laurentiu Marinovici

FERC Technical Conference: Increasing Real-Time and Day-Ahead Market Efficiency through Improved Software
Washington, DC, June 26-28, 2017

Project Summary

- Provide open-access power grid datasets and the capability to uniquely review, annotate, and curate submitted datasets
- Ensure sustainable model and dataset dissemination and evolution through user-defined dataset creation and validation
- Integrate and extend NRECA's success with Open Modeling Framework (OMF) to include transmission modeling

Collaboratively evolving high-fidelity power system models



Steering Committee

Type of Organization	Member	Institution
Academic	Daniel Kirschen	U. Washington
Academic	Warren Powell	Princeton University
Academic	Andy Sun	Georgia Tech
Government	Richard O'Neill	FERC
Industry	Yonghong Chen	MISO
Industry	Mani Vadari	Modern Grid Solution
Non-PNNL FFRDC	Jean-Paul Watson	Sandia National Laboratory



Curation Working Group

Institution	Member	Expertise
NREL	Bryan Palmintier	GRID DATA Project
U. Michigan	Pascal Van Hentenryck	GRID DATA Project
UIUC	Gabriel Weaver	Model evolution
Furman University	Christopher Blackwell	Multi-versioned data sets with attributes
PNNL	Ruisheng Diao	GRID DATA Project
PNNL	Justin Day	Research Librarian

- ▶ Topics
 - Metadata
 - File formatting
 - File versioning
 - Automation tools
 - DOI workflow
- ▶ Initial discussions on
 - Automation vs. human-in-the-loop
 - Tools for curation
- ▶ Curation specifications drafted

Active Curation



- ▶ Based on Digital Curation Center Lifecycle Model
- ▶ Curators will review uploaded models
- ▶ Curators will help guide model creation
- ▶ Community participation in reviews, questions, comments, etc.

Web Portal Version 1.5 (Current)

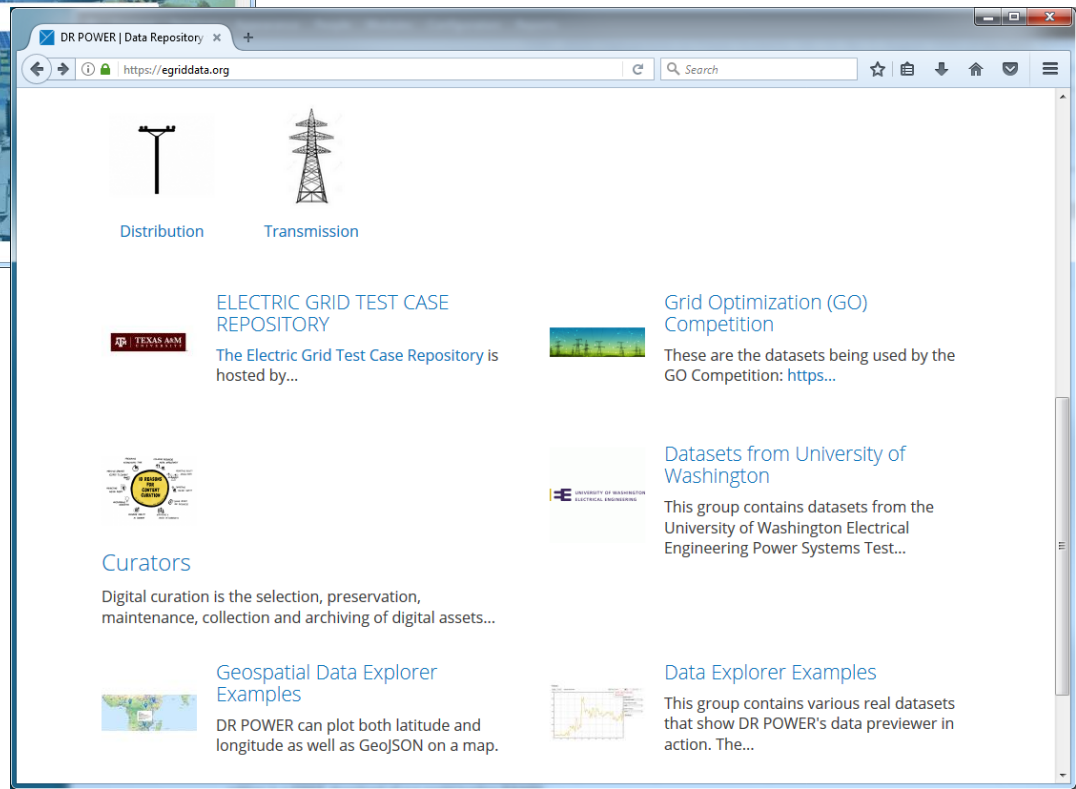
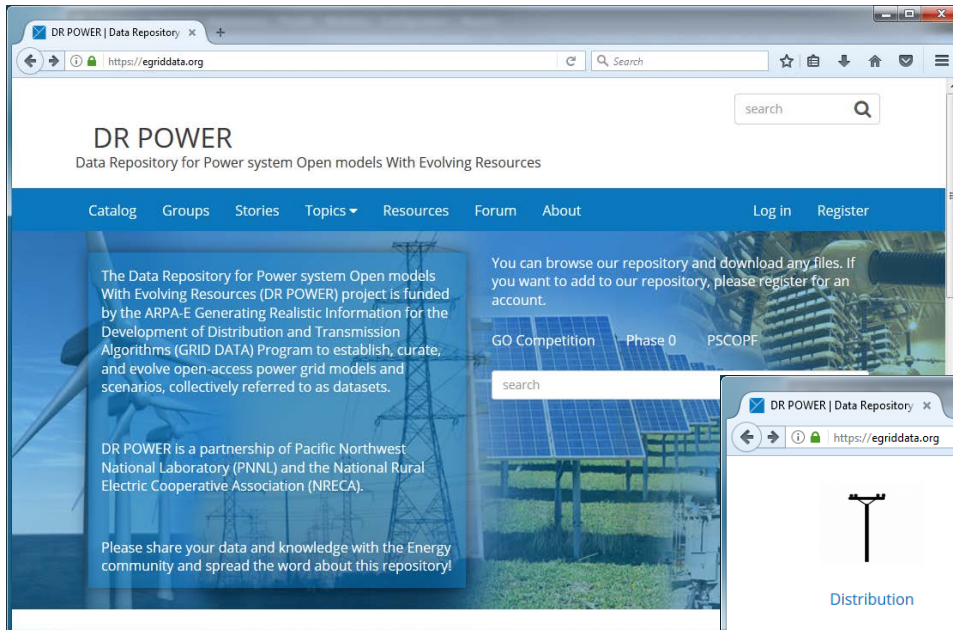
- ▶ <https://egriddata.org/> deployed with following capabilities:
 - Register users
 - Upload/download datasets
 - Basic search
 - Assign/Update DOI (currently using testing harness; full process but not registered)
 - Extend tagging dictionary
 - Community engagement in curation process
 - Created Curator role for assignment to users
 - Created Curator group and membership process
 - Request conversions of files
 - Site Analytics
- ▶ Populating in progress



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Home page: <https://egriddata.org/>



Catalog

DR POWER | Data Repository

https://egriddata.org/search/type/dataset

Search

search

DR POWER

Data Repository for Power system Open models With Evolving Resources

Catalog

Groups

Stories

Topics

Resources

Forum

About

Log in

Register

Home / Dataset

Content Types

Dataset

Topics

Transmission (12)

Tags

Format

Publisher

Author

License

13 results

Search

Sort by

Order


Search

Date changed

Descending


Apply

Reset



SouthCarolina 500-Bus System ACTIVSg500

ELECTRIC GRID TEST CASE REPOSITORY

 **Transmission**

The **ACTIVSg500** case is a 500 bus power system test case that is entirely synthetic, built from public information and a statistical analysis of real power syst

epc

pwb

pwd

raw

dxd

dxd

m

png

jpg

Groups

Groups | DR POWER

https://egriddata.org/groups

Search

search



DR POWER

Data Repository for Power system Open models With Evolving Resources

CatalogGroupsStoriesTopicsResourcesForumAboutLog inRegister

Home / Groups

Groups



ELECTRIC GRID TEST CASE REPOSITORY

The Electric Grid Test Case Repository is hosted by

4 datasets

Grid Optimization (GO) Competition

These are the datasets being used by the GO Competition:
<https://gocompetition.energy.gov/>

6 datasets

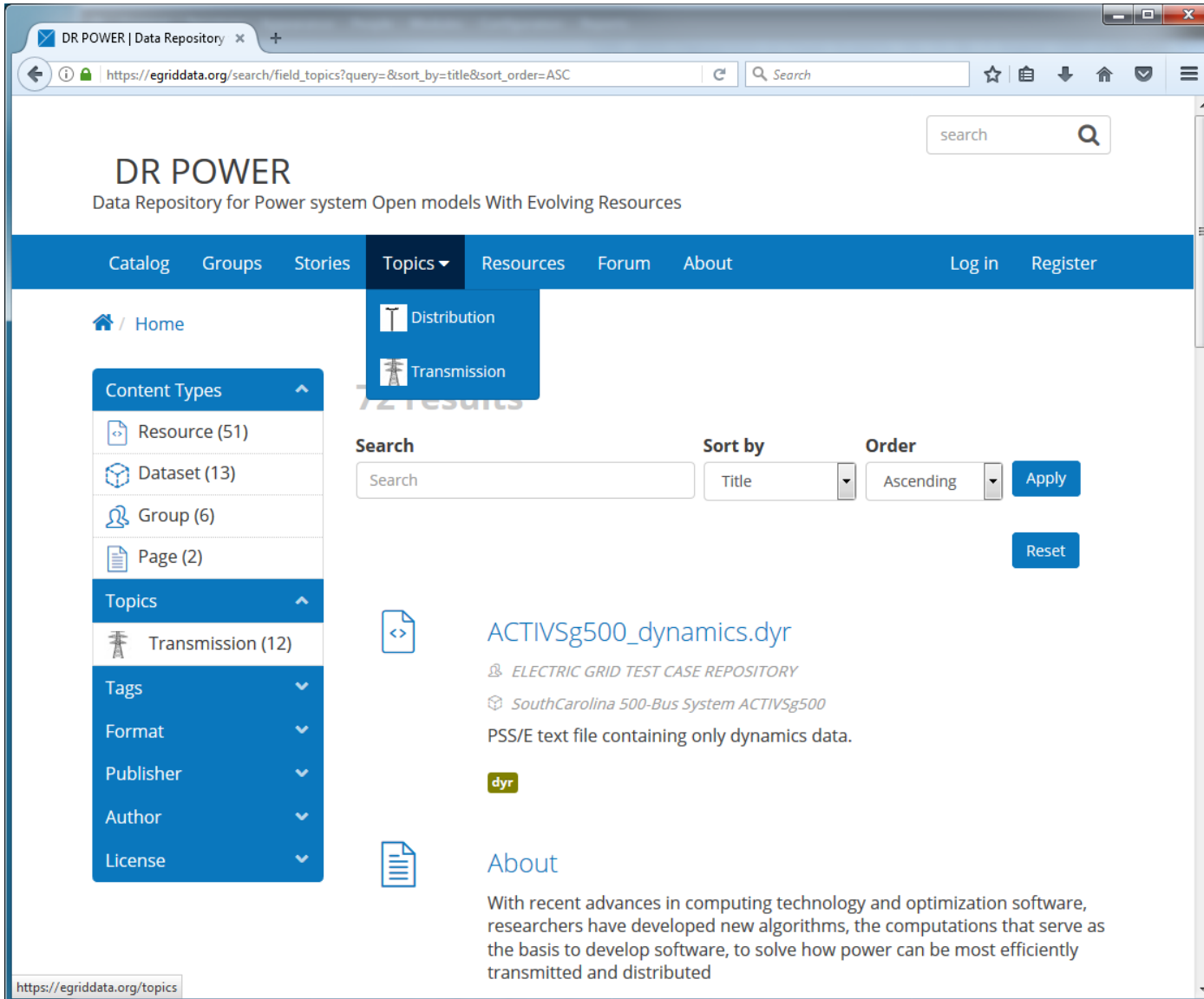
Curators

Digital curation is the selection, preservation, maintenance, collection and archiving of digital assets.

0 datasets

June 28, 2017 | 9

Topics (all)



The screenshot shows the DR POWER Data Repository website. The browser address bar displays the URL: https://egriddata.org/search/field_topics?query=&sort_by=title&sort_order=ASC. The page title is "DR POWER" with the subtitle "Data Repository for Power system Open models With Evolving Resources". The navigation bar includes links for Catalog, Groups, Stories, Topics (selected), Resources, Forum, About, Log in, and Register. A search bar is located in the top right corner. On the left side, there is a sidebar with "Content Types" (Resource (51), Dataset (13), Group (6), Page (2)) and "Topics" (Transmission (12)). The main content area shows a search bar, "Sort by" (Title), and "Order" (Ascending) dropdowns, with "Apply" and "Reset" buttons. Below this, a search result is displayed for "ACTIVSg500_dynamics.dyr", which is a PSS/E text file containing only dynamics data. The footer shows the URL <https://egriddata.org/topics>.

DR POWER
Data Repository for Power system Open models With Evolving Resources

Catalog Groups Stories **Topics** Resources Forum About Log in Register

Home

Content Types

- Resource (51)
- Dataset (13)
- Group (6)
- Page (2)
- Topics**
- Transmission (12)

Tags

Format

Publisher

Author

License

Search

Sort by

Order

Apply

Reset

ACTIVSg500_dynamics.dyr

ELECTRIC GRID TEST CASE REPOSITORY

SouthCarolina 500-Bus System ACTIVSg500

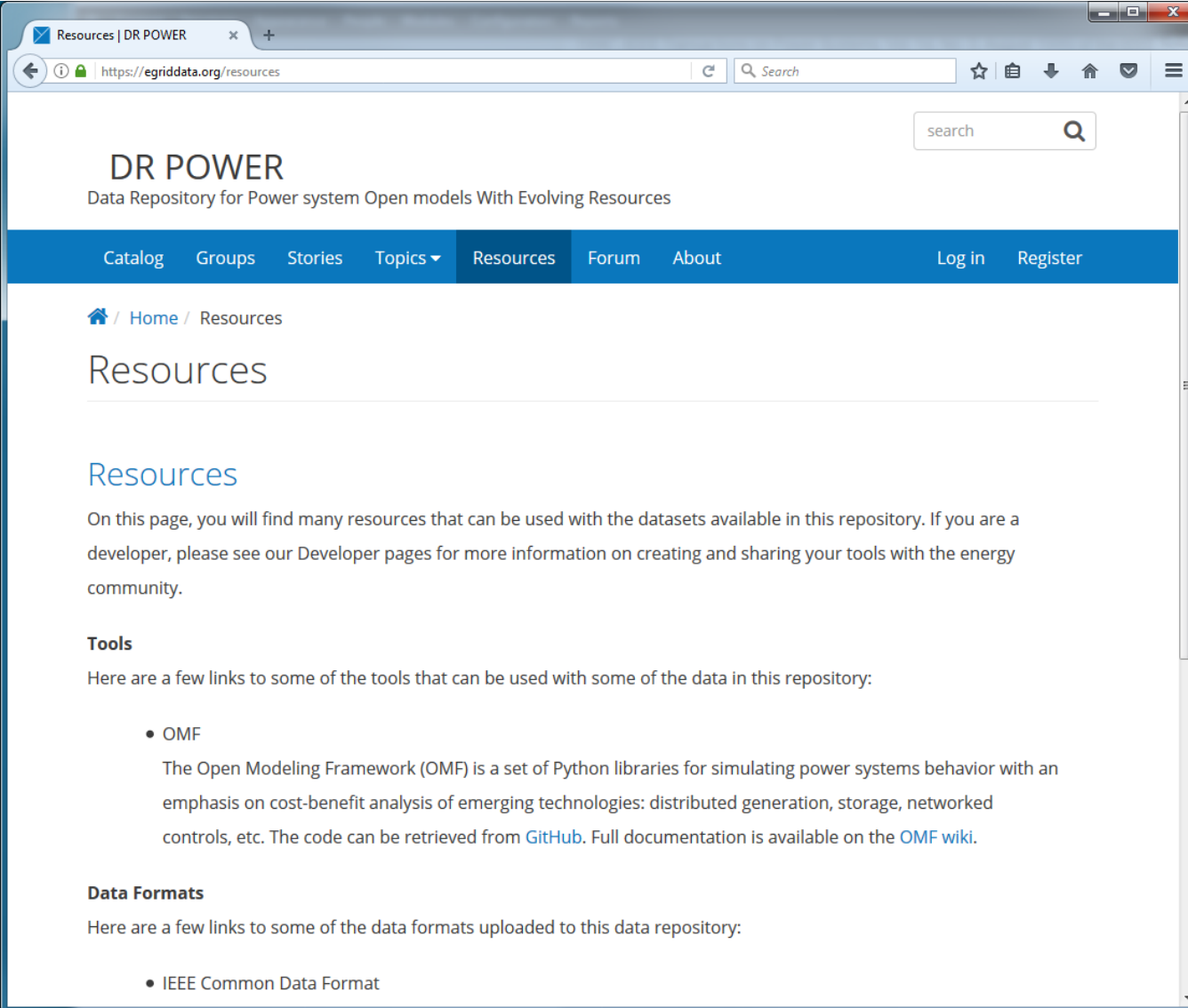
PSS/E text file containing only dynamics data.

dyr

About

With recent advances in computing technology and optimization software, researchers have developed new algorithms, the computations that serve as the basis to develop software, to solve how power can be most efficiently transmitted and distributed

<https://egriddata.org/topics>



Resources | DR POWER

https://egriddata.org/resources

DR POWER
Data Repository for Power system Open models With Evolving Resources

Catalog Groups Stories Topics Resources Forum About Log in Register

Home / Resources

Resources

Resources

On this page, you will find many resources that can be used with the datasets available in this repository. If you are a developer, please see our Developer pages for more information on creating and sharing your tools with the energy community.

Tools

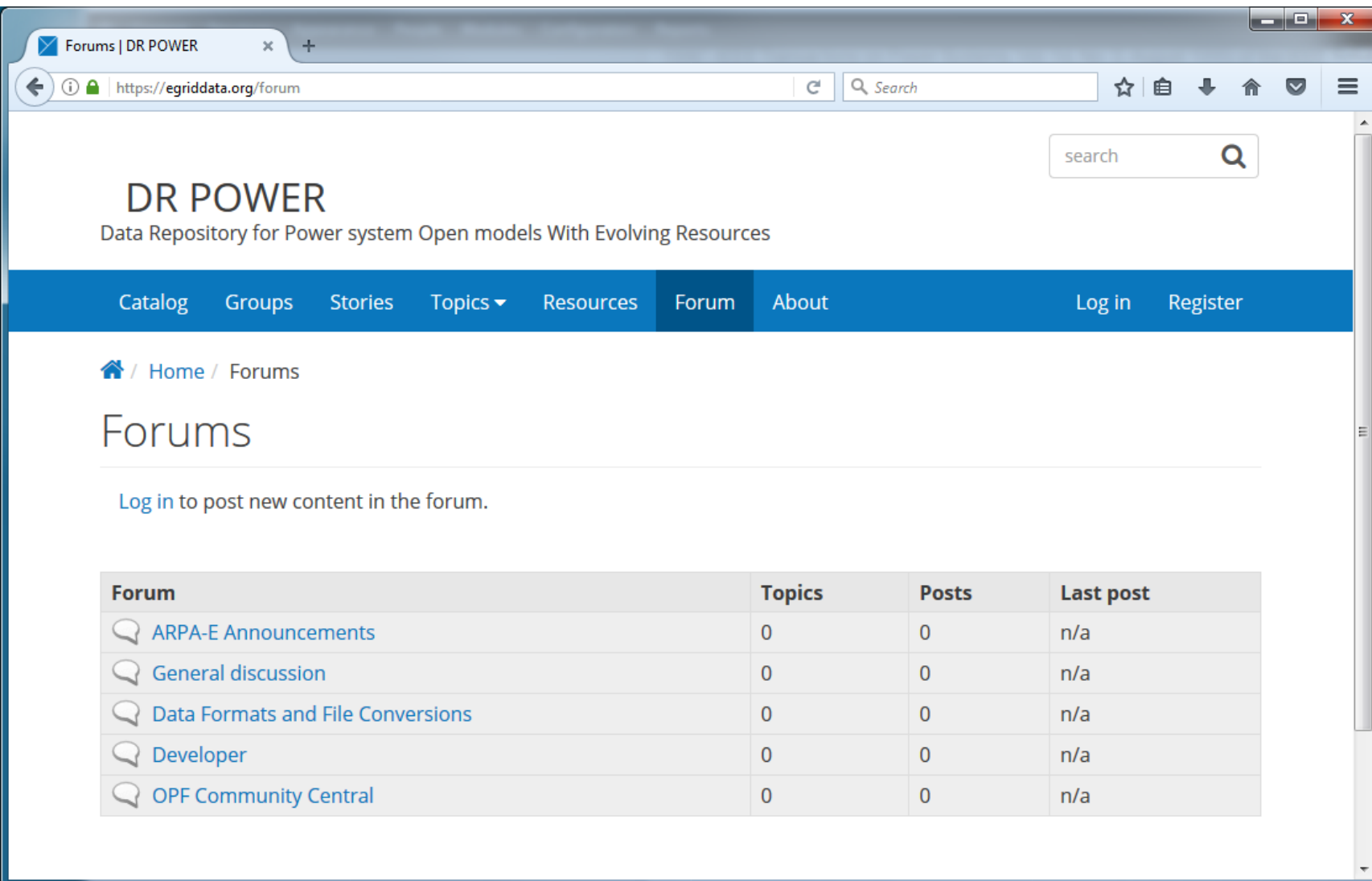
Here are a few links to some of the tools that can be used with some of the data in this repository:

- OMF
The Open Modeling Framework (OMF) is a set of Python libraries for simulating power systems behavior with an emphasis on cost-benefit analysis of emerging technologies: distributed generation, storage, networked controls, etc. The code can be retrieved from [GitHub](#). Full documentation is available on the [OMF wiki](#).






Data Formats

Here are a few links to some of the data formats uploaded to this data repository:

- IEEE Common Data Format



The screenshot shows a web browser window with the address bar displaying "https://egriddata.org/forum". The page title is "DR POWER" with the subtitle "Data Repository for Power system Open models With Evolving Resources". A navigation bar includes links for Catalog, Groups, Stories, Topics, Resources, Forum (selected), and About, along with Log in and Register buttons. A search bar is located in the top right. Below the navigation bar, a breadcrumb trail shows Home / Forums. The main heading is "Forums", followed by a prompt to "Log in to post new content in the forum." A table lists five forum categories, all with 0 topics and 0 posts.

Forum	Topics	Posts	Last post
 ARPA-E Announcements	0	0	n/a
 General discussion	0	0	n/a
 Data Formats and File Conversions	0	0	n/a
 Developer	0	0	n/a
 OPF Community Central	0	0	n/a

About

About | DR POWER

https://egriddata.org/about

search

DR POWER

Data Repository for Power system Open models With Evolving Resources

Catalog Groups Stories Topics Resources Forum About Log in Register

Home / About

About

View Revisions

About

With recent advances in computing technology and optimization software, researchers have developed new algorithms, the computations that serve as the basis to develop software, to solve how power can be most efficiently transmitted and distributed on the electric grid; however, existing models that test these algorithms are dated, inaccurate or incomplete; meanwhile, models that use real data from the electric grid cannot be shared publicly due to security and privacy challenges.

The Energy Grid Data Repository seeks to overcome these limitations by creating an interactive and publicly available repository to store the power system models, as well as other models developed by the engineering community. This repository will encourage a more accurate and comprehensive evaluation of emerging grid optimization tools, which will improve grid reliability and security while improving efficiency.

This Repository is funded under the Data Repository for Power system Open models With Evolving Resources (DR POWER) project by the ARPA-E Generating Realistic Information for the Development of Distribution and Transmission Algorithms (GRID DATA) Program to establish, curate, and evolve open-access power grid models and scenarios, collectively referred to as datasets.

DR POWER is a partnership of Pacific Northwest National Laboratory (PNNL) and the National Rural Electric Cooperative Association (NRECA).

Register

The screenshot shows a web browser window with the URL `https://egriddata.org/user/register`. The page title is "DR POWER" with the subtitle "Data Repository for Power system Open models With Evolving Resources". The navigation bar includes links for "Catalog", "Groups", "Stories", "Topics", "Resources", "Forum", "About", "Log in", and "Register". The "Register" button is highlighted. The breadcrumb trail is "Home / User account / User account". The main heading is "User account". There are three buttons: "Create new account", "Log in", and "Request new password". The "Create new account" button is highlighted. The form fields are: "Username *" (required), "E-mail address *" (required), and "About". The "Username" field has a hint: "Spaces are allowed; punctuation is not allowed except for periods, hyphens, apostrophes, and underscores." The "E-mail address" field has a hint: "A valid e-mail address. All e-mails from the system will be sent to this address. The e-mail address is not made public and will only be used if you wish to receive a new password or wish to receive certain news or notifications by e-mail." The "About" field is a text area. At the bottom, there is a green "Create new account" button. The browser's address bar shows the URL `https://egriddata.org/user/register`.

User account | DR POWER

[https://egriddata.org/user/register](#)

search

DR POWER

Data Repository for Power system Open models With Evolving Resources

Catalog Groups Stories Topics Resources Forum About Log in Register

Home / User account / User account

User account

Create new account Log in Request new password

Username *

Spaces are allowed; punctuation is not allowed except for periods, hyphens, apostrophes, and underscores.

E-mail address *

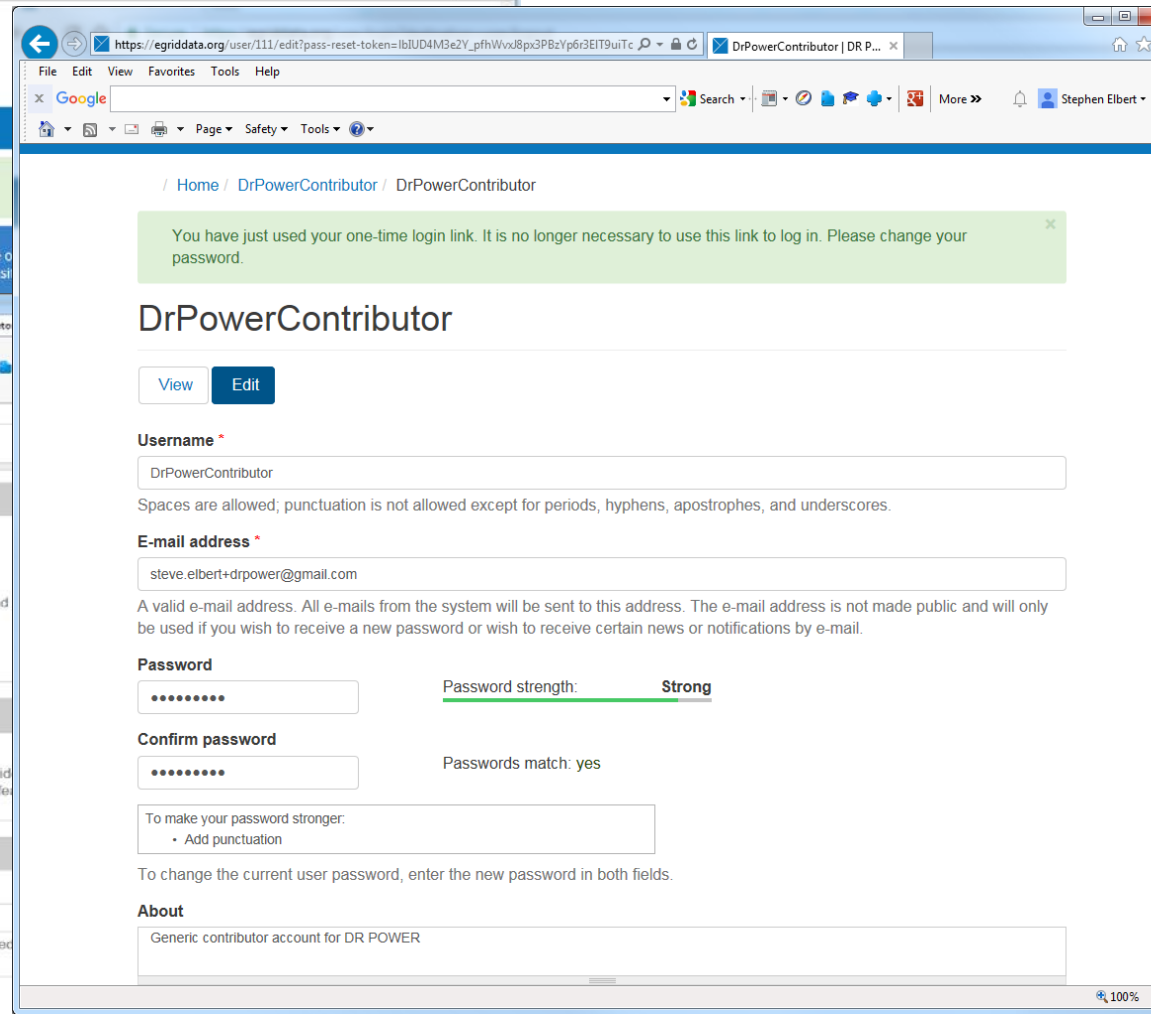
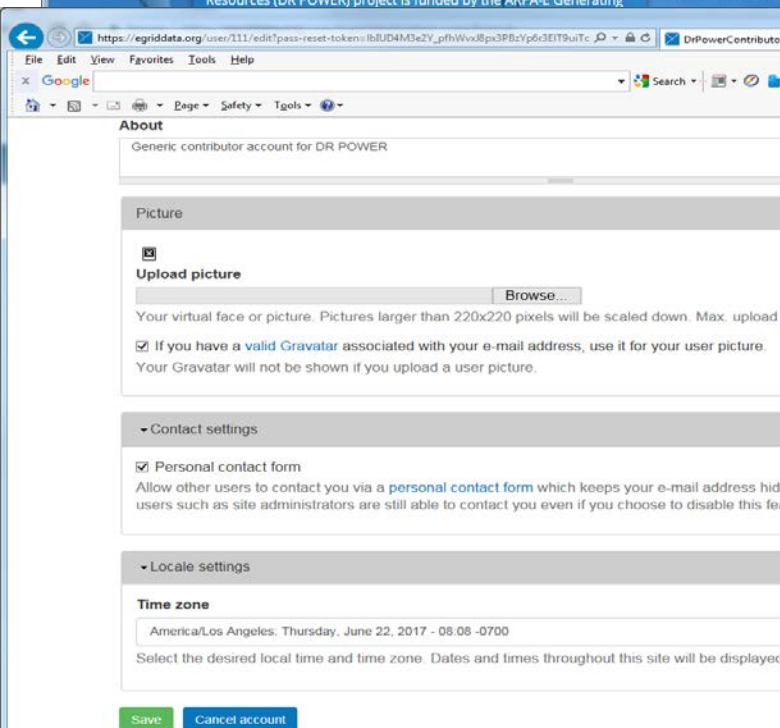
A valid e-mail address. All e-mails from the system will be sent to this address. The e-mail address is not made public and will only be used if you wish to receive a new password or wish to receive certain news or notifications by e-mail.

About

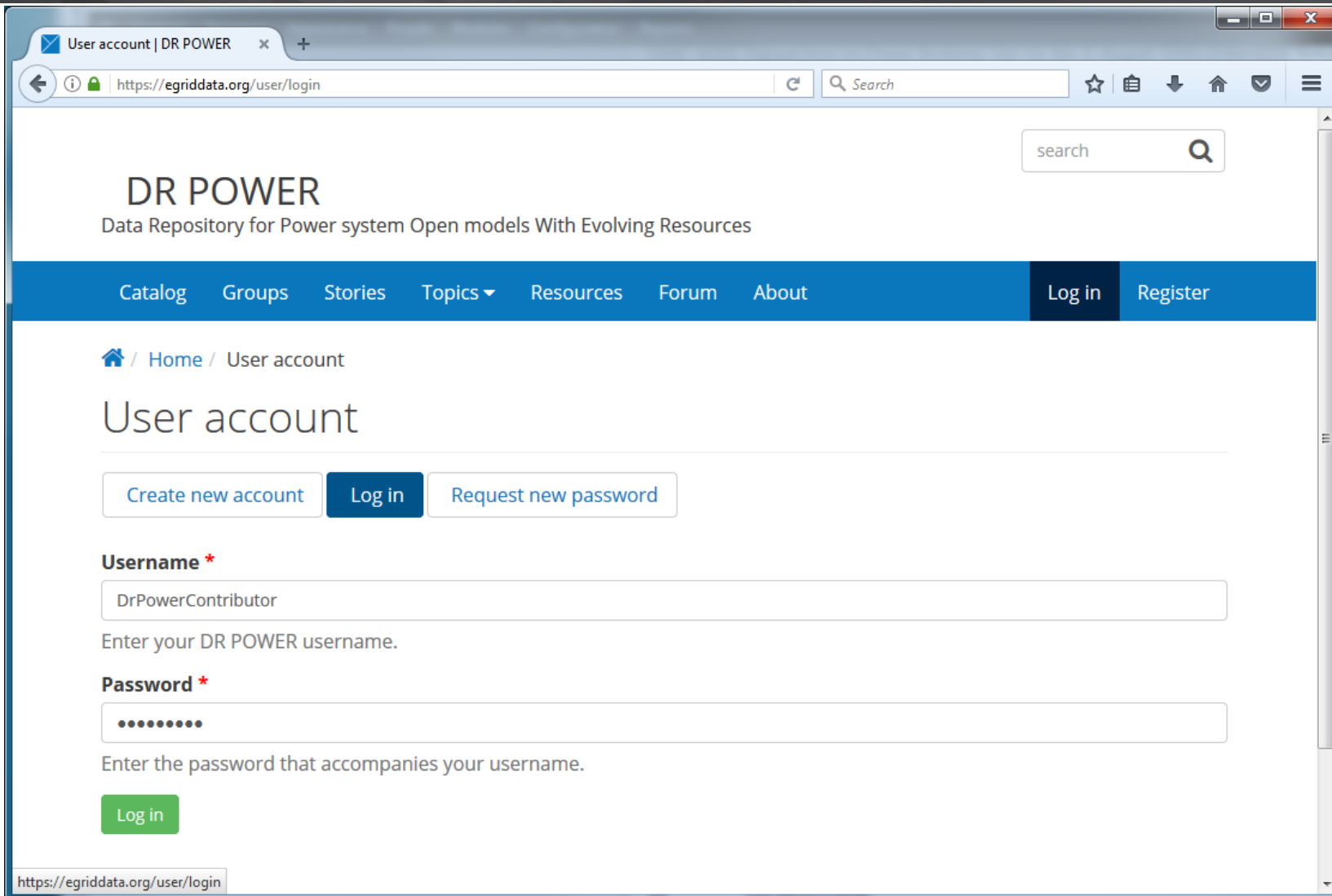
Create new account

[https://egriddata.org/user/register](#)

User validation



Log in



The screenshot shows a web browser window with the address bar displaying `https://egriddata.org/user/login`. The page title is "User account | DR POWER". The main heading is "DR POWER" with the subtitle "Data Repository for Power system Open models With Evolving Resources". A search bar is located in the top right. A blue navigation bar contains links for "Catalog", "Groups", "Stories", "Topics", "Resources", "Forum", "About", "Log in", and "Register". The breadcrumb trail is "Home / User account". The main heading "User account" is followed by three buttons: "Create new account", "Log in", and "Request new password". The "Log in" button is highlighted. Below this, there are two required fields: "Username" and "Password". The "Username" field contains the text "DrPowerContributor" and has a hint "Enter your DR POWER username." The "Password" field is masked with dots and has a hint "Enter the password that accompanies your username." A green "Log in" button is at the bottom of the form. The browser's status bar at the bottom shows the URL `https://egriddata.org/user/login`.

User account | DR POWER

[https://egriddata.org/user/login](#)

search

DR POWER

Data Repository for Power system Open models With Evolving Resources

Catalog Groups Stories Topics Resources Forum About Log in Register

Home / User account

User account

Create new account Log in Request new password

Username *

DrPowerContributor

Enter your DR POWER username.

Password *

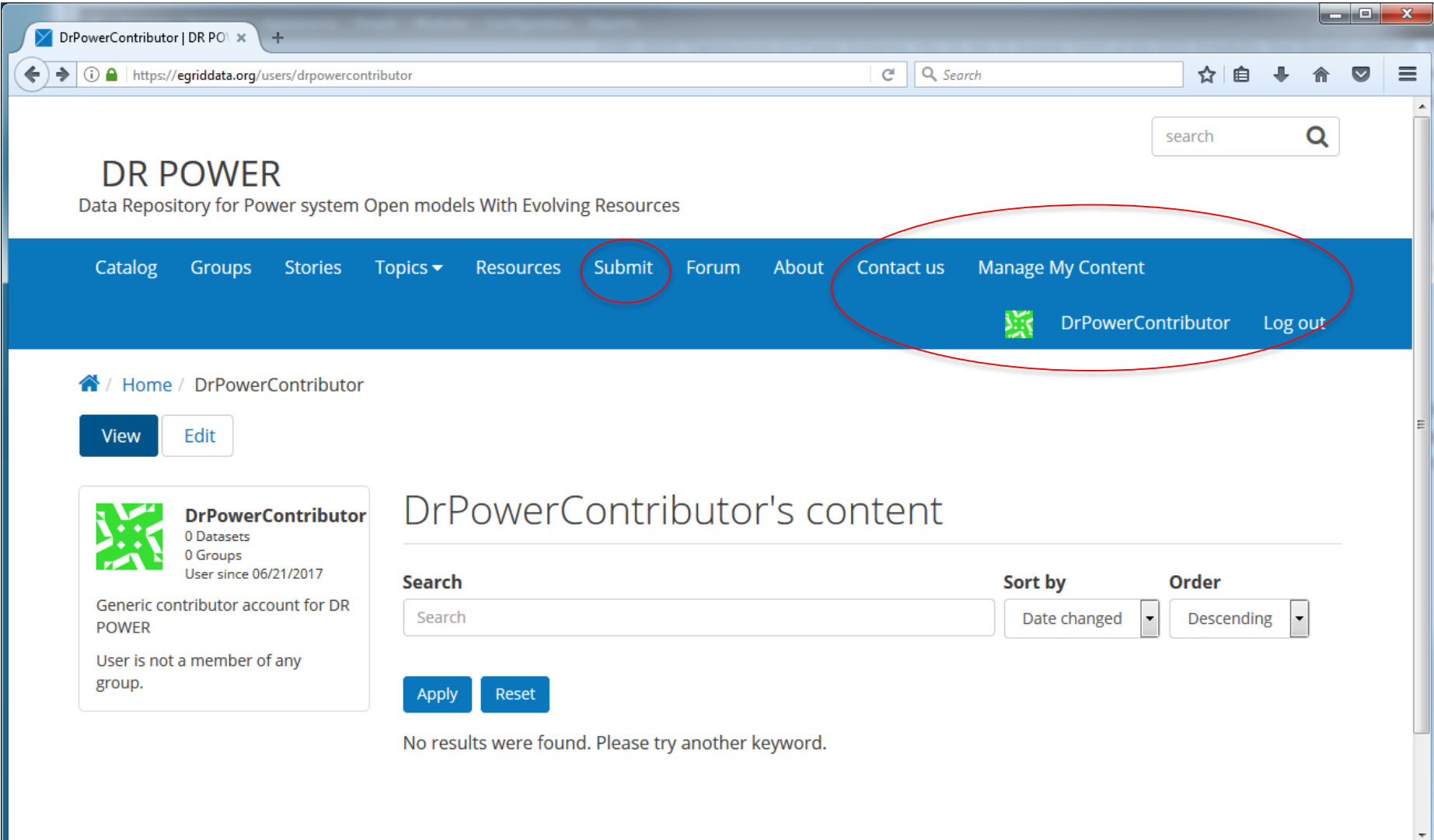
.....

Enter the password that accompanies your username.

Log in

<https://egriddata.org/user/login>

After Log in



The screenshot shows a web browser window with the URL <https://egriddata.org/users/drpowercontributor>. The page header includes a search bar and a navigation menu with links: Catalog, Groups, Stories, Topics, Resources, **Submit**, Forum, About, Contact us, and Manage My Content. The **Submit** link and the **Log out** button are circled in red. Below the navigation bar, the breadcrumb trail shows Home / DrPowerContributor. There are two buttons: View and Edit. A profile card for DrPowerContributor shows 0 Datasets, 0 Groups, and a user since 06/21/2017. The main content area is titled 'DrPowerContributor's content' and includes a search bar, 'Search' button, 'Apply' button, 'Reset' button, and sorting options (Date changed, Descending). A message at the bottom states: 'No results were found. Please try another keyword.'


DrPowerContributor | DR PO x

[←](#) [→](#) [https://egriddata.org/users/drpowercontributor](#) [Search](#) [☆](#) [📁](#) [↓](#) [🏠](#) [✉](#) [☰](#)

search 🔍


DR POWER
Data Repository for Power system Open models With Evolving Resources

Catalog Groups Stories Topics ▾ Resources **Submit** Forum About Contact us Manage My Content

 DrPowerContributor **Log out**

[🏠](#) / [Home](#) / DrPowerContributor

View **Edit**

 **DrPowerContributor**
0 Datasets
0 Groups
User since 06/21/2017
Generic contributor account for DR POWER
User is not a member of any group.

DrPowerContributor's content

Search **Sort by** **Order**

No results were found. Please try another keyword.

Submit: (1) Create dataset

https://egriddata.org/node/add/dataset

User account | DR POWER | Data Reposit...

File Edit View Favorites Tools Help

Google Search

Page Safety Tools

Content DKAN Structure Appearance People Modules Configuration Recline Configuration Reports

Hello Steve.Elbert Log out

Datasets are simply used to group related pieces of data. These can then be found under a single url with a description and licensing information.

1 Create dataset 2 Add data 3 Additional data


Title *

Phase 0 IEEE 14

URL

egriddata.org/dataset/phase-0-ieee-14 Edit

Description



This dataset is composed of 100 scenarios for the preventative security constrained optimal power flow (PSCOPF)

Text format Markdown... More information about text formats ?

Tags

PSCOPF x

eg The term 'PSCOPF' will be added.

Groups

Grid Optimization (GO) Competition x

Topics

Choose some options

License

Other (Public Domain)

License definitions and additional information can be found at opendefinition.org

Stephen

https://egriddata.org/node/add/dataset

Appearance People Modules Configuration Recline Configuration Reports Hello Steve.Elbert

License

Other (Public Domain)

License definitions and additional information can be found at opendefinition.org

Associated DOI Request

Comment settings

Authoring information
By Steve.Elbert

Publishing options
Published

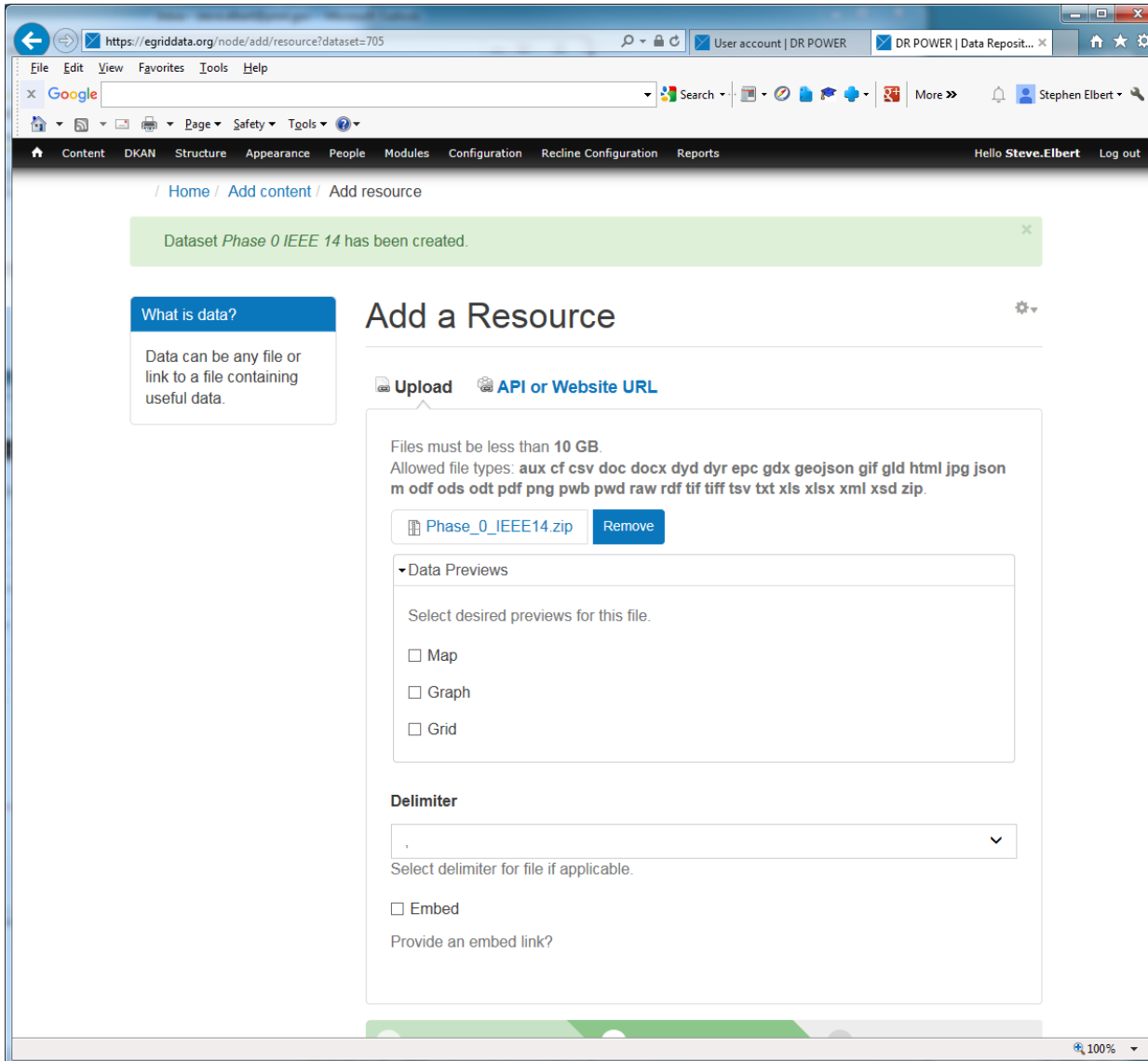
☒ Open
Users with the "Post comments" permission can post comments.

☐ Closed
Users cannot post comments.

Next: Add data

Important: By submitting content, you agree to release your contributions under the Open Database License.

Submit: (2) Add data 1



https://egriddata.org/node/add/resource?dataset=705

User account | DR POWER | DR POWER | Data Reposit...

File Edit View Favorites Tools Help

Google Search

Page Safety Tools

Content DKAN Structure Appearance People Modules Configuration Recline Configuration Reports

Hello **Steve Elbert** Log out

/ Home / Add content / Add resource

Dataset *Phase 0 IEEE 14* has been created.


What is data?

Data can be any file or link to a file containing useful data.

Add a Resource

Upload API or Website URL

Files must be less than **10 GB**.
Allowed file types: **aux cf csv doc docx dyd dyr epc gdx geojson gif gld html jpg json m odf ods odt pdf png pwb pwd raw rdf tif tiff tsv txt xls xlsx xml xsd zip**.

 Phase_0_IEEE14.zip **Remove**

Data Previews

Select desired previews for this file.

☐ Map

☐ Graph

☐ Grid

Delimiter

,

Select delimiter for file if applicable.

☐ Embed

Provide an embed link?

Submit: (2) Add data 2

Browser address bar: <https://egriddata.org/node/add/resource?dataset=705>

Navigation: Content, DKAN, Structure, Appearance, People, Modules, Configuration, Recline Configuration, Reports

Hello **Steve.Elbert** Log out

Title *

Phase 0 IEEE14 100 scenarios

Description

Text format Markdown... [More information about text formats](#)

Format eg. csv, json

Leave blank to auto-detect resource format

Dataset

Olga Test 2017-06-16-1612
Pacific Northwest Demonstration Project
Phase 0 IEEE 14
Richland Building Information

Dataset that this resource is attached to.

☒ This file contains no Critical Electric Infrastructure Information (CEII) *

By checking this box, I hereby acknowledge that the data in this file contains no Critical Electric Infrastructure Information (CEII) as defined in 18 C.F.R. § 388.113(c)(1); as well as "Critical Electric Infrastructure Information" and "Defense Critical Electric Infrastructure" as defined in Sec. 215A(a)(3) of the Federal Power Act (16 U.S.C 824 et seq.) as amended by Division F, Section 61003 of the Fixing America's Surface Transportation Act or the "FAST Act", 2015, Pub. L., No. 114-94 and as further defined, designated or identified in any regulations or orders promulgated thereunder.

Associated DOI Request

eg. <http://example.com/gold-prices-jan-201> **Select**

Link to a file hosted on a remote server. CSV files can be imported into the DKAN datastore.

URL path settings
[Automatic alias](#)

☒ Generate automatic URL alias
Uncheck this to create a custom alias below. [Configure URL alias patterns](#)

epos: X

Secure | <https://egriddata.org/node/add/resource?dataset=753>

Navigation: Structure, Appearance, People, Modules, Configuration, Recline Configuration, Reports

Hello **Steve.Elbert** Log out

eg. <http://example.com/gold-prices-jan-201> **Select**

Link to a file hosted on a remote server. CSV files can be imported into the DKAN datastore.

URL path settings
[Automatic alias](#)

Revision information
[New revision](#)

Comment settings

Authoring information
By Steve.Elbert

Publishing options
Published

☒ Generate automatic URL alias
Uncheck this to create a custom alias below. [Configure URL alias patterns](#)

URL alias

Optionally specify an alternative URL by which this content can be accessed. For example, type "about" when writing an about page. Use a relative path and don't add a trailing slash or the URL alias won't work.

Next: Additional Info **Save** **Save and add another**



Submit: (3) Additional data

DR POWER | Data Repository

https://egriddata.org/node/753/edit?additional=1

Content DCAM Structure Appearance People Metadata Configuration Redline Configuration Reports Hello Steve.Elbett Log out

1 Edit dataset 2 Add dataset 3 Additional data

Datasets are simply used to group related pieces of data. These can then be found under a single url with a description and licensing information.

Dataset Information

These fields are compatible with DCAT, an RDF vocabulary designed to facilitate interoperability between data catalogs published on the Web. These fields are also compatible with the Common Core metadata schema from Project Open Data.

Author

This is the author of the dataset.

Spatial / Geographical Coverage Area

Spatial coverage of the dataset. Will be rendered as GeoJSON. See DCAT spatial/geographical coverage for more info.

Map GeoJSON Points

Spatial / Geographical Coverage Location

Spatial location of the dataset. Could be Address, City, State, part of the world or other description. See DCAT spatial/geographical coverage for more info.

Frequency

The frequency with which dataset is published. See DCAT frequency for more info.

Temporal Coverage

The temporal period that the dataset covers. See DCAT temporal coverage for more info.

Show End Date

Date Time

E.g., 06/23/2017 E.g., 14:15:40

Granularity

This is usually geographical or temporal but can also be other dimension e.g. Person can be used to describe granularity of a dataset about average income. See DCAT Granularity for more info.

Data Dictionary

Provides some sort of description that helps understanding the data. This can be a URL to such a resource. See Project Open Data data dictionary for more info.

Contact Name

Contact person's name for the asset. See Project Open Data for more info. Name should be formatted as Last, First.

Contact Email

Contact person's email address. See Project Open Data for more info.

DR POWER | Data Repository

https://egriddata.org/node/753/edit?additional=1

Content DCAM Structure Appearance People Metadata Configuration Redline Configuration Reports Hello Steve.Elbett Log out

Contact Email

Contact person's email address. See Project Open Data for more info.

Public Access Level

Public

The degree to which this dataset could be made publicly-available, regardless of whether it has been made available. See Project Open Data for more info.

Additional Info

key value

Resources

IEEE 30-Bus (754)

Scanned 30 bus diagram (755)

30-bus 600 DPI TIFF diagram (756)

Related Content

Title URL

The link title is limited to 128 characters maximum.

Associated DOI Request

Revision information

Create new revision

Revision log message

Comment settings

Authoring information

By Steve.Elbett on 2017-06-23 13:58:35 -0700

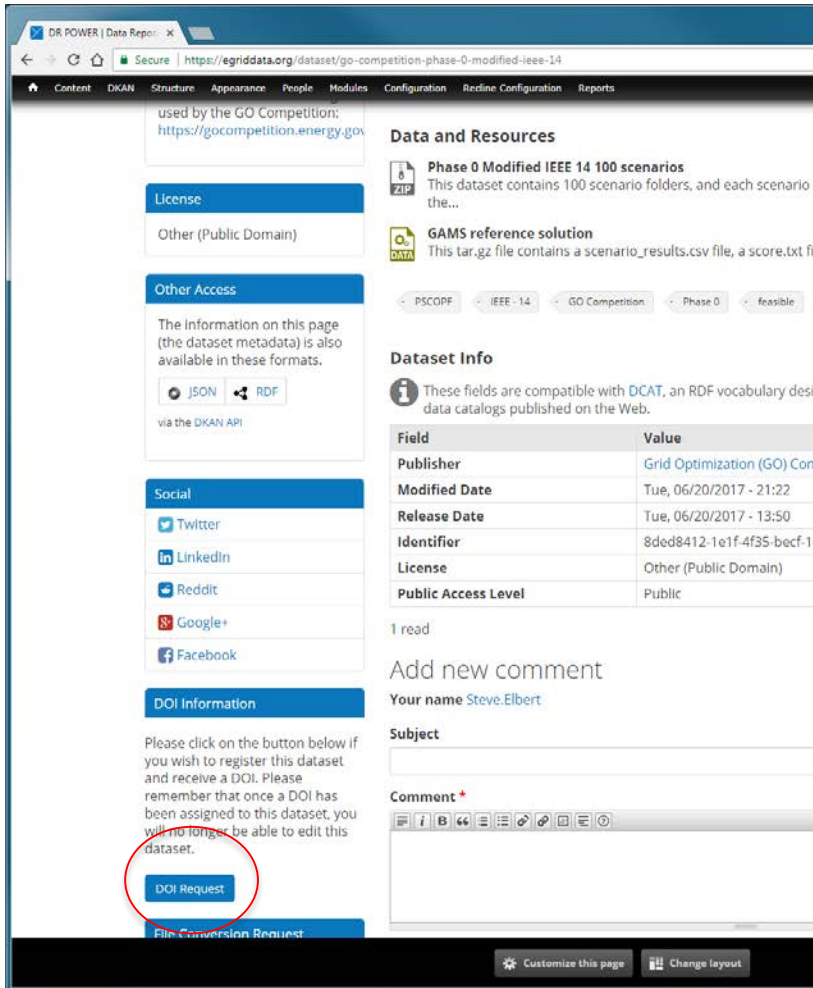
Publishing options

Published

Provide an explanation of the changes you are making. This will help other authors understand your motivations.

Save View changes Delete

Create a DOI: Product Description



used by the GO Competition;
<https://gocompetition.energy.gov>

License

Other (Public Domain)

Other Access

The information on this page (the dataset metadata) is also available in these formats.

[JSON](#) [RDF](#)

via the [DKAN API](#)

Social

[Twitter](#)
[LinkedIn](#)
[Reddit](#)
[Google+](#)
[Facebook](#)

DOI Information

Please click on the button below if you wish to register this dataset and receive a DOI. Please remember that once a DOI has been assigned to this dataset, you will no longer be able to edit this dataset.

[DOI Request](#)

Data and Resources

Phase 0 Modified IEEE 14 100 scenarios
This dataset contains 100 scenario folders, and each scenario contains...

GAMS reference solution
This tar.gz file contains a scenario_results.csv file, a score.txt file...

Dataset Info

These fields are compatible with DCAT, an RDF vocabulary designed for data catalogs published on the Web.

Field	Value
Publisher	Grid Optimization (GO) Center
Modified Date	Tue, 06/20/2017 - 21:22
Release Date	Tue, 06/20/2017 - 13:50
Identifier	8ded8412-1e1f-4f35-becf-16...
License	Other (Public Domain)
Public Access Level	Public

1 read

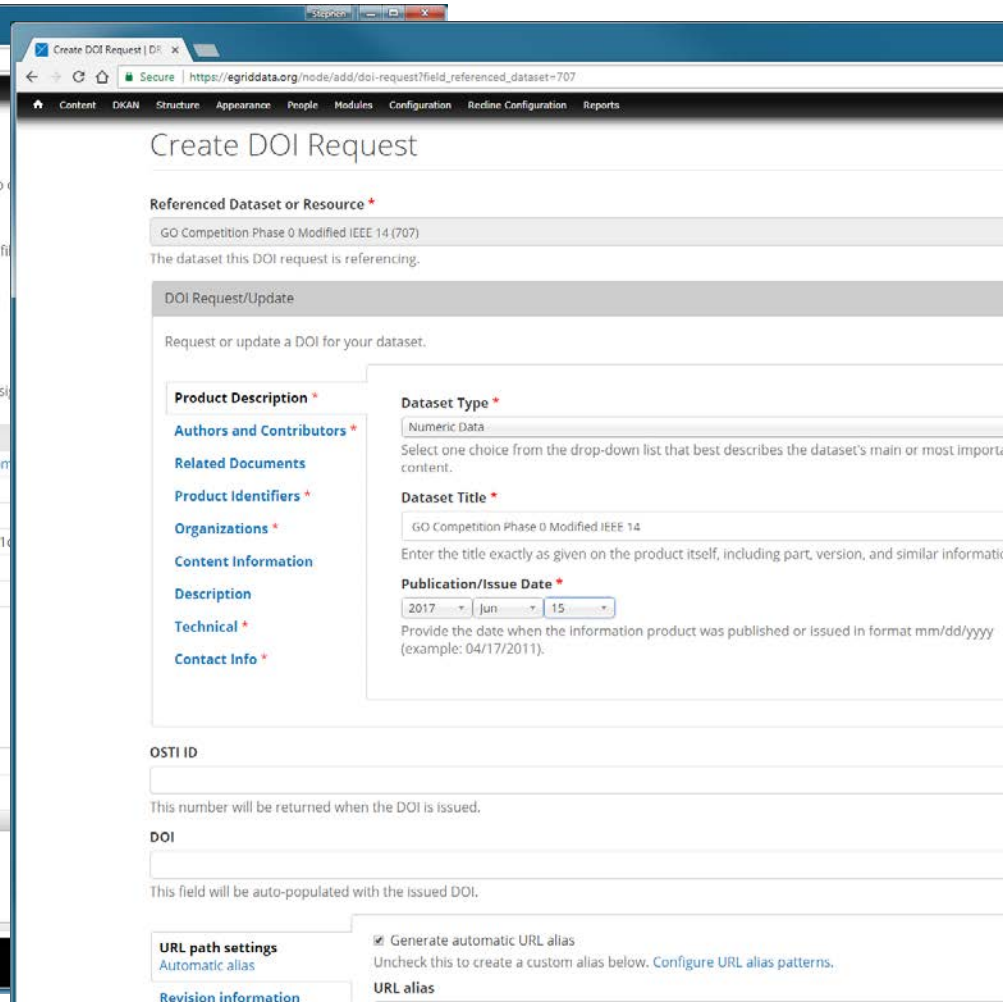
Add new comment

Your name [Steve Elbert](#)

Subject

Comment *

[Customize this page](#) [Change layout](#)



Create DOI Request

Referenced Dataset or Resource *

GO Competition Phase 0 Modified IEEE 14 (707)

The dataset this DOI request is referencing.

DOI Request/Update

Request or update a DOI for your dataset.

Product Description *

[Authors and Contributors *](#)

[Related Documents](#)

[Product Identifiers *](#)

[Organizations *](#)

[Content Information](#)

[Description](#)

[Technical *](#)

[Contact Info *](#)

Dataset Type *

Numeric Data

Select one choice from the drop-down list that best describes the dataset's main or most important content.

Dataset Title *

GO Competition Phase 0 Modified IEEE 14

Enter the title exactly as given on the product itself, including part, version, and similar information.

Publication/Issue Date *

2017 Jun 15

Provide the date when the information product was published or issued in format mm/dd/yyyy (example: 04/17/2011).

OSTI ID

This number will be returned when the DOI is issued.

DOI

This field will be auto-populated with the issued DOI.

URL path settings

☒ Generate automatic URL alias

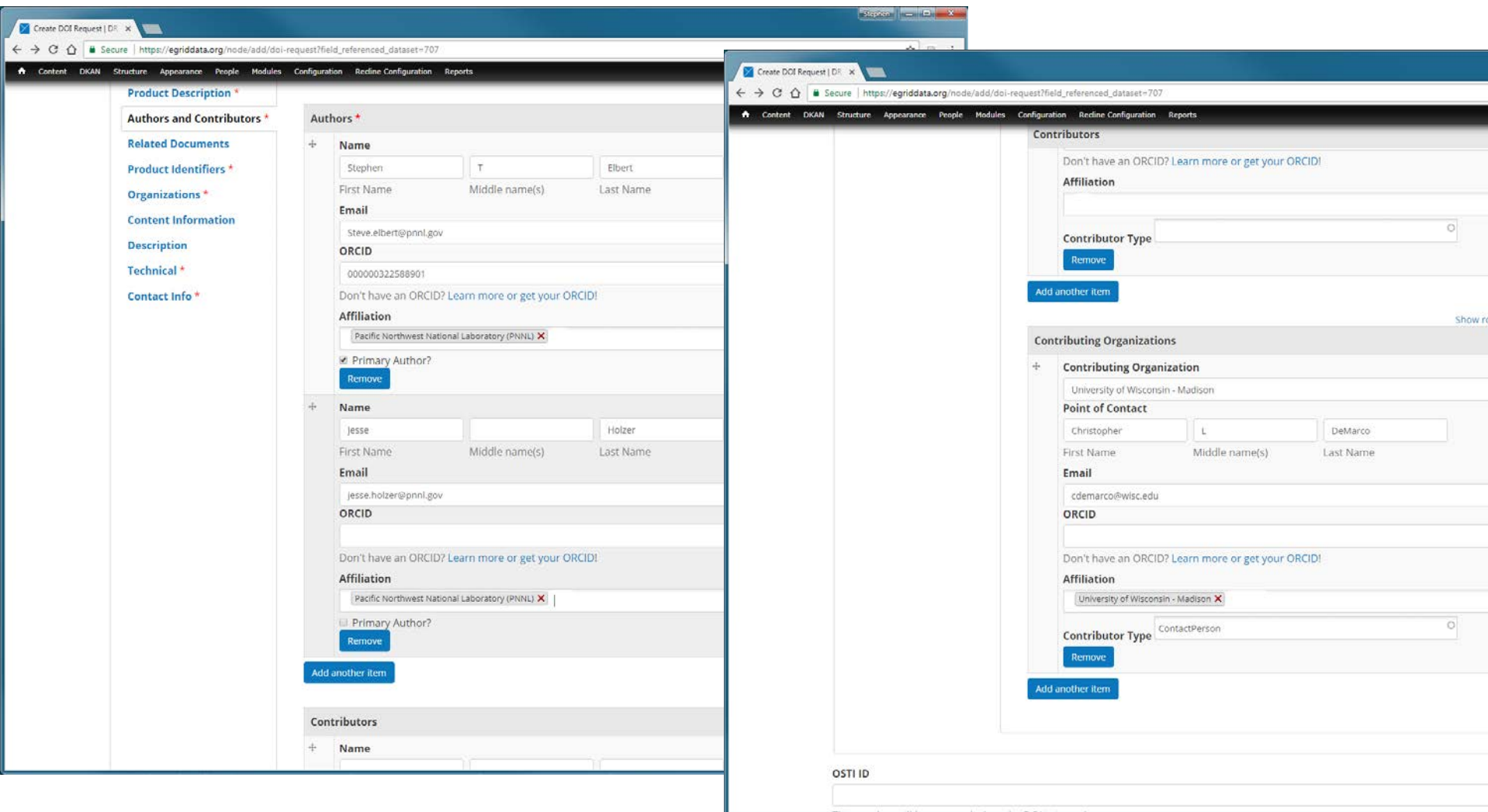
Automatic alias

Uncheck this to create a custom alias below. [Configure URL alias patterns.](#)

Revision information

URL alias

DOI: Authors and Contributors



Create DOI Request | DOI

Secure | https://eGRIDdata.org/node/add/doi-request?field_referenced_dataset=707

Content DIKAN Structure Appearance People Modules Configuration Redline Configuration Reports

Product Description *

Authors and Contributors *

Related Documents

Product Identifiers *

Organizations *

Content Information

Description

Technical *

Contact Info *

Authors *

+ Name

Stephen T Elbert

First Name Middle name(s) Last Name

Email

Steve.elbert@pnnl.gov

ORCID

000000322588901

Don't have an ORCID? [Learn more](#) or [get your ORCID!](#)

Affiliation

Pacific Northwest National Laboratory (PNNL) X

☒ Primary Author?

Remove

+ Name

Jesse Holzer

First Name Middle name(s) Last Name

Email

jesse.holzer@pnnl.gov

ORCID

Don't have an ORCID? [Learn more](#) or [get your ORCID!](#)

Affiliation

Pacific Northwest National Laboratory (PNNL) X

☐ Primary Author?

Remove

Add another item

Contributors

Don't have an ORCID? [Learn more](#) or [get your ORCID!](#)

Affiliation

Contributor Type

Remove

Add another item

Contributing Organizations

+ Contributing Organization

University of Wisconsin - Madison

Point of Contact

Christopher L DeMarco

First Name Middle name(s) Last Name

Email

cdemarco@wisc.edu

ORCID

Don't have an ORCID? [Learn more](#) or [get your ORCID!](#)

Affiliation

University of Wisconsin - Madison X

Contributor Type

ContactPerson

Remove

Add another item

OSTI ID



DOI: Related Documents

The screenshot shows a web browser window with the URL https://egriddata.org/node/add/doi-request?field_referenced_dataset=707. The page title is "Create DOI Request | DOI". The main heading is "DOI Request/Update". Below this, it says "Request or update a DOI for your dataset.".

On the left side, there is a sidebar with the following links: "Product Description *", "Authors and Contributors *", "Related Documents", "Product Identifiers *", "Organizations *", "Content Information", "Description", "Technical *", and "Contact Info *".

The main content area has a "Related Resource" section. An "Insert link" dialog box is open over this section. The dialog box has the following fields: "Text" (containing "Grid Optimization Competition"), "Description" (empty), "Reference" (empty), "URL" (containing "https://gocompetition.energy.gov/"), and "Inline" (checked). There are "Cancel" and "OK" buttons at the bottom of the dialog box.

Below the "Related Resource" section, there is an "Add/Remove Related Identifiers/DOIs" section. It contains a plus sign icon and the text "This STI Product (Item A) (is related in this way to)". Below this is a text input field. The text below the input field reads: "Referencing other documents, other datasets, or software applications that relate to the dataset you are submitting allows the user of your information to follow these vital links and to better understand the scope of your research. You may add DOIs to cross-reference these other items. If you do not have a DOI for one of the items you wish to relate to your dataset, please put the citation information for that item in the Related Resource field." Below this is another paragraph: "This Related Identifier/DOIs field also allows you, for each DOI you reference, to choose a controlled vocabulary term that 'explains' the type of relationship between the DOI you enter and the dataset you are submitting." Below this is another paragraph: "You may up to 200 DOIs to reference other papers, datasets, or software that relate to the STI product you are submitting/announcing with this record. The STI product you are currently describing/submitting with this record is always considered Item A. The related DOI URL is always considered Item B. When cross-referencing with the 'how related' controlled vocabulary, the virtual sentence structure you want to create is 'Item A (is related in this way to) Item B'." Below this is a "DOI (Item B)" label and a text input field. There is a "Remove" button below the input field. At the bottom of the section, there is an "Add another item" button.

DOI: Product Identifiers

Create DOI Request | DOI | x

Secure | https://egriddata.org/node/add/doi-request?field_referenced_dataset=707

Content DKAN Structure Appearance People Modules Configuration Redline Configuration Reports Hello Steve.Elibert Log out

Request or update a DOI for your dataset.

Product Description *

Authors and Contributors *

Related Documents

Product Identifiers *

Organizations *

Content Information

Description

Technical *

Contact Info *

Dataset Product Number(s) * [Show row weights](#)

+

An identifying number that has been assigned to the dataset by either the originating/submitting organization or by the organization currently hosting the data. If two different organizations have assigned different numbers to the dataset, both are listed here.

[Add another item](#)

DOE Contract/Award Number(s) [Show row weights](#)

+

Enter the DOE contract number under which the work was funded. If the dataset is a result of a joint effort between two or more DOE Site/Facility Management Contractors, etc., additional DOE contract numbers may be entered. **The "DE" should not be included as a part of the number.** When more than one number is entered, the first number is considered the primary number. If a DOE Contract Number does not apply for the originating organization, the word "NONE" should be entered.

[Add another item](#)

Other non-DOE Contract/Award Number(s) [Show row weights](#)

+

[Add another item](#)

Other Identifying Numbers [Show row weights](#)

+

[Add another item](#)

DOI: Organizations

Create DOI Request | DR x

Secure | https://egriddata.org/node/add/doi-request?field_referenced_dataset=707

Content DKAN Structure Appearance People Modules Configuration Recline Configuration Reports Hello Steve Elbert Log out

Request or update a DOI for your dataset.

Product Description *

Authors and Contributors *

Related Documents

Product Identifiers *

Organizations *

Content Information

Description

Technical *

Contact Info *

Originating Organization *

Pacific Northwest National Laboratory (PNNL) X

Select the name of the organization that performed the research or issued the dataset from the drop-down list. More than one organization may be selected. You may also type in the name of the Originating Research Organization, if you do not see it in the picklist. Select or list the primary organization first and separate multiple entries with a semicolon and a space. (See also the Contributor Organization(s) field.)

Contributor Organizations

University of Wisconsin - Madison X Arizona State University X

The name of a Research/Project Collaboration, if applicable, should be entered in this field, not in the author field. Contributor organizations are organizations which clearly do not fit into any of the other organization fields. They are, instead, any company, institution, or organization to which the submitter wishes to provide recognition. Examples of possible contributor organizations that a submitter may want to list (in addition to listing a collaboration name) include:

- An external organization that provided significant review of the research product.
- An organization that provided site management but was not directly involved in the research/experiment itself.
- An organization that collected data to provide to the originating research organization.
- A data center or repository that is not listed as the originating research organization.

Sponsoring Organization(s) *

USDOE Advanced Research Projects Agency - Energy (ARPA-E) X

Select the DOE Program Office and sub-Program Office (e.g. Office of Science (SC), Office of Basic Energy Sciences (BES, DOE office of Nuclear Energy (NE), Fuel Cycle Research and Development Program) that funded the work described in the STI Product. For projects funded by more than one Program Office, select each source of the DOE funding in descending order of dollar amount of funding. The names of funding offices for work for non-DOE organizations may be typed into this field.

OSTI ID

This number will be returned when the DOI is issued.

DOI

This field will be auto-populated with the issued DOI.

DOI: Description

Create DOI Request | DOI: x

Secure | https://egriddata.org/node/add/doi-request?field_referenced_dataset=707


Content DKAN Structure Appearance People Modules Configuration Redefine Configuration Reports Hello Steve Elbert Log out

DOI Request/Update

Request or update a DOI for your dataset.

[Product Description *](#)
[Authors and Contributors *](#)
[Related Documents](#)
[Product Identifiers *](#)
[Organizations *](#)
[Content Information](#)
Description
[Technical *](#)
[Contact Info *](#)

Abstract




American Electric Power System in 1962. The modification consisted of removing one line, linking buses 7 and 9, in order to generate a distinct power system network model. The 100 scenarios, all known to be feasible, were generated by random perturbation of some of the limits (e.g. on generator power output and branch flows). These problems are small enough that they should not pose any challenge to off-the-shelf optimization solvers, commercial or otherwise.

Text format

[More information about text formats](#)

Provide a clear, concise summary of the content of the dataset, as well as specialized parameters that describe the data. Specialized parameters may include a date range during which information was taken (such as May, 01 2002 - December 31, 2002), geographic information (such as a specific state, region, country, latitude and longitude, etc.), information such as well depth ranges, temperature ranges, etc. The abstract length should be no more than 5,000 characters.

Keywords



PSCOPF; feasible; IEEE14; optimal power flow

Provide terms that describe the content of the dataset. More than one term may be entered; separate multiple terms with a semicolon and a space. If keywords are not provided by the originating organization, the Office of Scientific and Technical Information may generate them.

Add another item

Show row weights

OSTI ID

This number will be returned when the DOI is issued.

DOI

This field will be auto-populated with the issued DOI.

DOI: Technical

Create DOI Request | DOI: X

Secure | https://egriddata.org/node/add/doi-request?field_referenced_dataset=707

Content | DKAN | Structure | Appearance | People | Modules | Configuration | Recline Configuration | Reports | Hello Steve Elbert | Log out

Product Description *

Authors and Contributors *

Related Documents

Product Identifiers *

Organizations *

Content Information

Description

Technical *

Contact Info *

Web Page (URL) *

Provide the URL that leads to an HTML "landing page" (information page) that provides context and usage information for the dataset. The landing page must include a direct link to the dataset and/or to its component files. Provide a complete unique URL (Uniform Resource Locator) address sufficient to access the landing page.

Digital Object Identifier (if already assigned)

Provide the DOI only if an organization other than OSTI has assigned it. If the dataset does not already have a DOI, one will be assigned to it by the [DOE Data ID Service](#). **[Please be aware that registering a dataset for a DOI includes a commitment on the part of the author or submitter that the dataset will be maintained indefinitely for public access. DataCite recommends that datasets be placed in the care of a data center or online repository prior to registration.]**

Dataset's File Extension

Please provide the file extension of the dataset. The content of the dataset will not be indexed by OSTI but knowing the type of file posted will be important to the users that search our databases. Some common file extensions are .txt, .csv, .ps, etc.

Software needed to utilize dataset (if applicable)

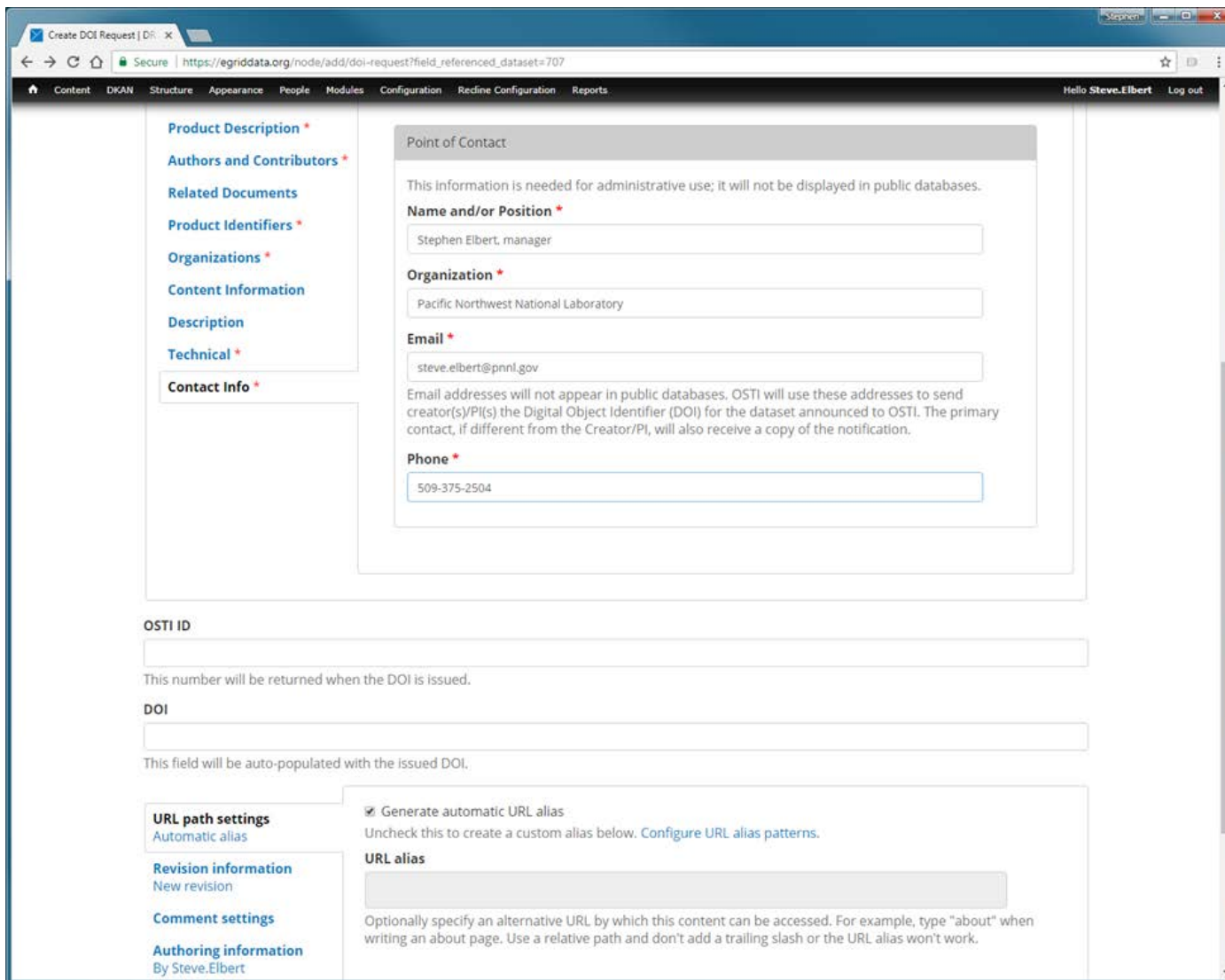
Text format [More information about text formats](#)

Specialized software tools are often developed to allow a user to manipulate data in various ways. If these tools are available for the user but do not have to be used with the data, they do not need to be listed. However, if there is a piece of software without which a user cannot open, see, or use the dataset, that software should be noted in this field.

Dataset Size

Indicate how many individual data files are included in the dataset being announced, or if the dataset consists primarily of images, note the approximate number of images. You may also indicate size in megabytes, and you may indicate whether the dataset is complete or will continue to have files added to it.

DOI: Contact Info



The screenshot shows a web browser window with the address bar displaying "https://egriddata.org/node/add/doi-request?field_referenced_dataset=707". The page title is "Create DOI Request | DR: x". The browser window includes a navigation bar with links: Content, DKAN, Structure, Appearance, People, Modules, Configuration, Redefine Configuration, and Reports. The user is logged in as "Hello Steve Elbert" with a "Log out" link.

The main content area is divided into a left sidebar and a main form area. The sidebar contains a list of links: Product Description *, Authors and Contributors *, Related Documents, Product Identifiers *, Organizations *, Content Information, Description, Technical *, and Contact Info *. The "Contact Info" link is highlighted.

The main form area is titled "Point of Contact" and contains the following fields and text:

- A note: "This information is needed for administrative use; it will not be displayed in public databases."
- Name and/or Position ***: A text input field containing "Stephen Elbert, manager".
- Organization ***: A text input field containing "Pacific Northwest National Laboratory".
- Email ***: A text input field containing "steve.elbert@pnnl.gov". Below this field is a note: "Email addresses will not appear in public databases. OSTI will use these addresses to send creator(s)/PI(s) the Digital Object Identifier (DOI) for the dataset announced to OSTI. The primary contact, if different from the Creator/PI, will also receive a copy of the notification."
- Phone ***: A text input field containing "509-375-2504".

Below the "Point of Contact" section, there are two more input fields:

- OSTI ID**: An empty text input field. Below it is a note: "This number will be returned when the DOI is issued."
- DOI**: An empty text input field. Below it is a note: "This field will be auto-populated with the issued DOI."

At the bottom of the form, there are two sections:

- URL path settings**: A section with a link "Automatic alias".
- Revision information**: A section with a link "New revision".
- Comment settings**: A section with a link "By Steve Elbert".
- Authoring information**: A section with a link "By Steve Elbert".

There is also a checkbox labeled "Generate automatic URL alias" which is checked. Below it is a note: "Uncheck this to create a custom alias below. [Configure URL alias patterns.](#)".

Below the checkbox is a section titled "URL alias" with a text input field. Below this field is a note: "Optionally specify an alternative URL by which this content can be accessed. For example, type 'about' when writing an about page. Use a relative path and don't add a trailing slash or the URL alias won't work."

DOI Request Summary

DOI Request for GO Competition Phase 0 Modified IEEE 14

[View](#) [Edit](#) [Track](#) [Devel](#)

Dataset Type: Numeric Data
Dataset Title: GO Competition Phase 0 Modified IEEE 14
Publication/Issue Date: 06/15/2017
Contributing Organizations: University of Wisconsin - Madison

Contributing Organization: University of Wisconsin - Madison
Email: [Contact person by email](#)
Affiliation: University of Wisconsin - Madison
Contributor: ContactPerson
Type:
Point of Contact: Christopher L DeMarco

Related Resource: [Grid Optimization Competition datasets](#)

Dataset Product Number(s): 8ded8412-1e1f-4f35-becf-1da45b9f2e58
DOE Contract/Award Number(s): DE-AC05-76RL01830
Point of Contact: **Name** Stephen Elbert, manager
and/or
Position:
Organization: Pacific Northwest National Laboratory
Email: [Contact person by email](#)
Phone: 509-375-2504

Originating Organization: Pacific Northwest National Laboratory (PNNL)
Contributor Organizations: University of Wisconsin - Madison
Arizona State University

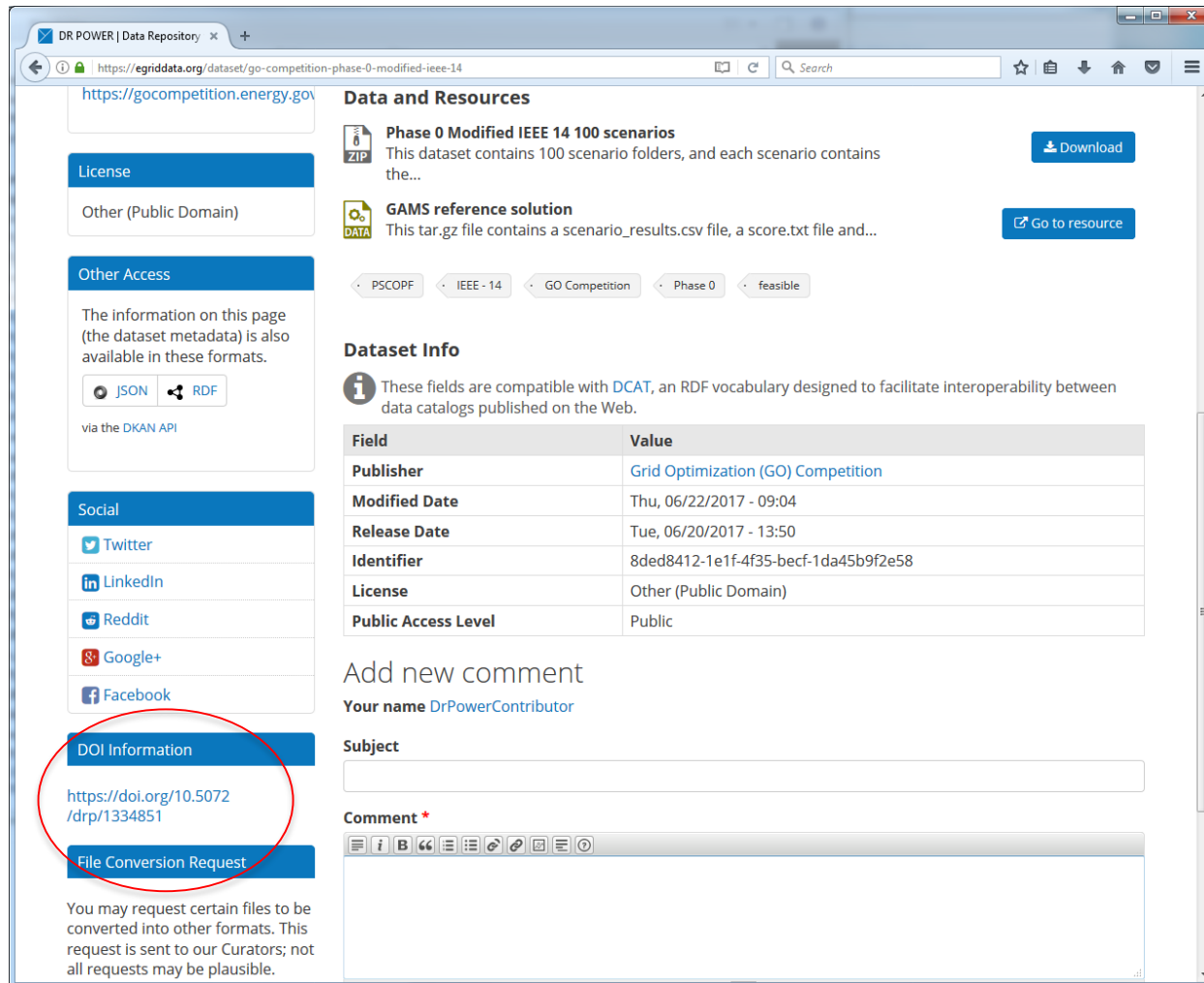
Sponsoring Organization(s): USDOE Advanced Research Projects Agency - Energy (ARPA-E)
Availability: Optimization and Control Group Energy and Environment Directorate Pacific Northwest National Laboratory
Country of Publication: United States
Language: English
Subject Categories: 24 Power Transmission and Distribution
optimal power flow

Abstract:
This dataset is composed of 100 scenarios for the preventative security constrained optimal power flow (PSCOPF) problem and is based on a modified IEEE 14 bus test case, which is a model of the American Electric Power System in 1962. The modification consisted of removing one line, linking buses 7 and 9, in order to generate a distinct power system network model. The 100 scenarios, all known to be feasible, were generated by random perturbation of some of the limits (e.g. on generator power output and branch flows). These problems are small enough that they should not pose any challenge to off-the-shelf optimization solvers, commercial or otherwise.

Keywords: PSCOPF; feasible; IEEE14; optimal power flow
Web Page (URL): <https://egriddata.org/dataset/go-competition-phase-0-modified-ieee-14>
Dataset's File Extension: zip
Dataset Size: 902 files

Referenced Dataset or Resource	GO Competition Phase 0 Modified IEEE 14
OSTI ID	OSTI ID: 1334851
DOI	DOI: 10.5072/drp/1334851

DOI available



DR POWER | Data Repository

<https://egriddata.org/dataset/go-competition-phase-0-modified-ieee-14>

<https://gocompetition.energy.gov>

License

Other (Public Domain)

Other Access

The information on this page (the dataset metadata) is also available in these formats.

[JSON](#) [RDF](#)

via the [DKAN API](#)

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[Facebook](#)

DOI Information

<https://doi.org/10.5072/drpf1334851>

File Conversion Request

You may request certain files to be converted into other formats. This request is sent to our Curators; not all requests may be plausible.

Data and Resources

Phase 0 Modified IEEE 14 100 scenarios
This dataset contains 100 scenario folders, and each scenario contains the...

GAMS reference solution
This tar.gz file contains a scenario_results.csv file, a score.txt file and...

[Download](#) [Go to resource](#)

[PSCOPF](#) [IEEE - 14](#) [GO Competition](#) [Phase 0](#) [feasible](#)

Dataset Info

These fields are compatible with [DCAT](#), an RDF vocabulary designed to facilitate interoperability between data catalogs published on the Web.

Field	Value
Publisher	Grid Optimization (GO) Competition
Modified Date	Thu, 06/22/2017 - 09:04
Release Date	Tue, 06/20/2017 - 13:50
Identifier	8ded8412-1e1f-4f35-becf-1da45b9f2e58
License	Other (Public Domain)
Public Access Level	Public

Add new comment

Your name [DrPowerContributor](#)

Subject

Comment *

This DOI was generated using the OSTI test harness and is not valid.

Setting an internal software switch is all it takes to generate a valid DOI.

The policy of who can generate a DOI and when is still under review.



Group: GO Competition (public view)

Grid Optimization (GO) Com


https://egriddata.org/group/grid-optimization-go-competition

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View

Revisions



Grid Optimization (GO) Competition

These are the datasets being used by the GO Competition:
<https://gocompetition.energy.gov>

Request group membership

Members (1)

Date Changed

June 20, 2017 (4)

June 21, 2017 (1)

June 22, 2017 (1)

Tags

GO Competition (6)

Phase 0 (6)

PSCOPF (6)

feasible (5)

179bus (2)

IEEE - 14 (2)

RTS96 (2)

Grid Optimization (GO) Competition

Grid Optimization (GO) Competition

Transmission

This dataset is composed of 100 scenarios for the preventative security constrained optimal power flow (PSCOPF) problem and is based on a modified IEEE 14 bus test case, which is a model of the American Electric Power System in 1962.

zip

data

Grid Optimization (GO) Competition

Grid Optimization (GO) Competition

Transmission

This dataset is composed of 10 scenarios, only 3 known to be feasible, based on the 179 bus model of the Western Systems Coordinating Council (WECC/WSCC) developed at the University of Wisconsin - Madison ("DC Multi-infeed Study," Electric Power R

zip

Grid Optimization (GO) Competition

Grid Optimization (GO) Competition

Transmission

This dataset is composed of 100 scenarios, all known to be feasible, based on the 1996 update ("The

June 28, 2017 | 32



Group: GO Competition (owner view)

Grid Optimization (GO) Competition

View Edit Group Revisions Track Devel

Grid Optimization (GO) Competition

Search Sort by Order

Displaying 1 - 6 of 6 datasets

You are the group manager

Members (1)

Date Changed

Tags

GO Competition (6)

Phase 0 (6)

PSCOPF (6)

feasible (5)

179bus (2)

IEEE - 14 (2)

RTS96 (2)

security contingencies (2)

GO Competition Phase 0 Modified IEEE 14

Grid Optimization (GO) Competition

Transmission

This dataset is composed of 100 scenarios for the preventative security constrained optimal power flow (PSCOPF) problem and is based on a modified IEEE 14 bus test case, which is a model of the American Electric Power System in 1962.

zip data

GO Competition Phase 0 Infeasible 179bus

Grid Optimization (GO) Competition

Transmission

This dataset is composed of 10 scenarios, only 3 known to be feasible, based on the 179 bus model of the Western Systems Coordinating Council (WECC/WSCC) developed at the University of Wisconsin - Madison ("DC Multi-infeed Study," Electric Power R

zip

GO Competition Phase 0 Feas179bus

Grid Optimization (GO) Competition

Transmission

This dataset is composed of 10 scenarios, all known to be feasible, based on the 179 bus model of the Western Systems Coordinating Council (WECC/WSCC) developed at the University of Wisconsin - Madison ("DC Multi-infeed Study," Electric Power Res.

Dataset owner view (top of page)

DR POWER | Data Repos

Secure | https://egriddata.org/dataset/go-competition-phase-0-modified-ieee-14

Stephen

Content

DKAN

Structure

Appearance

People

Modules

Configuration

Redline Configuration

Reports

Hello **Steve Elbert** Log out

Home

Datasets

GO Competition Phase 0 Modified IEEE 14

View


Add Resource

Edit

Revisions

Track

Devel



Grid Optimization (GO) Competition

These are the datasets being used by the GO Competition:
<https://gocompetition.energy.gov>

License

Other (Public Domain)

Other Access

The information on this page (the dataset metadata) is also available in these formats.

JSON

RDF


GO Competition Phase 0 Modified IEEE 14


⚙

Transmission

This dataset is composed of 100 scenarios for the preventative security constrained optimal power flow (PSCOPF) problem and is based on a modified IEEE 14 bus test case, which is a model of the American Electric Power System in 1962. The modification consisted of removing one line, linking buses 7 and 9, in order to generate a distinct power system network model. The 100 scenarios, all known to be feasible, were generated by random perturbation of some of the limits (e.g. on generator power output and branch flows). These problems are small enough that they should not pose any challenge to off-the-shelf optimization solvers, commercial or otherwise.

Data and Resources

 **Phase 0 Modified IEEE 14 100 scenarios**
This dataset contains 100 scenario folders, and each scenario contains the...

 **GAMS reference solution**
This tar.gz file contains a scenario_results.csv file, a score.txt file and...

Download

Go to resource

PSCOPF

IEEE - 14

GO Competition

Phase 0

feasible

Dataset Info

i

These fields are compatible with [DCAT](#), an RDF vocabulary designed to facilitate interoperability between data catalogs published on the Web.



Dataset public view (bottom of page)

DR POWER | Data Repository

https://eGRIDdata.org/dataset/go-competition-phase-0-modified-ieee-14

(the dataset metadata) is also available in these formats.

[JSON](#) [RDF](#)

via the [DKAN API](#)

Social

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DOI Information

<https://doi.org/10.5072/drp/1334851>

File Conversion Request

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[Request Conversion](#)

Dataset Info

These fields are compatible with [DCAT](#), an RDF vocabulary designed to facilitate interoperability between data catalogs published on the Web.

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Publisher	Grid Optimization (GO) Competition
Modified Date	Thu, 06/22/2017 - 10:03
Release Date	Tue, 06/20/2017 - 13:50
Identifier	8ded8412-1e1f-4f35-becf-1da45b9f2e58
License	Other (Public Domain)
Public Access Level	Public

Add new comment

Your name [DrPowerContributor](#)

Subject

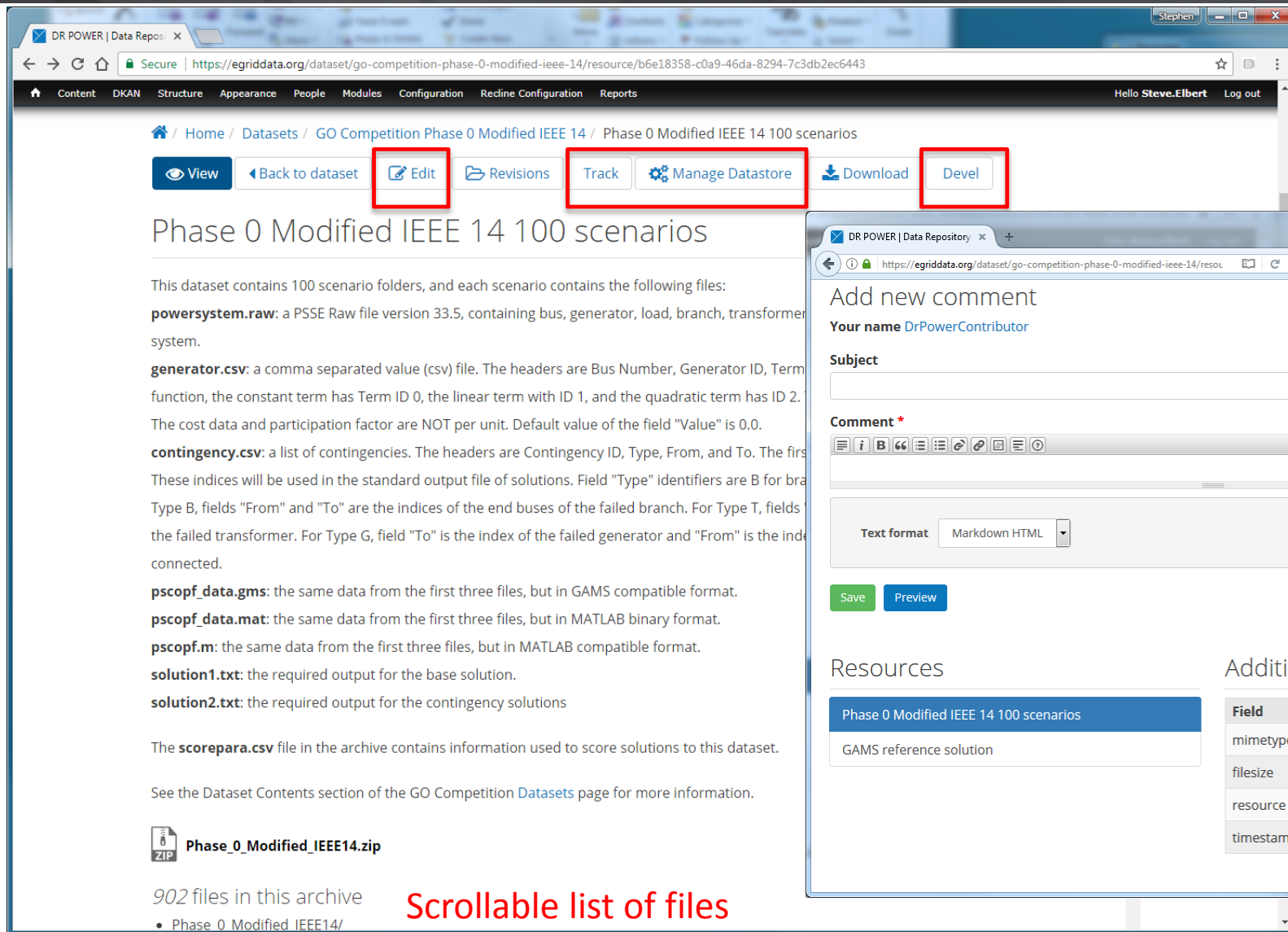
Comment *

Text format [Markdown HTML](#)

[More information about text formats ?](#)

[Save](#) [Preview](#)

Data file owner view



DR POWER | Data Repository

Secure | <https://egriddata.org/dataset/go-competition-phase-0-modified-ieee-14/resource/b6e18358-c0a9-46da-8294-7c3db2ec6443>

Content DKAN Structure Appearance People Modules Configuration Redline Configuration Reports Hello Steve.Elbert Log out

Home / Datasets / GO Competition Phase 0 Modified IEEE 14 / Phase 0 Modified IEEE 14 100 scenarios

View Back to dataset Edit Revisions Track Manage Datastore Download Devel


Phase 0 Modified IEEE 14 100 scenarios

This dataset contains 100 scenario folders, and each scenario contains the following files:

- powersystem.raw**: a PSSE Raw file version 33.5, containing bus, generator, load, branch, transformer system.
- generator.csv**: a comma separated value (csv) file. The headers are Bus Number, Generator ID, Term function, the constant term has Term ID 0, the linear term with ID 1, and the quadratic term has ID 2. The cost data and participation factor are NOT per unit. Default value of the field "Value" is 0.0.
- contingency.csv**: a list of contingencies. The headers are Contingency ID, Type, From, and To. The first three indices will be used in the standard output file of solutions. Field "Type" identifiers are B for branch, Type B, fields "From" and "To" are the indices of the end buses of the failed branch. For Type T, fields "From" and "To" are the indices of the failed transformer. For Type G, field "To" is the index of the failed generator and "From" is the index of the failed generator.
- pscopf_data.gms**: the same data from the first three files, but in GAMS compatible format.
- pscopf_data.mat**: the same data from the first three files, but in MATLAB binary format.
- pscopf.m**: the same data from the first three files, but in MATLAB compatible format.
- solution1.txt**: the required output for the base solution.
- solution2.txt**: the required output for the contingency solutions.

The **scorepara.csv** file in the archive contains information used to score solutions to this dataset.

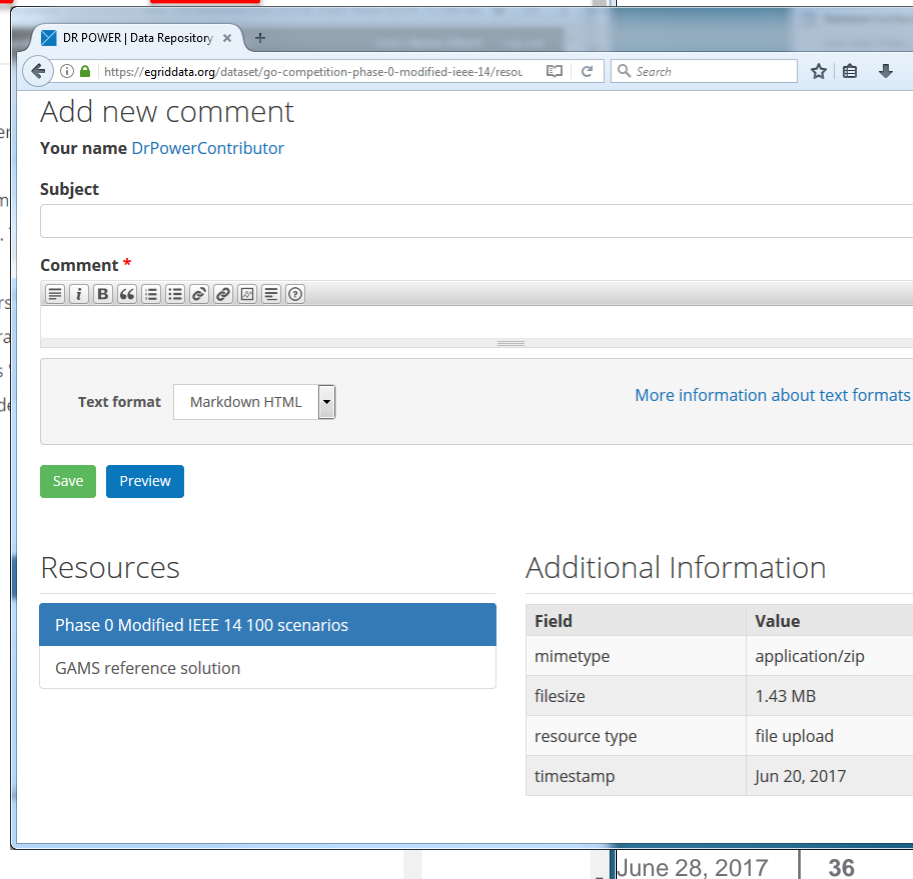
See the Dataset Contents section of the GO Competition [Datasets](#) page for more information.

 **Phase_0_Modified_IEEE14.zip**

902 files in this archive

- Phase 0 Modified IEEE14/

Scrollable list of files



DR POWER | Data Repository

<https://egriddata.org/dataset/go-competition-phase-0-modified-ieee-14/resou> Search

Add new comment

Your name [DrPowerContributor](#)

Subject

Comment *

Text format Markdown HTML

Save Preview

Resources

- Phase 0 Modified IEEE 14 100 scenarios
- GAMS reference solution

Additional Information

Field	Value
mimetype	application/zip
filesize	1.43 MB
resource type	file upload
timestamp	Jun 20, 2017

June 28, 2017 36



GRID DATA example (top of page)

The screenshot shows a web browser window with the URL <https://egriddata.org/dataset/texas-2000-bus-system-activsg2k>. The page title is "Texas 2000-Bus System ACTIVSg2k". The left sidebar features the Texas A&M University logo and the text "ELECTRIC GRID TEST CASE REPOSITORY". Below this, it states: "The Electric Grid Test Case Repository is hosted by Prof. Thomas Overbye, Department of Electrical and Computer Engineering in the College of Engineering at Texas A&M University with support of ARPA-E's GRID DATA program." Further down, it mentions: "Synthetic electric grid cases are a representation of power grids with a detailed modeling of the power system dynamics and protections. Works [1] – [3] present a methodology to create". The main content area has a heading "Texas 2000-Bus System ACTIVSg2k" and a sub-heading "Transmission". The text describes the ACTIVSg2k test case as a 2000-bus power system test case that is entirely synthetic, built from public information and a statistical analysis of real power systems. It bears no relation to the actual grid in this location, except that generation and load profiles are similar, based on public data. A spreadsheet document contains the case's specifications, including the areas, substations, buses, lines, transformers, generators, loads, and shunt devices. Benchmark power flow solutions are also given. The case is also provided in PowerWorld format, Matpower format, PSS/E raw format, and PSLF epc format. It then states: "Synthetic electric grid models are fictitious representations that are designed to be statistically and functionally similar to actual electric grids while containing no confidential critical energy infrastructure information (CEII). Some of these cases were developed with the support of the U.S. DOE ARPA-E Grid Data program; their support is gratefully acknowledged. A description of the initial algorithm used to develop these cases is given in: A. B. Birchfield; T. Xu; K. M. Gegner; K. S. Shetye; T. J. Overbye, 'Grid Structural Characteristics as Validation Criteria for Synthetic Networks,' to appear in IEEE Transactions on Power Systems." Finally, it says: "Please contact Adam Birchfield (abirchfield@tamu.edu) for any questions regarding this case." The bottom of the page has a section titled "Data and Resources".

DR POWER | Data Repository x +

<https://egriddata.org/dataset/texas-2000-bus-system-activsg2k> Search

Home / Datasets / Texas 2000-Bus System ACTIVSg2k

View Revisions

TEXAS A&M UNIVERSITY

ELECTRIC GRID TEST CASE REPOSITORY

The Electric Grid Test Case Repository is hosted by Prof. Thomas Overbye, Department of Electrical and Computer Engineering in the College of Engineering at Texas A&M University with support of ARPA-E's GRID DATA program.

Synthetic electric grid cases are a representation of power grids with a detailed modeling of the power system dynamics and protections. Works [1] – [3] present a methodology to create

Texas 2000-Bus System ACTIVSg2k

Transmission

The **ACTIVSg2k** test case is a 2000-bus power system test case that is entirely synthetic, built from public information and a statistical analysis of real power systems. It bears no relation to the actual grid in this location, except that generation and load profiles are similar, based on public data. A spreadsheet document contains the case's specifications, including the areas, substations, buses, lines, transformers, generators, loads, and shunt devices. Benchmark power flow solutions are also given. The case is also provided in PowerWorld format, Matpower format, PSS/E raw format, and PSLF epc format.

Synthetic electric grid models are fictitious representations that are designed to be statistically and functionally similar to actual electric grids while containing no confidential critical energy infrastructure information (CEII). Some of these cases were developed with the support of the [U.S. DOE ARPA-E Grid Data program](#); their support is gratefully acknowledged. A description of the initial algorithm used to develop these cases is given in:

A. B. Birchfield; T. Xu; K. M. Gegner; K. S. Shetye; T. J. Overbye, "Grid Structural Characteristics as Validation Criteria for Synthetic Networks," to appear in [IEEE Transactions on Power Systems](#).

Please contact Adam Birchfield (abirchfield@tamu.edu) for any questions regarding this case.

Data and Resources



GRID DATA example (middle of page)

The screenshot shows a web browser window with the URL <https://egriddata.org/dataset/texas-2000-bus-system-activsg2k>. The page is titled "Data and Resources" and lists several downloadable files. On the left, there is a sidebar with text about synthetic power systems. At the bottom, there is a "Dataset Info" section with a breadcrumb trail.

protections. WORKS [1] – [3] present a methodology to create entirely fictitious synthetic power system networks that can capture structural and functional characteristics of actual power grids. Synthetic network base cases are extended with generator cost data and dynamic models for energy economic and transient stability studies in works [4] and [5], respectively.

Synthetic networks have no relation to the actual electric grid in their geographic location, thus they contain no confidential information and pose no security concern. Researchers can freely use synthetic power grid to test and validate new tools and techniques as on actual power grid.

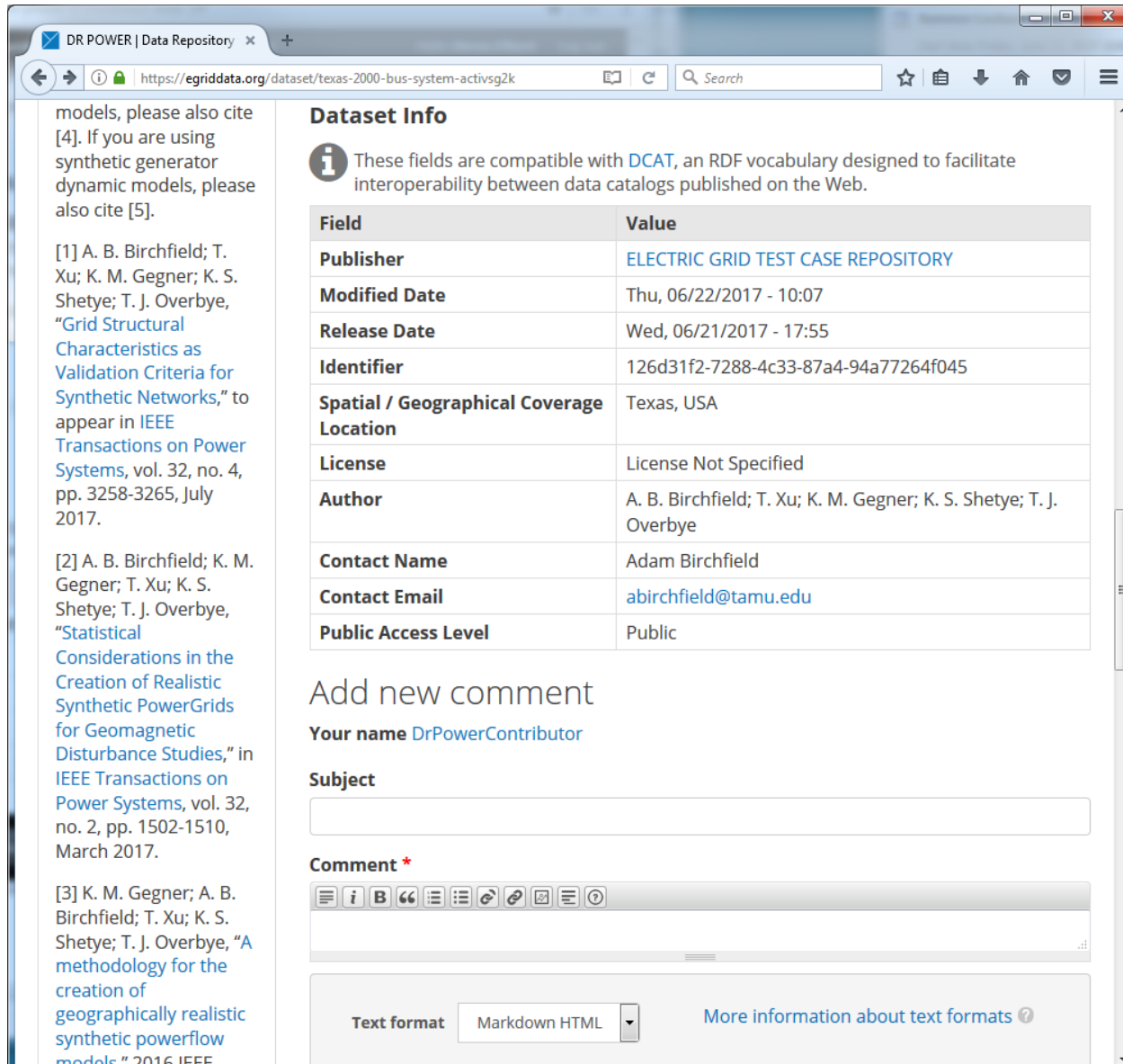
To cite the algorithms used to create these synthetic cases, please use [1]. If you are using synthetic generator cost models, please also cite [4]. If you are using

Data and Resources

Icon	File Name	Description	Action
	ACTIVSg2000.EPC	PSLF text file containing only power flow data.	Download
	ACTIVSg2000.PWB	PowerWorld Simulator and PowerWorld DS binary case file which can be opened...	Download
	ACTIVSg2000.pwd	PowerWorld Simulator and PowerWorld DS online diagram associated with the...	Download
	ACTIVSg2000.RAW	PSS/E text file containing only power flow data.	Download
	case_ACTIVSg2000.m	MATPOWER text file containing only power flow data with generator cost model...	Download
	Map of Texas with 2000-bus region	Shaded area shows region of Texas that was the basis of this synthetic...	Download
	Transmission lines in Texas	Shows the location of the transmission lines.	Download
	Frequency map		Download
Download All			

◀ ACTIVSg2k ◀ GRIDDATA ◀ synthetic ◀ TAMU ◀ OPF ◀ Optimal Power Flow

Dataset Info





Near-term Goals (by end of July)

- ▶ Web Portal will be updated with the following capabilities:
 - New roles defined:
 - Data Contributor – any user can create datasets and upload files.
 - Curation Moderator – any registered user who has been approved by the Curation Supervisor to be a curator.
 - Curation Supervisor – Lead Curator (Laurentiu Marinovici) will supervise curators, communicate curator requirements, and drive the curation process.
 - New upload workflow:
 - Datasets can be created and files added, but this work stays unpublished (not visible to the public). A Data Contributor can continually change and modify the dataset, before releasing it for review by a Curation Moderator.
 - Once a Review Dataset Request has been initiated by the Contributor, any Curation Moderator may review the dataset. If the dataset passes the initial review, the dataset is released to the public and a secondary, in-depth review can be started.
 - During the in-depth review, a Curator and the Author will improve the details of the dataset based on the Curation Strategic Guidelines.
 - After an in-depth review is done, a DOI can be requested at any time by the Contributor.
- ▶ Continue populating repository with public domain datasets

Long Term Sustainability

- ▶ Opportunities to manage data outside the GRID DATA program:
 - End use load energy consumption (building data)
 - DARPA RADICS program
 - Solar and wind data (e.g. NREL SMARtDaTa)
 - Atmospheric Radiation Monitoring program data
- ▶ Critical need for Digital Object Identifier (DOI) creation and management
 - Funding agencies requesting data access via DOI
 - Adoption by IM3 (Integrated Multi-sector Multi-scale Modeling)
 - Institutional support in return for data management technology
 - Software infrastructure: copyright distributed under permissive open source license
- ▶ Continual community engagement
 - IEEE Power Engineering Society Test Case Working Group
 - Seeking unique data schema's to prove out concepts of data evolution

▶ PNNL

- Mark Rice (Principal Investigator)
- Stephen Elbert (Co-Principal Investigator)
- Jenn Lee (Tech to Market Lead)
- Olga Kuchar (e-grids.org Web Portal Lead)
- Laurentiu Marinovici (Data Curation Lead)

▶ NRECA

- David Pinney (Open Modeling Framework Lead)
- Justin Yang (Software Developer)

Backup slides



Pacific Northwest
NATIONAL LABORATORY

*Proudly Operated by **Battelle** Since 1965*

Electrical power system models and simulations

- Transmission and generation models
- Distribution models
- MATPOWER, MATLAB Power System Toolbox, PowerWorld, Siemens PSS/E, GE's PSLF, GridLAB-D, OMF

Observations and measurements

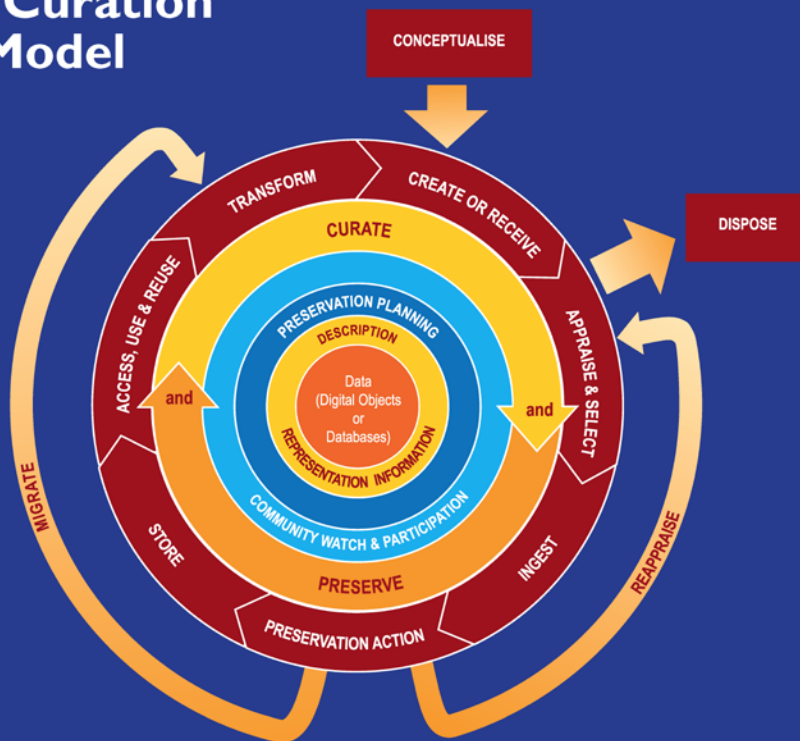
- PMU, wind, solar, weather data, etc.

Accompanying material

- Graphics and tables
- Instrumentation
- Data dictionaries
- Geospatial information
- References and bibliography, etc.

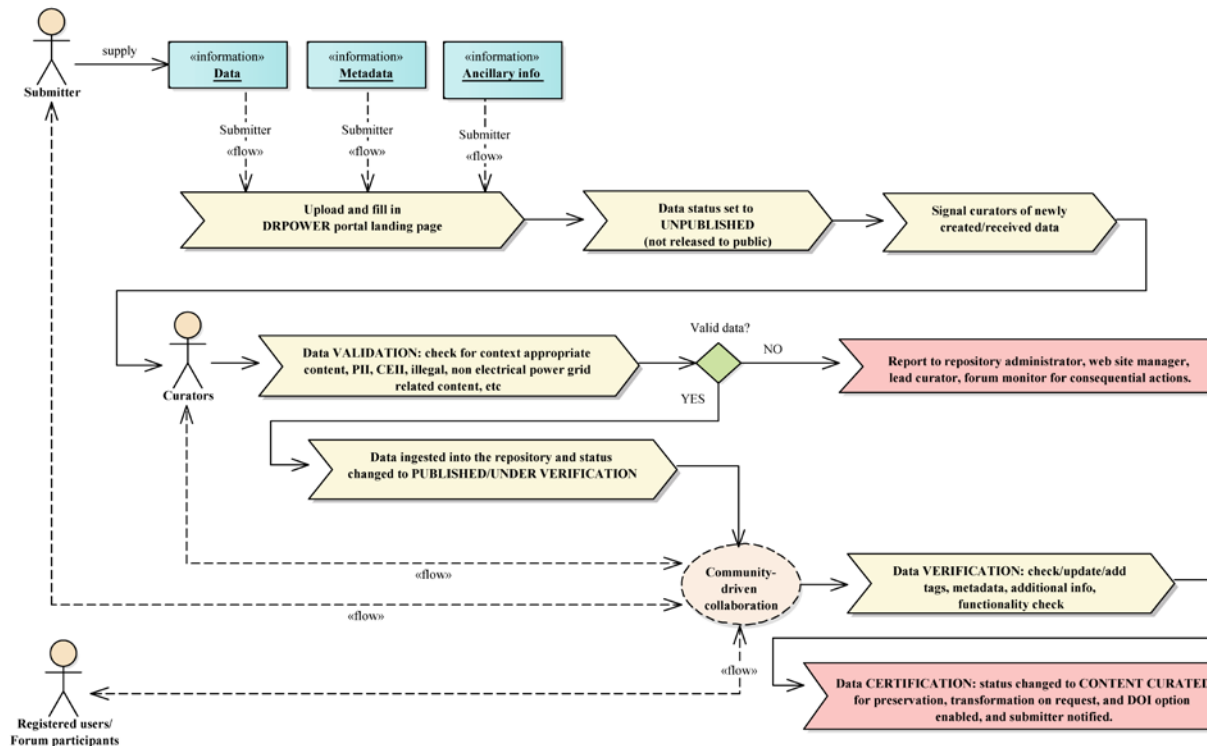
Curator guidelines

The DCC Curation Lifecycle Model



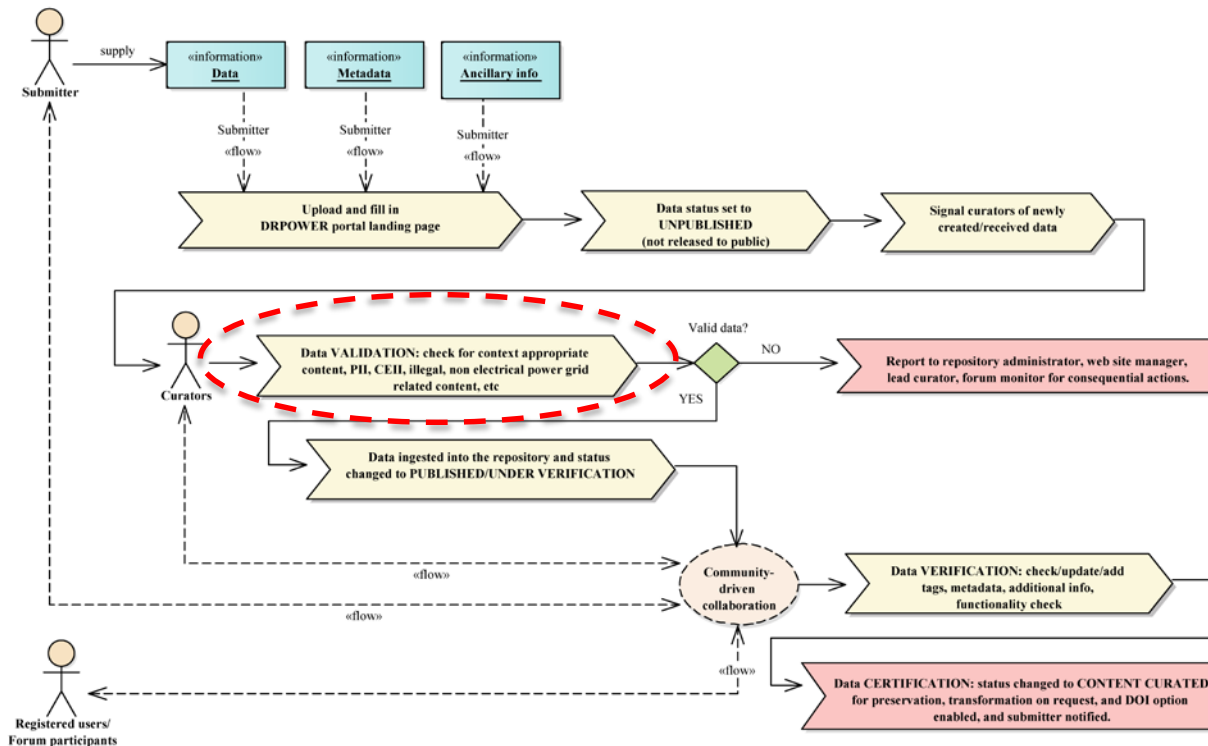
- ▶ DR POWER repository
 - Online
 - Community-driven
- ▶ Creating/receiving data that needs
 - Upload
 - Revision
 - Modification
 - Tagging, etc.

Appraisal and selection guidelines



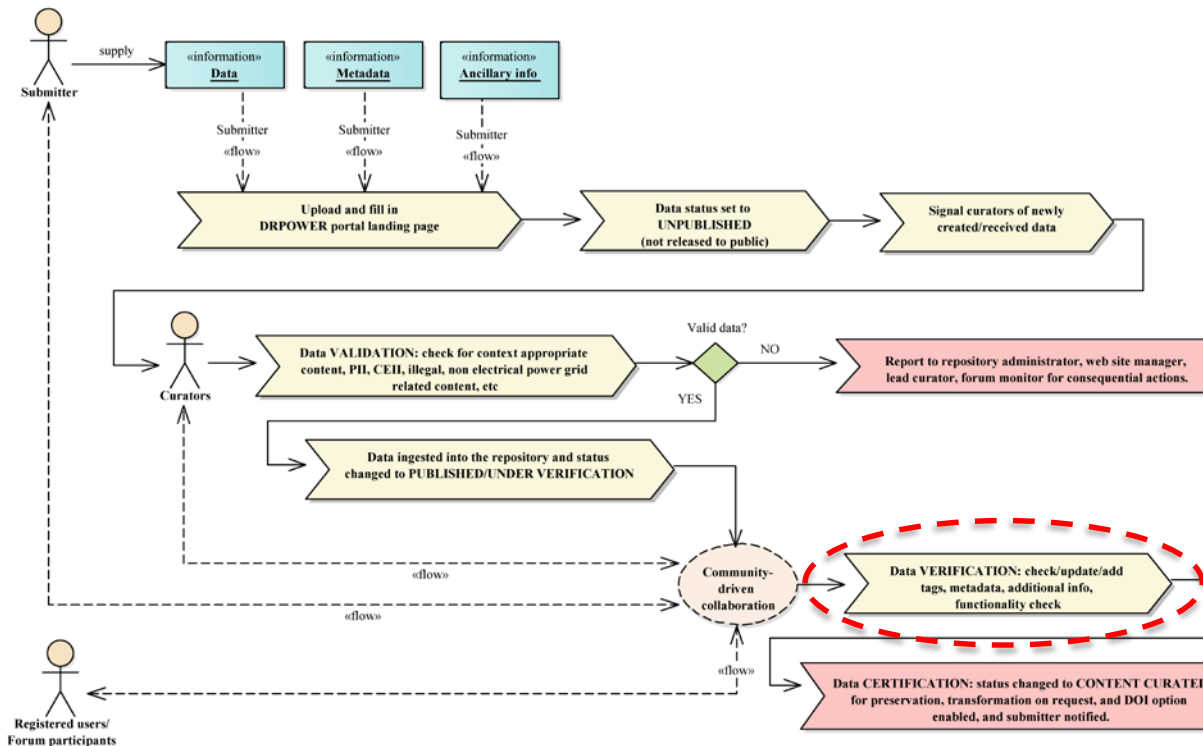
- ▶ Validation
- ▶ Verification
- ▶ Certification
- ▶ Transformation

Validation guidelines



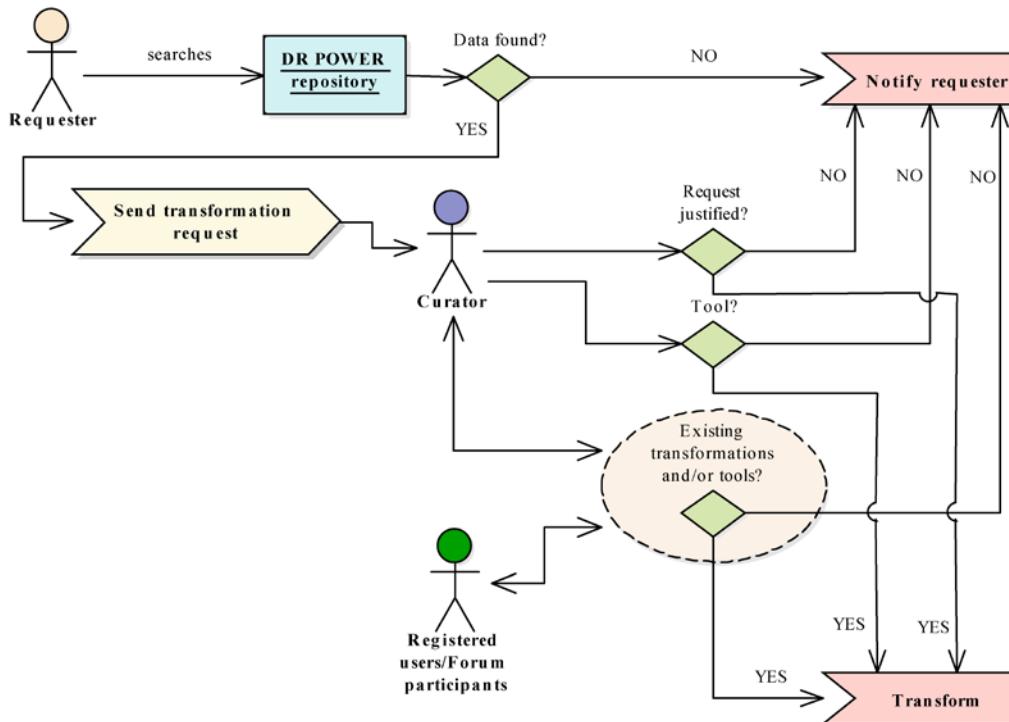
- ▶ Unallowable material
 - Legally objectionable language and/or data
 - Personally Identifiable Information
 - Critical Energy/Electrical Infrastructure Information
 - Non-context related material
- ▶ Allowable material
 - Transmission, generation and/or distribution networks
 - Models
 - Measurement data
 - Economic aspects

Verification & certification guidelines



- In-depth check
 - Quality assurance
 - Metadata
 - Tags
 - Readability
 - Running
- User communication
- Certification

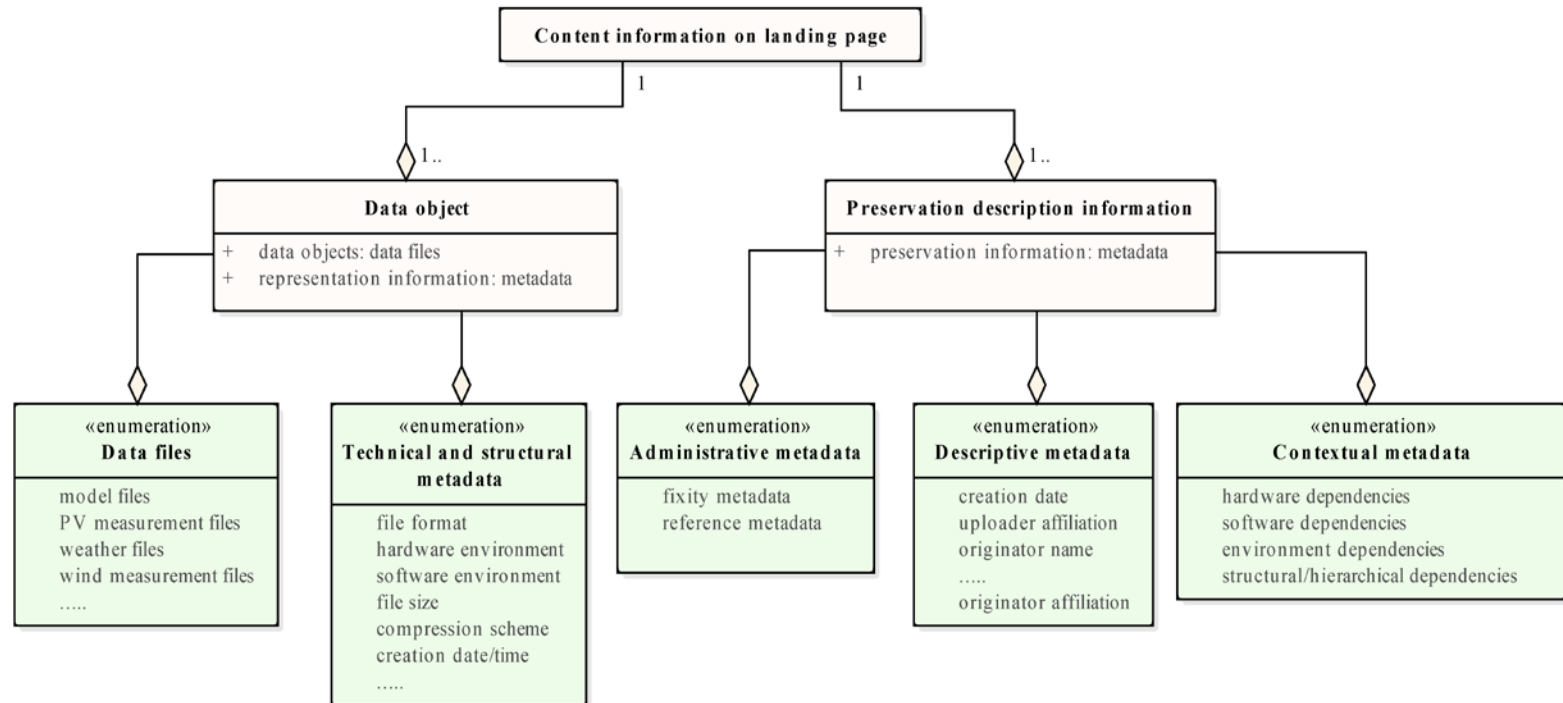
Transformation guidelines



► By request

► Questions

- Meaningful?
- Of interest?
- Existing tool?
- Community interest in building a conversion tool?



Curation Development Screenshots

People

List

Permissions

Permissions

Roles

Role assign

Name

administrator

anonymous user (locked)

authenticated user (locked)

editor

Data Contributor

Curation Moderator

Curation Supervisor

site manager

author

Forum Moderator


Add role

[Home](#) / [Manage My Content](#) / Manage My Content

Manage My Content

Published Type Promoted
- Any - - Any - - Any - [Apply](#)

Title	Creation Date	Published	Promoted	Type	Edit
Demo Workflow File	June 19, 2017	No	No	Resource	edit
Monika Demo Test for New Workflow	June 19, 2017	No	No	Dataset	edit
UIUC_150_bus	June 8, 2017	Yes	No	Resource	edit
UIUC_150_bus	June 8, 2017	Yes	No	Resource	edit
UIUC_150_bus	June 8, 2017	Yes	No	Resource	edit
UIUC_150_bus					
UIUC_150_bus					

 monika [Log out](#)

[Home](#) / Manage Content

Manage Content

Published Type Promoted
- Any - - Any - - Any - [Apply](#)

Operations

- Choose an operation - [Execute](#)

Title	Creation Date	Published	Type	Created By	Edit	
Demo Workflow File	June 19, 2017	No	Resource	monika	edit	<input type="checkbox"/>
Monika Demo Test for New Workflow	June 19, 2017	No	Dataset	monika	edit	<input type="checkbox"/>
DOI Request for KGTest-14	June 15, 2017	Yes	DOI Request	KevinGlass	edit	<input type="checkbox"/>
DOI Request for KGTest-14	June 15, 2017	Yes	DOI Request	KevinGlass	edit	<input type="checkbox"/>

 oakuchar [Log out](#)

Curation Development Screenshots

Stale drafts



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Title

Type

Groups [Filter](#) [Reset](#)

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Title	Revision Author	Groups	Updated	Actions
<input type="checkbox"/>  KGTEST01	KevinGlass	(none)	Tue, 06/13/2017 - 16:33	Edit Submit for Review
<input type="checkbox"/>  KGTEST01	KevinGlass	(none)	Tue, 06/13/2017 - 16:11	Edit Submit for Review