Energy Access Explorer Back-End Exercise

Hands-on

Please use the following citation for:

- **This exercise:** Sahar,T., Stockman, J., Sinclair-Lecaros, S., Mentis, D., 2025."EnergyAccess Explorer. Lesson 5: EAE Back-End, Hands-On Exercises. "World Resources Institute.
- **MyEAE Account**: Create a MyEAE user account at www.energyaccessexplorer.org by clicking 'login' on the top right corner. Complete the form in the login page and follow the steps, you can select the 'User account and Mailing list' registration type. Once your account is created, you will receive a confirmation email. In case you do not see the confirmation email in your inbox, please check your email's spam folder too.
- **Back-end login:** please complete the EAE Back-end Login Request Form for access to EAE's Backend infrastructure.

Learning outcomes

By the end of this exercise, you will learn how to:

1) Learn how to navigate the Content Management System interface

2) Create Vector and Raster datasets in the back end of EAE

Contents

I. Navigating the CMS: Categories

II. Navigating the CMS: Geographies

III. Navigating the CMS: Datasets

IV. Create a Vector Dataset

V. Prepare Dataset & Run Paver

VI. Update Dataset Configuration

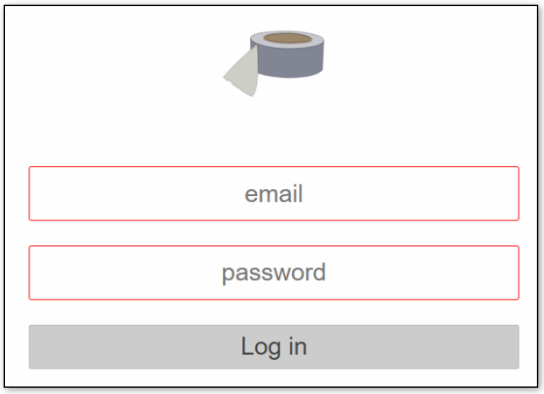
VII. Create a Raster Dataset

VII. Prepare .CSV File

IX. Setting up .CSV Dataset in EAE

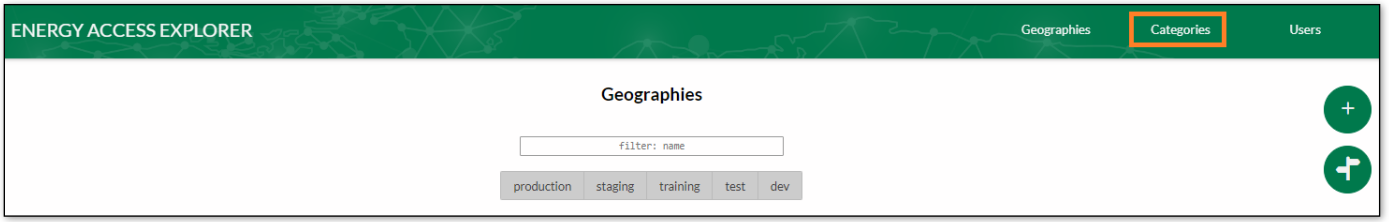
I. Navigating the CMS: Categories

1. Access the CMS at: admin.energyaccessexplorer.org

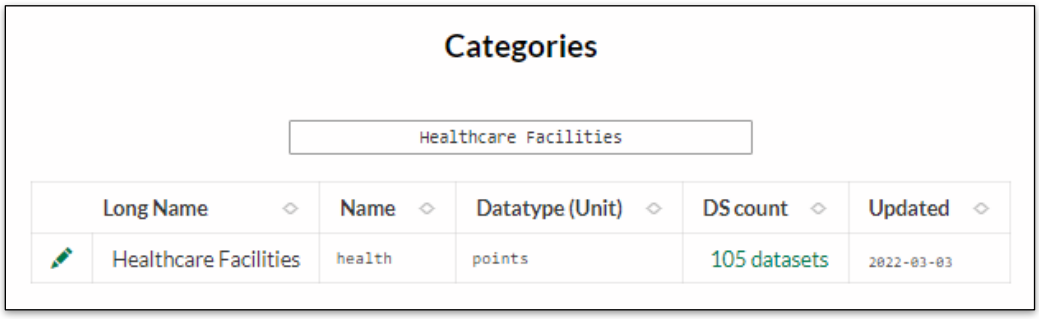


2. Use the login credentials provided

3. Navigate to Categories



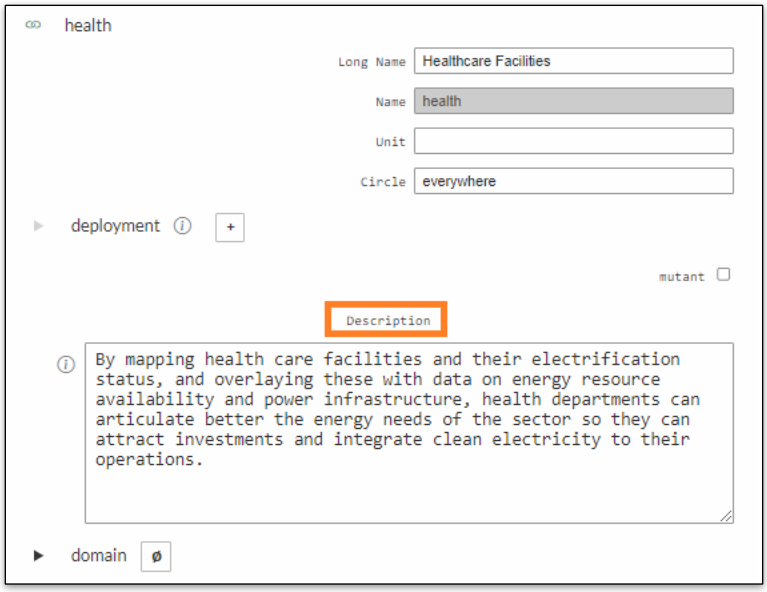
4. Use the Search feature to find Healthcare Facilities



a) What is the Healthcare Facilities' Category datatype?

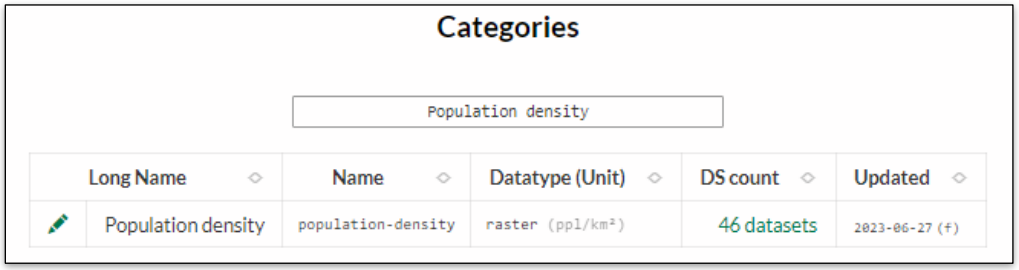
b) Click on this category's settings icon

c) Find the description of this category



d) Click cancel or anywhere outside the pop up to exit

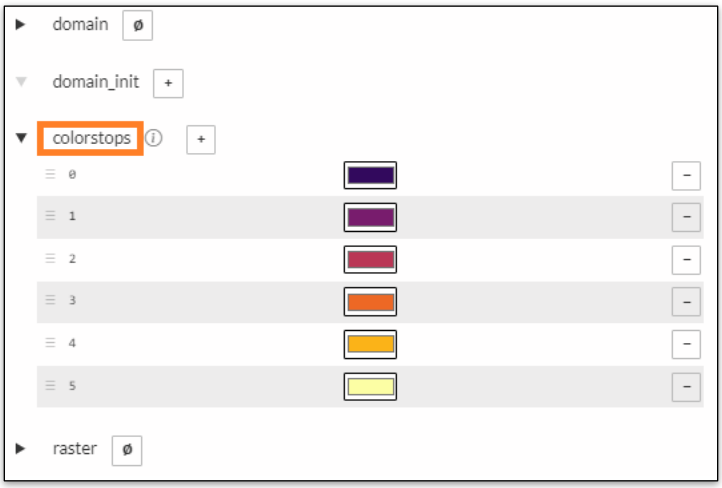
5. Use the Search feature to find the category Population density



a) What is the Category datatype?

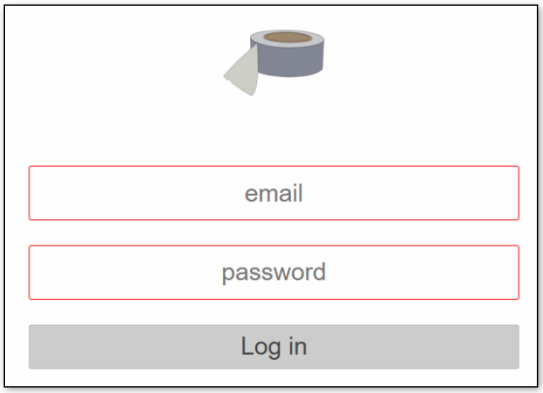
b) Click on category's settings icon

c) How many color stops does the category have?



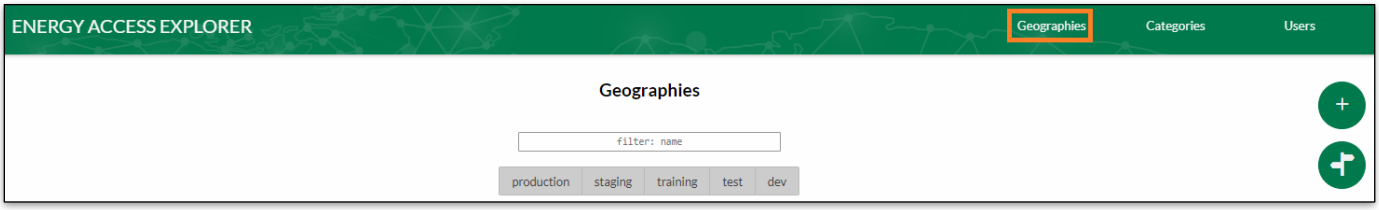
II. Navigating the CMS: Geographies

1. Access the CMS at: admin.energyaccessexplorer.org

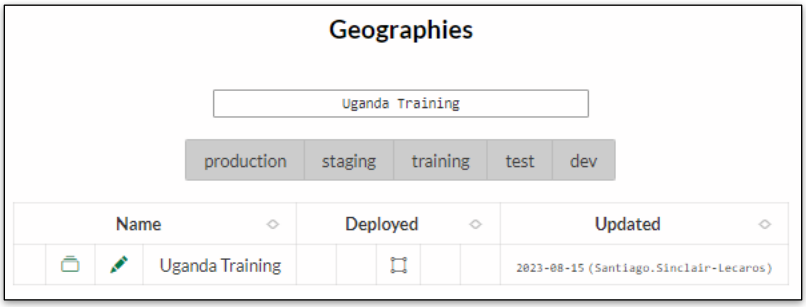


2. Use the login credentials provided

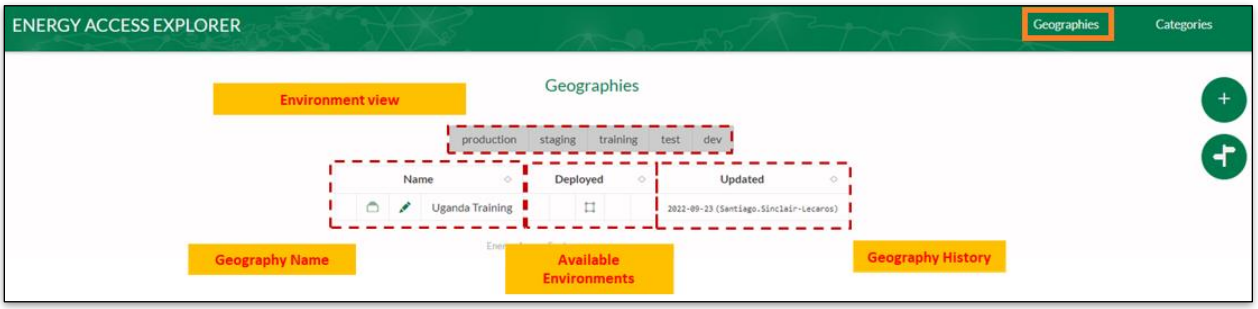
3. Navigate to Geographies



4. Find the following geography properties for *Uganda Training*



a) What environment is the geography deployed in?



b) Click the datasets button  How many datasets are recorded in the geography

c) Click the Geographies or the back button of your browser to go back to the previous window.

5. Click on geography's settings icon

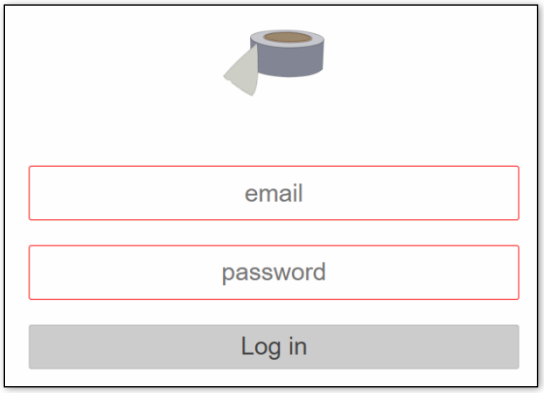
a) How many divisions does the geography have?



b) List the different divisions

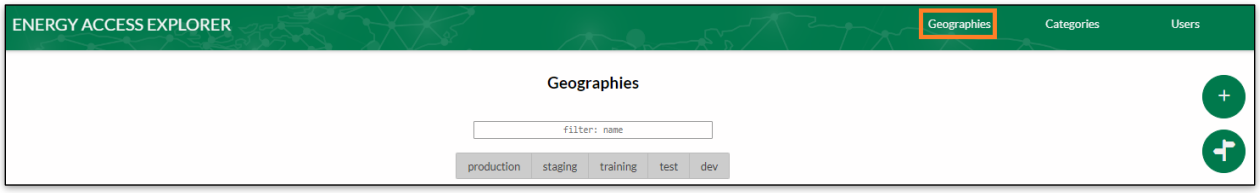
III. Navigating the CMS: Datasets

1. Access the CMS at: admin.energyaccessexplorer.org



2. Use the login credentials provided

3. Navigate to Geographies



4. Find Uganda Training geography and click the datasets button

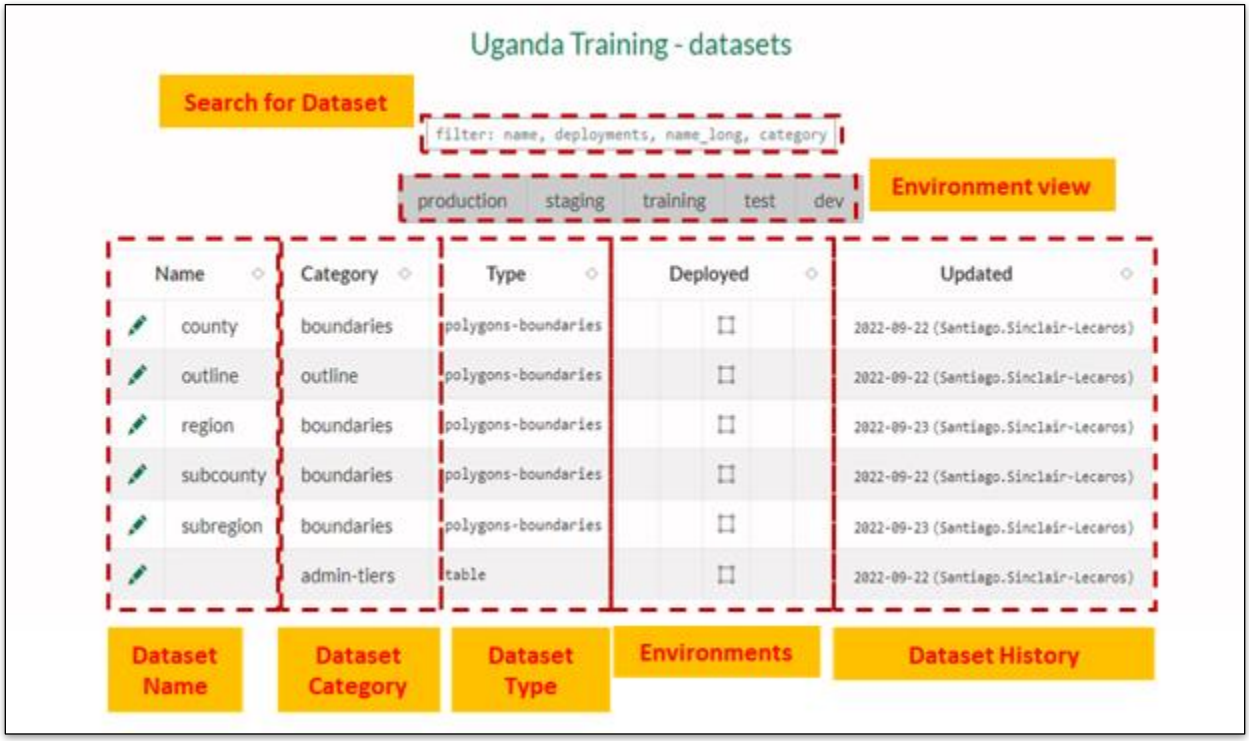
   a) What datasets are stored in the geography?

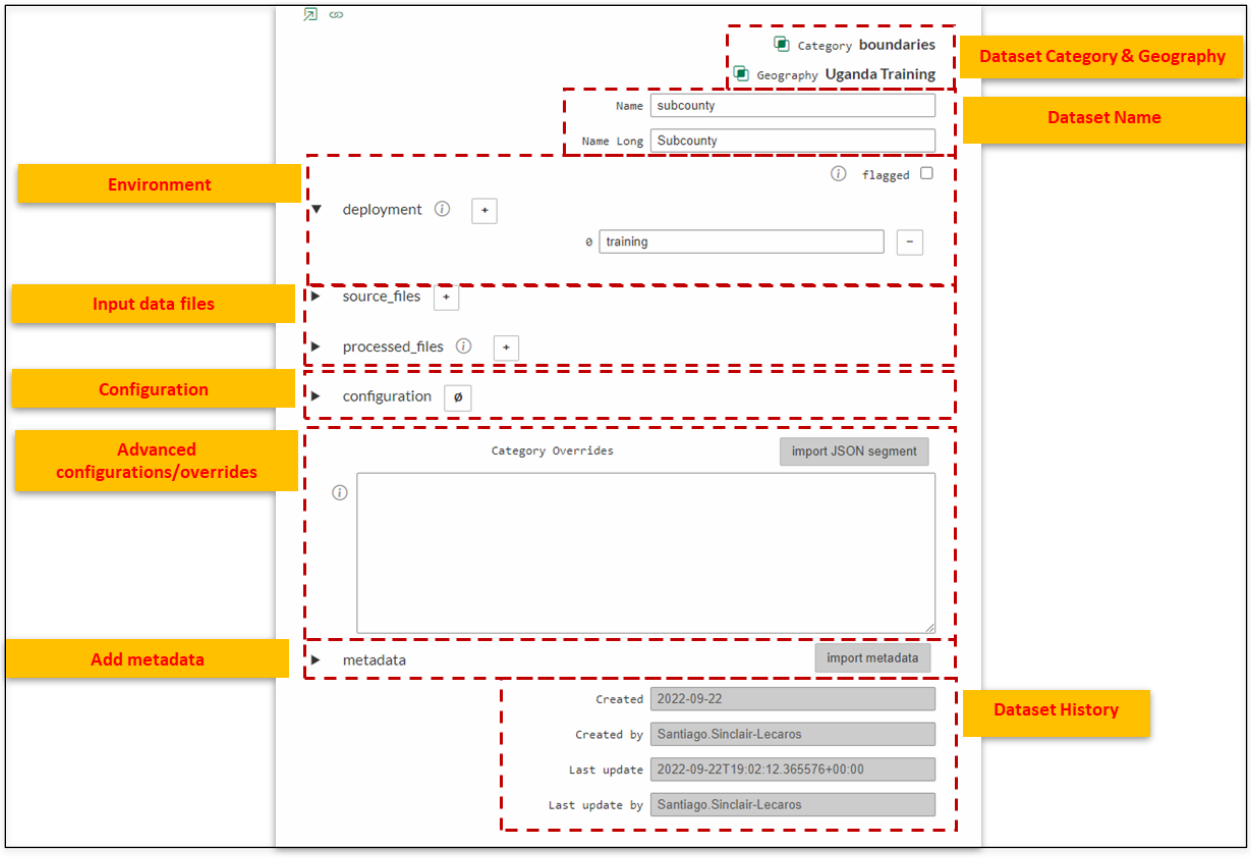
   b) What dataset type can you find?

5. Click on one dataset's settings

   a) Find the dataset category.

   b) Check under deployment to see the environment the dataset is deployed on


Uganda Training - datasets
Search for Dataset
filter: name, deployments, name_long, category
production
staging
training
test
dev
Environment view
Name
Category
Type
Deployed
Updated
county
boundaries
polygons-boundaries
2022-09-22 (Santiago.Sinclair-Lecaros)
outline
outline
polygons-boundaries
2022-09-22 (Santiago.Sinclair-Lecaros)
region
boundaries
polygons-boundaries
2022-09-23 (Santiago.Sinclair-Lecaros)
subcounty
boundaries
polygons-boundaries
2022-09-22 (Santiago.Sinclair-Lecaros)
subregion
boundaries
polygons-boundaries
2022-09-23 (Santiago.Sinclair-Lecaros)
admin-tiers
table
2022-09-22 (Santiago.Sinclair-Lecaros)
Dataset Name
Dataset Category
Dataset Type
Environments
Dataset History

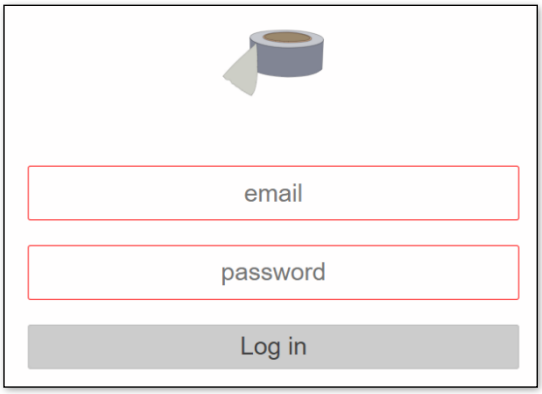

Category boundaries
Geography Uganda Training
Dataset Category & Geography
Name subcounty
Name Long Subcounty
Dataset Name
flagged
Environment
deployment
0 training
Input data files
source_files
processed_files
Configuration
configuration
Advanced configurations/overrides
Category Overrides
import JSON segment
Add metadata
metadata
import metadata
Created 2022-09-22
Created by Santiago.Sinclair-Lecaros
Last update 2022-09-22T19:02:12.365576+00:00
Last update by Santiago.Sinclair-Lecaros
Dataset History

IV. Create a Vector Dataset

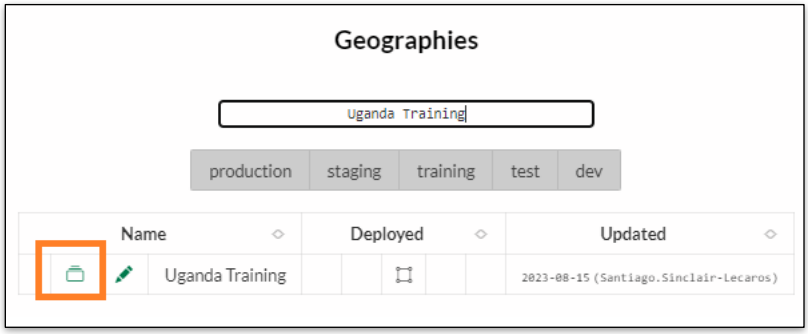
1. You will work with the vector dataset provided below.

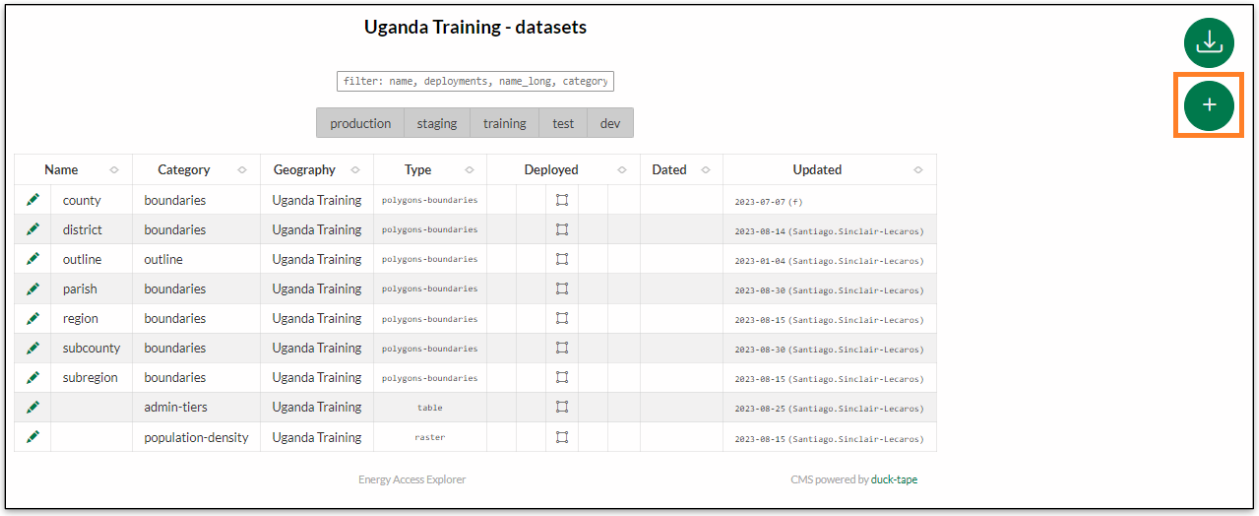
Dataset	Type	EAE category	Filepath URL	Attribute Headers [EAE labels]
Distribution Lines	Vector (Lines)	distribution	Link	voltage [Voltage]

2. Log into the EAE Content Management System (CMS) at admin.energyaccessexplorer.org using your login credentials



3. Click the datasets button to navigate to 'Datasets' for the Uganda Training geography. Click the green 'plus sign' button to create a new dataset in EAE.

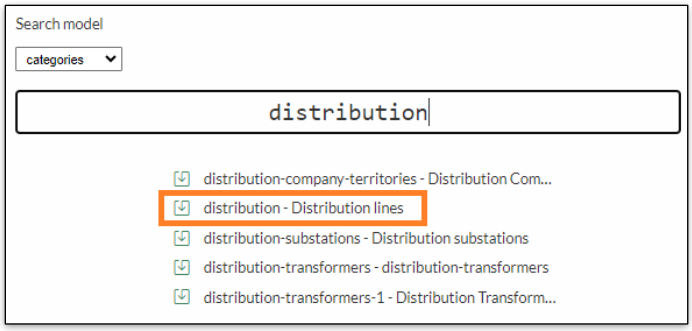




4. Click the search feature  in the pop-up window.



5. Find the ‘distribution’ category record and then click on the  button. Then click 'Save’ to create the dataset.

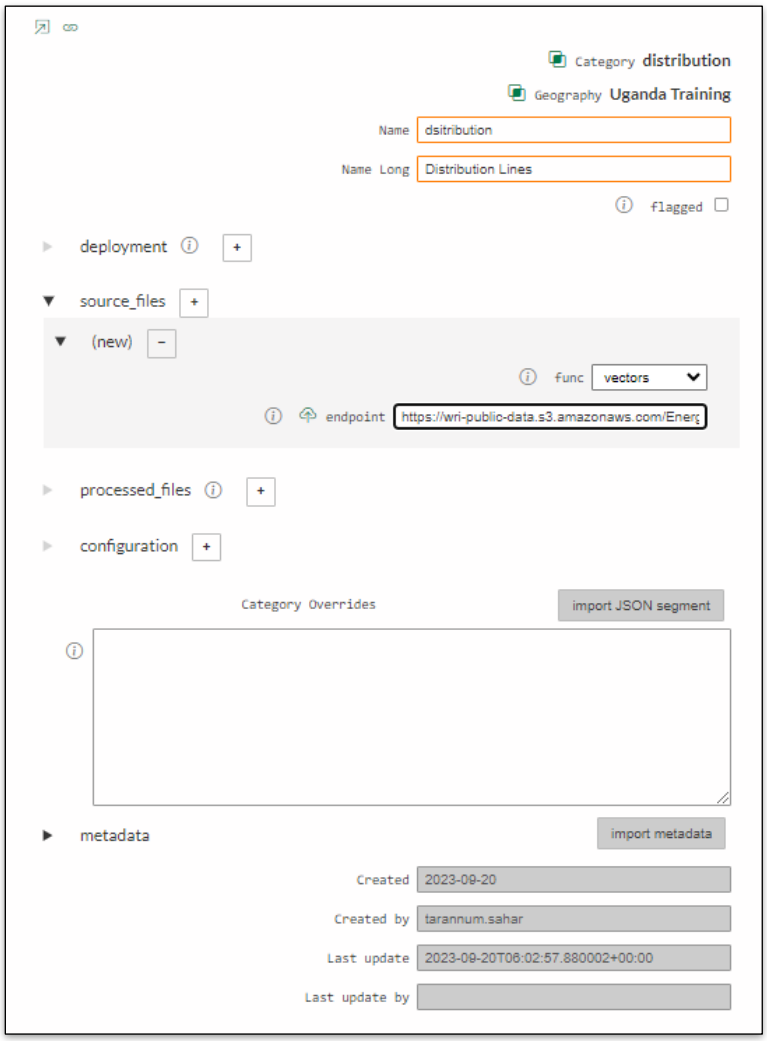




6. Name your dataset (use lower case for 'Name' with dashes for spaces, for 'Name Long' you can use uppercaser, lowercase and spaces). **Include your name or initials in the dataset name so that you can differentiate your files from other trainees**. Navigate to the 'Source Files' section of the record and paste the URL below for the distribution line dataset in the 'endpoint' field.

URL: https://wri-public-data.s3.amazonaws.com/EnergyAccess/UGA/UG_DistributionLines_MV_2022.geojson

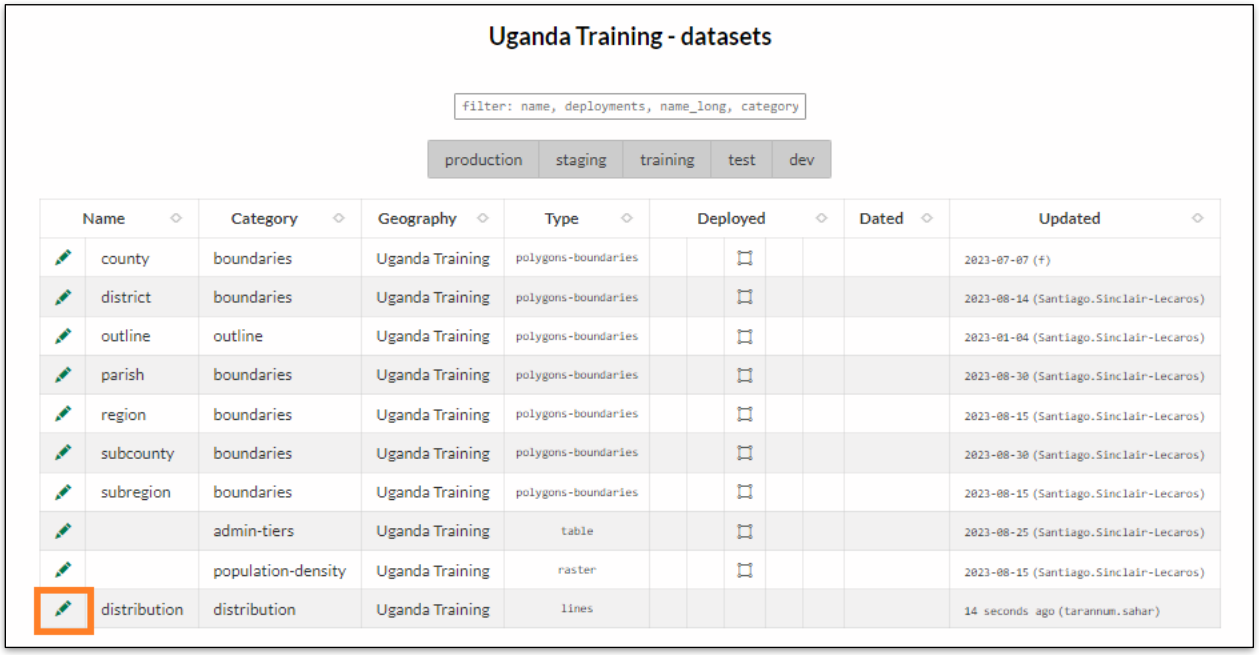
Remember to define the data type as 'vector'



7. Save and exit the dataset record using the  tool in the right-hand corner. We will return to this dataset in the next exercise.

V. Prepare Dataset and Run Paver

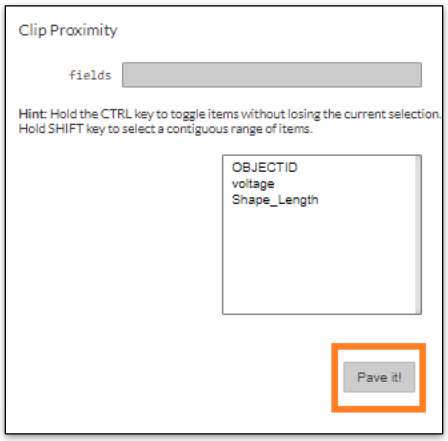
1. Find the vector dataset that you created in the previous exercise. Click on the edit icon to open the dataset record.



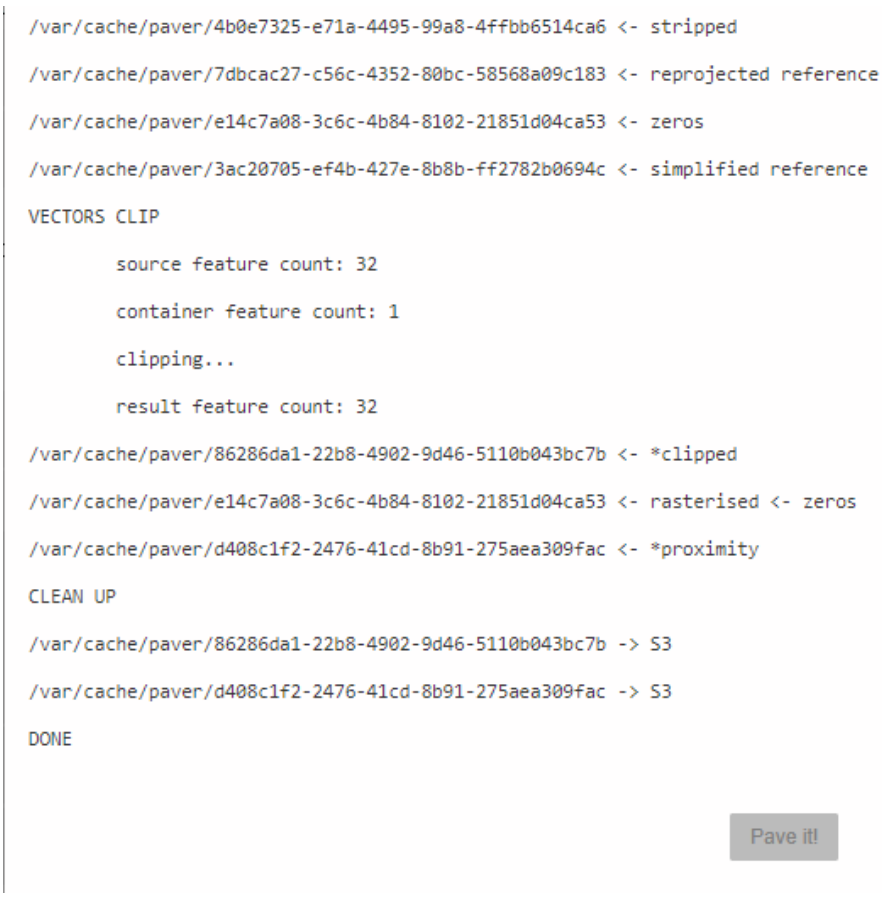
Name	Category	Geography	Type	Deployed	Dated	Updated
county	boundaries	Uganda Training	polygons-boundaries			2023-07-07 (f)
district	boundaries	Uganda Training	polygons-boundaries			2023-08-14 (Santiago.Sinclair-Lecaros)
outline	outline	Uganda Training	polygons-boundaries			2023-01-04 (Santiago.Sinclair-Lecaros)
parish	boundaries	Uganda Training	polygons-boundaries			2023-08-30 (Santiago.Sinclair-Lecaros)
region	boundaries	Uganda Training	polygons-boundaries			2023-08-15 (Santiago.Sinclair-Lecaros)
subcounty	boundaries	Uganda Training	polygons-boundaries			2023-08-30 (Santiago.Sinclair-Lecaros)
subregion	boundaries	Uganda Training	polygons-boundaries			2023-08-15 (Santiago.Sinclair-Lecaros)
	admin-tiers	Uganda Training	table			2023-08-25 (Santiago.Sinclair-Lecaros)
	population-density	Uganda Training	raster			2023-08-15 (Santiago.Sinclair-Lecaros)
distribution	distribution	Uganda Training	lines			14 seconds ago (tarannum.sahar)

2. Click on the Paver icon to begin Paver processing. 

3. We will need to select any data attributes that we wish to preserve in EAE:



4. Once you've selected the desired attributes, click 'Pave It' from the pop-up Paver window. The system will begin automatically processing your dataset to match EAE specifications. You will be notified when this process is complete: 'DONE'

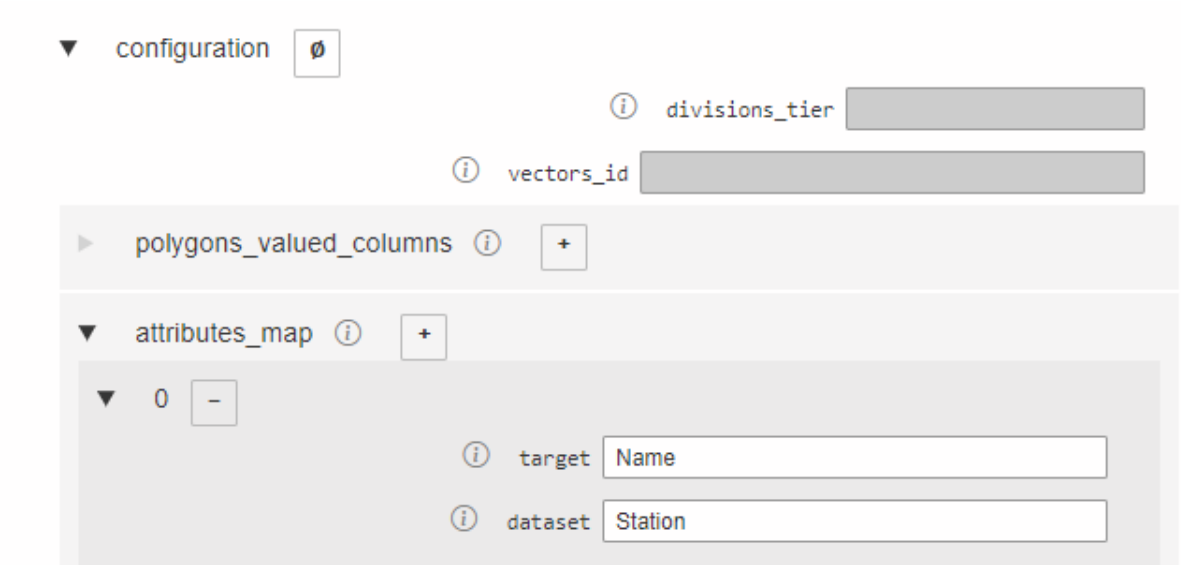


5. You have now processed your dataset and it is ready for deployment in the staging environment. You can close the edit window.

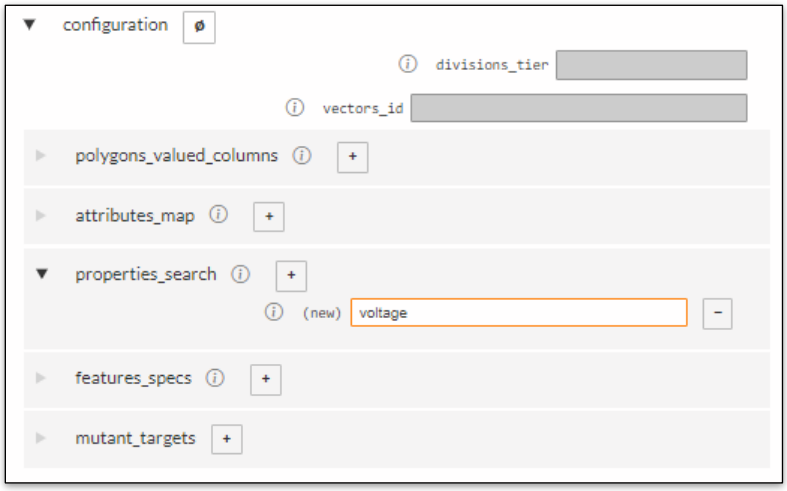
VI. Update Dataset configuration

1. Click ‘edit’ to open your dataset’s configuration settings. Open the ‘Configuration’ settings and click the ‘plus-sign’ box beside the ‘attributes_map’ section to add a new data attribute. In the ‘target’ field, enter the name of the attribute as you would like it to appear in EAE (see the text in parenthesis [ ] in the training data spreadsheet). In the ‘dataset’ field, enter the GeoJSON attribute header exactly as it appears on the training data spreadsheet (outside the parenthesis), including all capitalization and special characters. If there are multiple

attributes associated with your dataset, repeat this step until they are all listed in the dataset record.



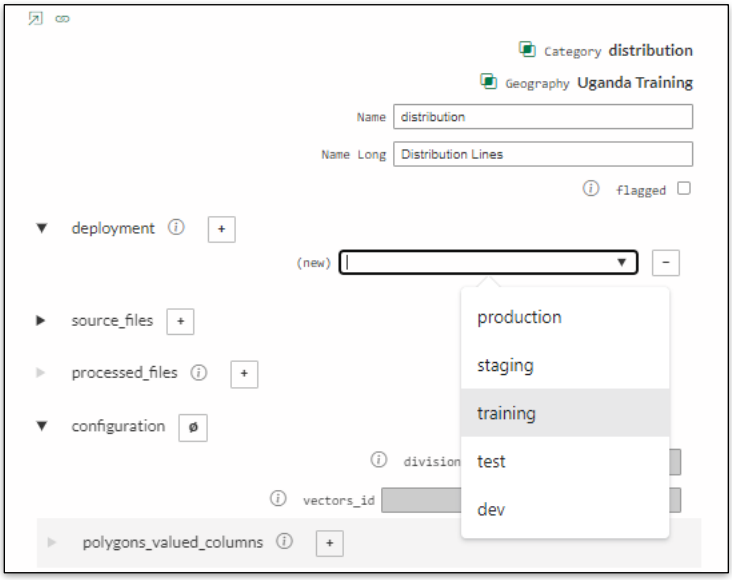
2. Next, we will make lines searchable by voltage level. In the 'properties_search' subsection, add the column header 'voltage'



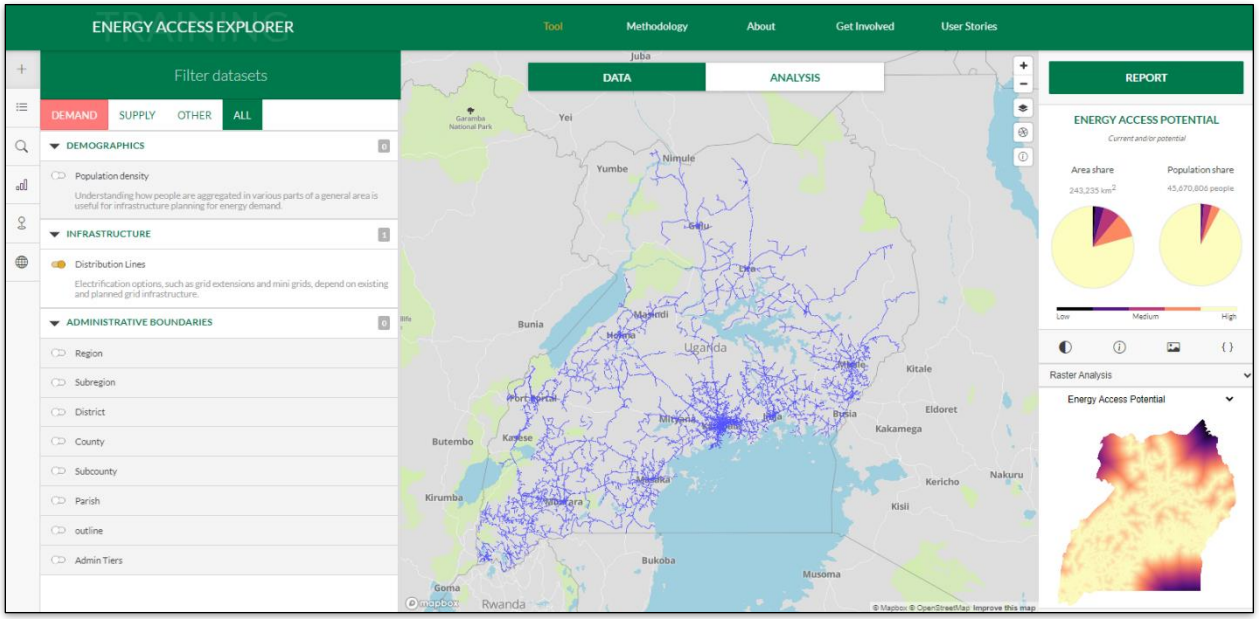
3. Navigate to the 'Features_specs' subsection and click the 'plus-sign' to view the available fields. This is where you can customize display options for the dataset. The 'key' field refers to the attribute column you'd like to modify the appearance of, and 'value' refers to the

specific value for which you'd like to set display options (example: key = 'fuel1' , target = 'solar'). For today's exercise, we will not be customizing the display options, so click the 'minus-sign' button next to 'new' to cancel. This will revert to the default settings defined in the attached category record.

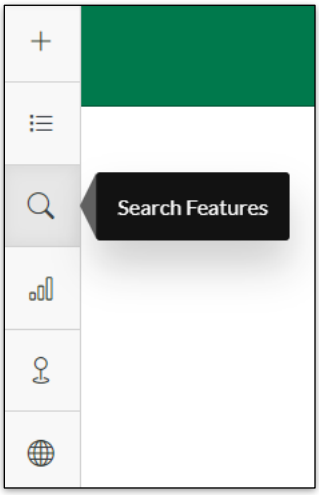
4. You can now deploy your dataset in the training environment. Navigate up to the 'Deployments' section of the dataset record and select/type 'training' from the drop-down menu. Save and exit the record.

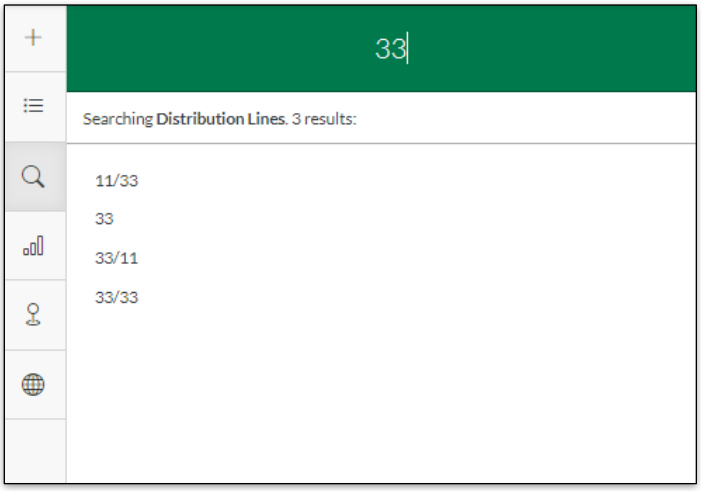


5. Log into the training environment https://training.energyaccessexplorer.org using your login credentials to test your changes, refreshing your browser if necessary. Add the dataset that you've created, and make sure you can view and query the data, and that the analysis preview appears in the bottom right corner of the EAE screen.



Then, select the search feature (magnifying glass icon) from the menu on the left of the screen. Your data layer should appear in the search feature. Try typing “33” to see a list of potential 33 kV distribution lines.





6. You can repeat these steps to process any of the other vector datasets provided below.

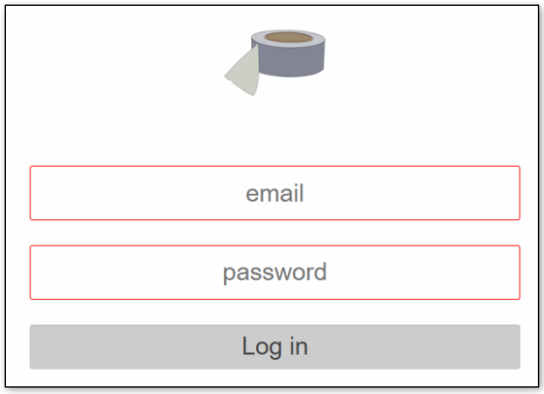
Dataset	Type	EAE category	Filepath URL	Attribute Headers [EAE labels]
Distribution Lines	Vector (Lines)	distribution	Link	voltage [Voltage]
Health Facilities	Vector (Points)	health	Link	FACILITY_N [Name]; LEVEL [Level]; ELECTRIFIC [Electrification Status];
Protected Areas	Vector (Polygons)	protected-areas	Link	NAME [Name]; DESIG_ENG [Type]
Minigrids	Vector (Points)	minigrids	Link	Name [Name]; Capacity [Capacity (MW)]; Status [Status]

VII. Create a Raster Dataset

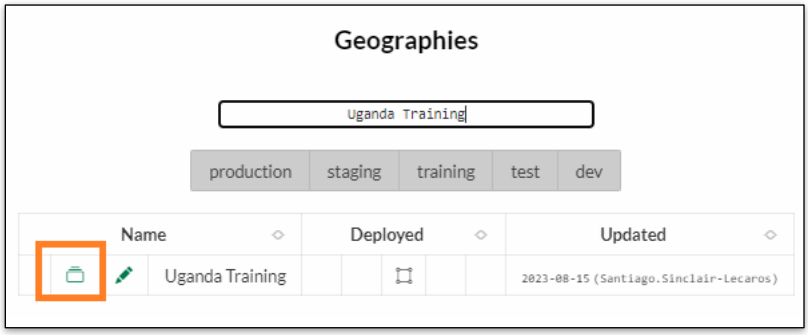
1. You will work with the raster dataset in the table below.

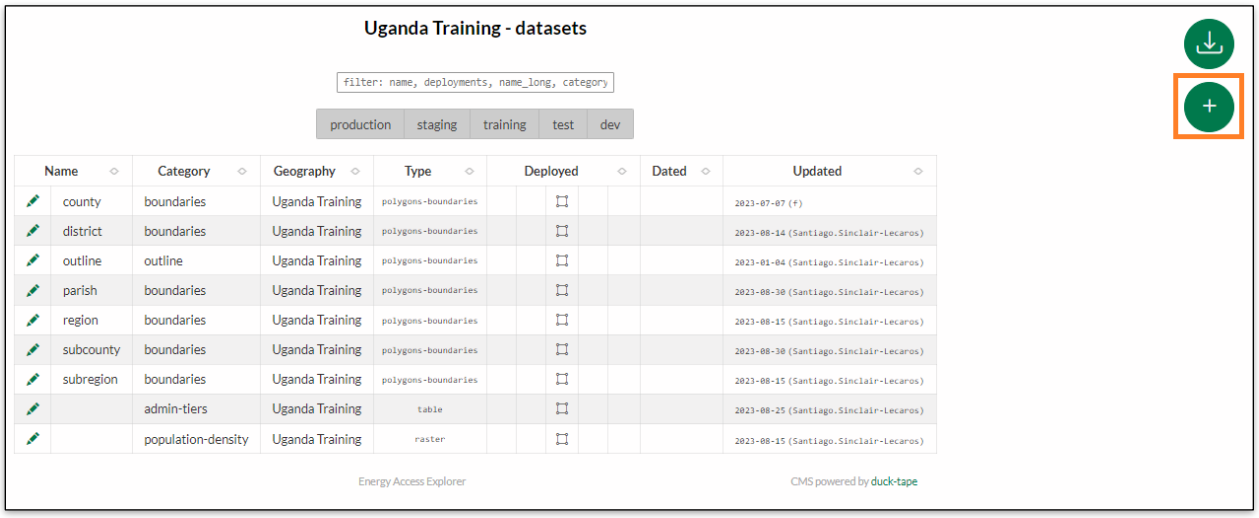
Dataset	Type	EAE category	Filepath URL
Nighttime Lights	Raster	nighttime-lights	Link

2. Log into the EAE Content Management System (CMS) using your login credentials



3. Navigate to 'Datasets' for the Uganda Training geography. Click the green 'plus sign' button to create a new dataset in EAE

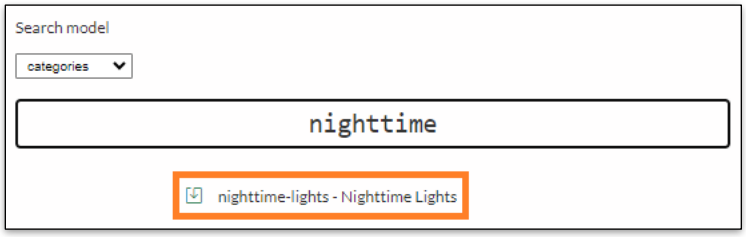




4. Click the search feature  in the pop-up window.



5. Find the ‘nighttime’ category record and then click on the button. Then click 'Save’ to create the dataset.

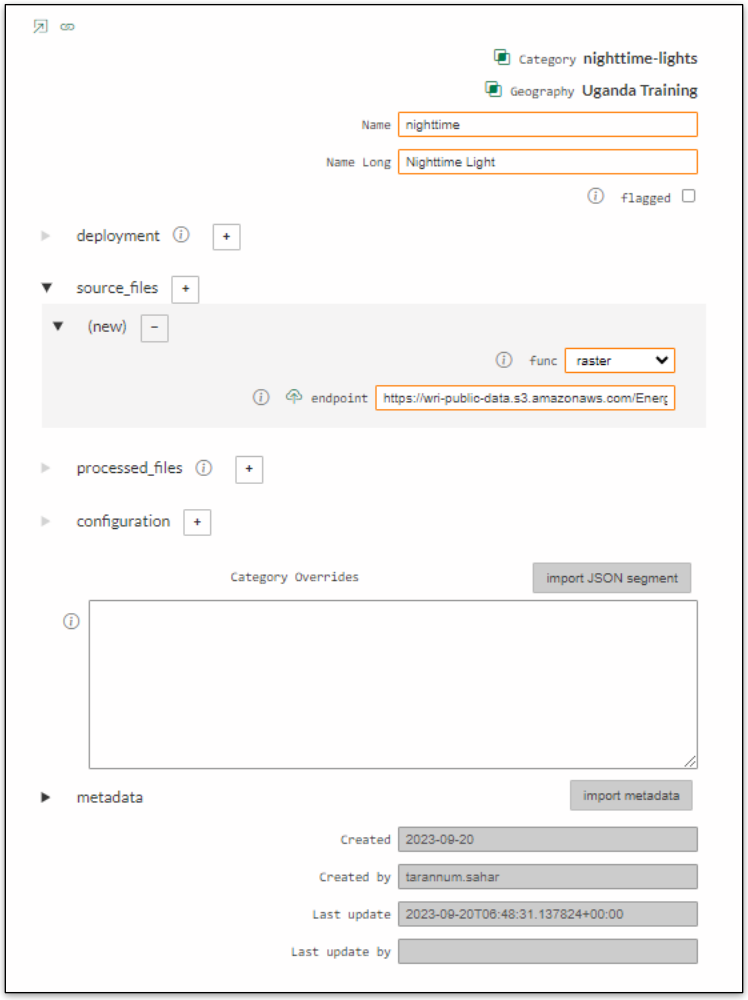




6. Name your dataset (use lower case for ‘Name’ with dashes for spaces, for ‘Name Long’ you can use uppercaser, lowercase and spaces). Navigate to the ‘Source Files’ section of the record and paste the URL below for the distribution line dataset in the ‘endpoint’ field.

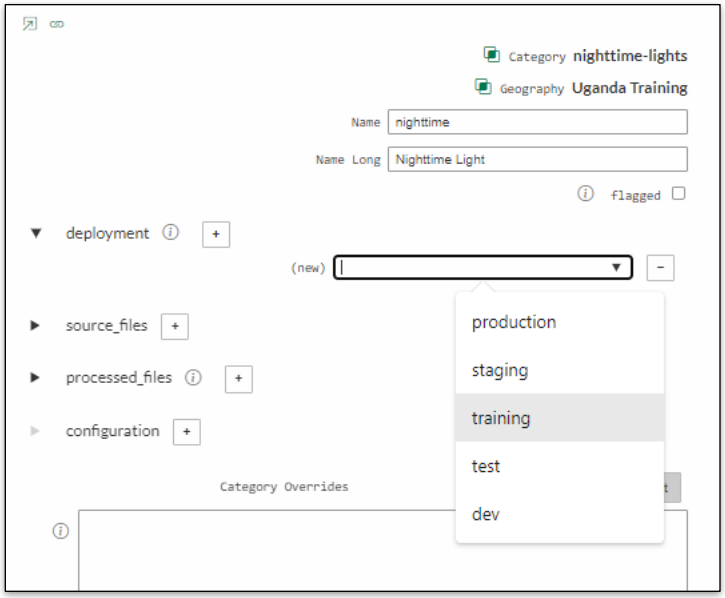
URL: https://wri-public-data.s3.amazonaws.com/EnergyAccess/UGA/nighttime-lights.tif

Remember to define the data type as ‘raster’



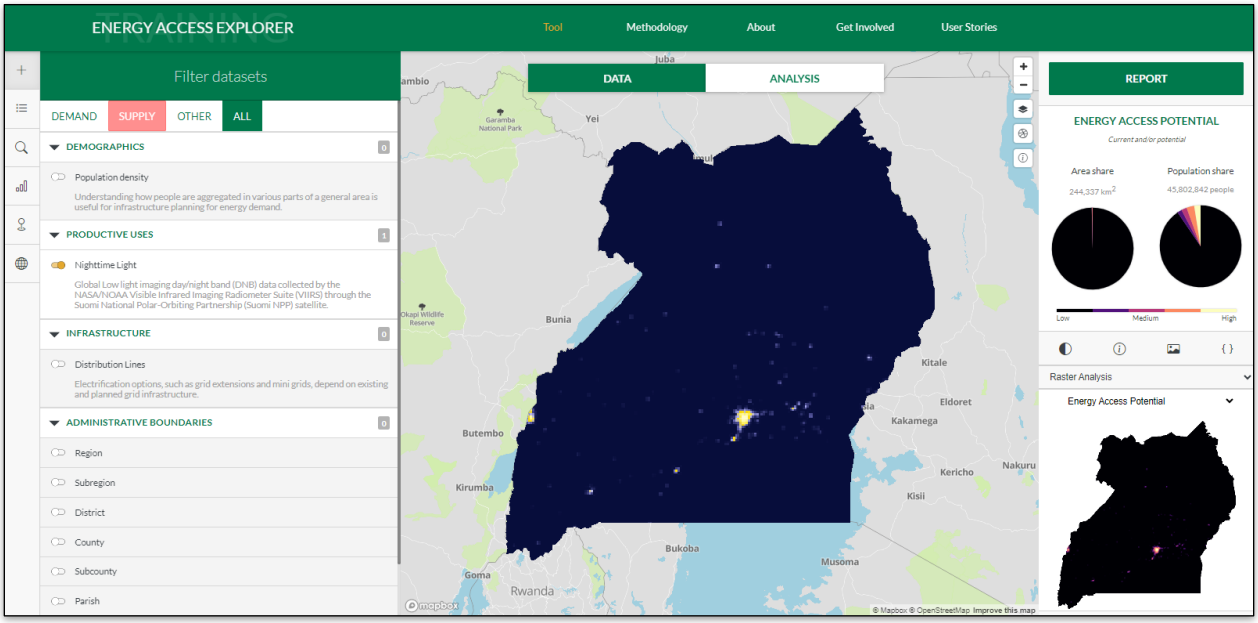
7. Save and exit the dataset record using the  tool in the right-hand corner. Click the edit icon on your dataset again and then click on the  Paver icon to begin automated data processing then close the dataset's settings window once done.

8. When Paver processing is complete, use the 'edit' icon to return to the dataset record. Click on the plus-sign in 'deployments' section and select/type 'training' from the drop-down menu. Save and exit the record. It is now active in the training environment.



9. Log into the training environment https://training.energyaccessexplorer.org to test your changes, refreshing your browser if necessary. Select the dataset to view it in the EAE Data View. Confirm that it loads properly, and that it generates an analysis preview in the bottom right corner of the EAE window. You may also try querying any point within the dataset in the map view to see the value for that cell.

If EAE is already open in your browser, you will have to refresh to see any changes.


ENERGY ACCESS EXPLORER
Tool
Methodology
About
Get Involved
User Stories
Filter datasets
DEMAND
SUPPLY
OTHER
ALL
DEMOGRAPHICS
Population density
Understanding how people are aggregated in various parts of a general area is useful for infrastructure planning for energy demand.
PRODUCTIVE USES
Nighttime Light
Global Low light imaging day/night band (DNB) data collected by the NASA/NOAA Visible Infrared Imaging Radiometer Suite (VIIRS) through the Suomi National Polar-Orbiting Partnership (Suomi NPP) satellite.
INFRASTRUCTURE
Distribution Lines
Electrification options, such as grid extensions and mini grids, depend on existing and planned grid infrastructure.
ADMINISTRATIVE BOUNDARIES
Region
Subregion
District
County
Subcounty
Parish
DATA
ANALYSIS
Juba
Yei
Bunia
Butembo
Kirumba
Goma
Rwanda
Bukoba
Musoma
Kitale
Eldoret
Kakamega
Kericho
Nakuru
Kisii
REPORT
ENERGY ACCESS POTENTIAL
Current and/or potential
Area share
Population share
Low
Medium
High
Raster Analysis
Energy Access Potential

VIII. Prepare CSV File

1. For this exercise, you will be referring to the table below which contains an extract of household grid electricity access data at the sub-regional level from the 2019/2020 Uganda National Household Survey (2019/20 UNHS) undertaken by the Uganda Bureau of Statistics.

Sub-Region	**Grid Electricity**
GREATER KAMPALA	92.5
CENTRAL II	42.8
CENTRAL I	23.3
BUSOGA	13.3
BUKEDI	5.2
BUGISU_SEBEI	9.6
TESO	3.6
KARAMOJA	1
LANGO	8.4
ACHOLI	2.3
WEST NILE	1.60
BUNYORO	6.20
TOORO	10.10
ANKOLE	8.10
KIGEZI	7.70

2. Open excel and copy the table above to the excel workbook.

4. The table below provides a reference for Uganda Subregions' OBJECTID. In your excel worksheet, carefully update/replace the values in the Subregion column to match the numerical OBJECTID for each Subregion as per the table below.

OBJECTID	Subregion
0	ACHOLI
1	ANKOLE
2	BUGISU_SEBEI
3	BUKEDI
4	BUNYORO
5	BUSOGA
6	CENTRAL I
7	CENTRAL II
8	GREATER KAMPALA
9	KARAMOJA
10	KIGEZI
11	LANGO
12	TESO
13	TOORO
14	WEST NILE

5. In your worksheet, update the first column header from 'Subregion' to 'OBJECTID' to match the reference file. Your updated copy of the census table should now contain Subregion OBJECTID numbers in the first column and data values in the second as shown below.

	A	B
1	**OBJECTID**	**Grid Electricity**
2	8	92.5
3	7	42.8
4	6	23.3
5	5	13.3
6	3	5.2
7	2	9.6
8	12	3.6
9	9	1
10	11	8.4
11	0	2.3
12	14	1.6
13	4	6.2
14	13	10.1
15	1	8.1
16	10	7.7

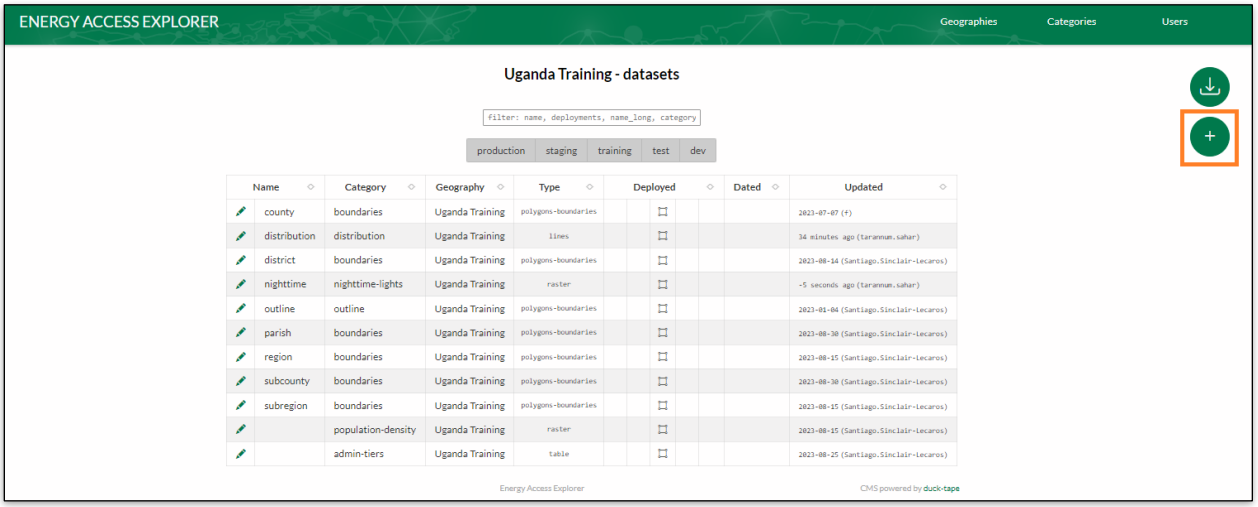
Go to File > Save As and save the file as a .csv to your local computer. Be sure to give the file a descriptive name including the lighting source.

Example: UGA_region_lighting_electricity.csv

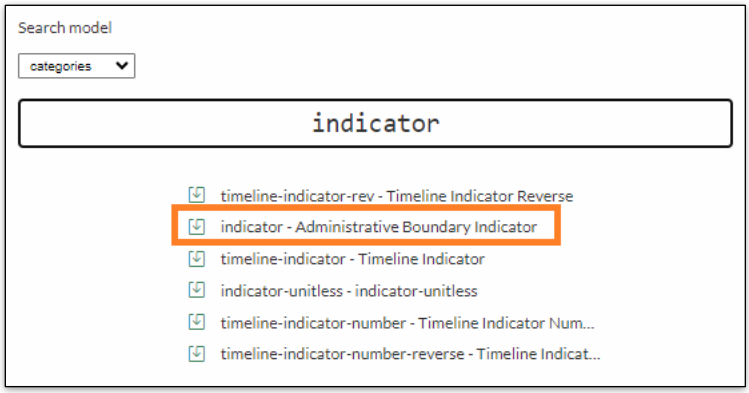
6. Your .csv file is now ready to display region-level data for the lighting source.

IX. Setting up CSV Dataset in EAE

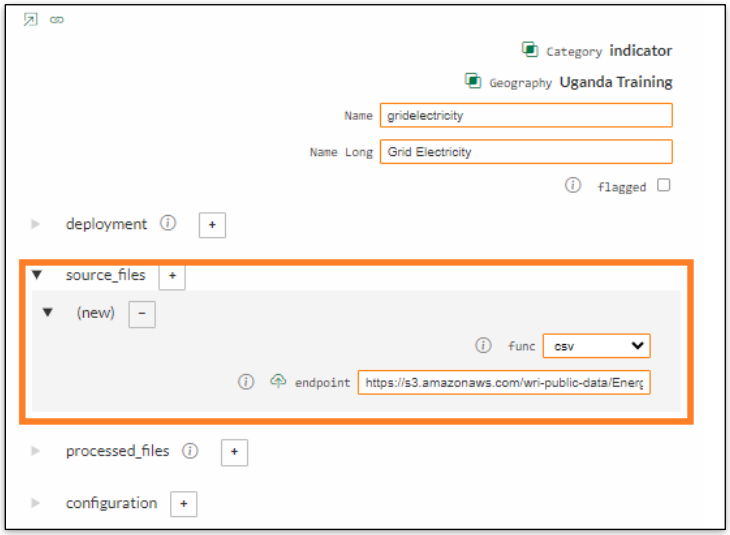
1. Open the datasets table for Uganda Training and create a new dataset (as you've done in the previous exercises) with a category of 'indicator – Administrative Boundary Indicator' Save it.





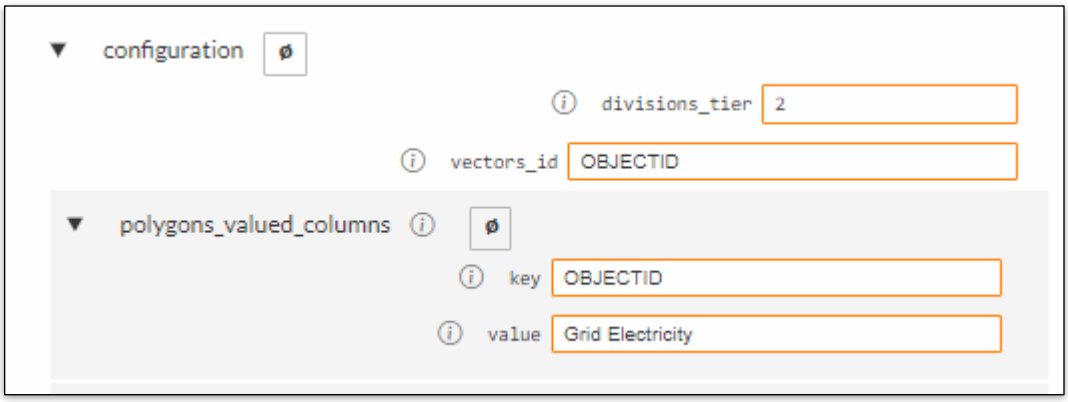


2. Name your dataset and then go to the 'Source Files' section of the record. Indicate that the data type is 'csv' and then upload the file to the 'endpoint' field from your local computer where you have the file saved.

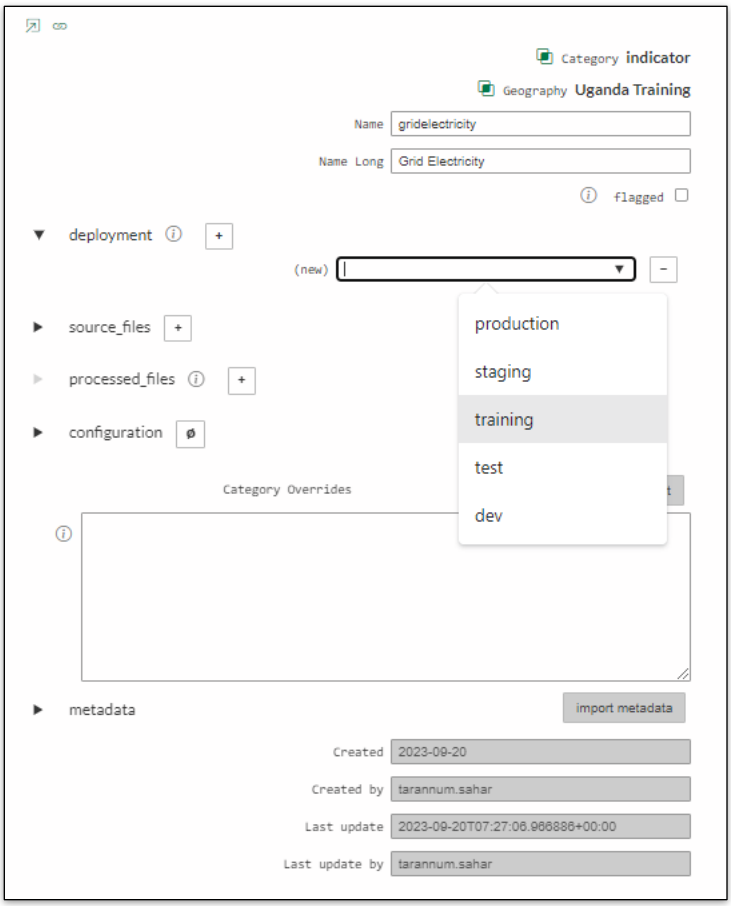


3. Click the edit icon for this dataset and navigate to the Configuration section of the record. In the 'divisions_tier' field, type '2' to indicate that this data is linked to 2nd-level administrative divisions (Subregions) and in the 'vectors_ID' field, type 'OBJECTID'. Save.

4. Click the 'plus-sign' button next to the 'polygons_valued_columns' subsection of the record. In the 'key' field, enter the column header containing the region IDs ('OBJECTID'). In the 'value' field, enter the column header corresponding to the data indicator 'Grid Electricity'.



5. Deploy your record in the training environment. You may now save and exit the dataset record.



6. Test the record in the EAE training environment, refreshing your browser if necessary.

You should be able to view, query, and filter on the census indicator you've uploaded.

