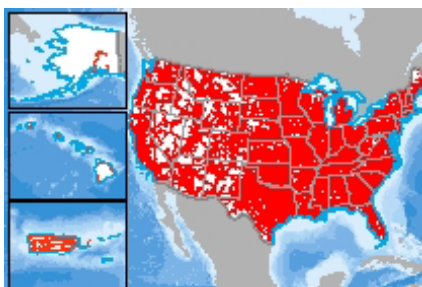


# Transmission Lines



## Tags

homeland security, homeland defense, emergency response, electricity, kilovolts, transmission lines, energy infrastructure, power lines, transmission, voltage, owners

## Summary

This feature class/shapefile is for the Homeland Infrastructure Foundation Level Database (HIFLD) (<https://gii.dhs.gov/HIFLD>) as well as the Energy modelling and simulation community. Publication date: 2022-12-14

## Description

This feature class/shapefile represents electric power transmission lines. Transmission Lines are the system of structures, wires, insulators and associated hardware that carry electric energy from one point to another in an electric power system. Lines are operated at relatively high voltages varying from 69 kV up to 765 kV, and are capable of transmitting large quantities of electricity over long distances. Underground transmission lines are included where sources were available. The following updates have been made since the previous release: 8,653 features added, geographic coverage expanded to include Guam, Northern Mariana Islands, and Virgin Islands.

## Credits

Oak Ridge National Laboratory (ORNL), Los Alamos National Laboratory (LANL), Idaho National Laboratory (INL), National Geospatial-Intelligence Agency (NGA) Homeland Security Infrastructure Program (HSIP) Team

## Use limitations

None (Public Use). Users are advised to read the data set's metadata thoroughly to understand appropriate use and data limitations.

## Extent

<b>West</b>	-159.779336	<b>East</b>	144.823499
<b>North</b>	65.017210	<b>South</b>	13.447581

## Scale Range

<b>Maximum (zoomed in)</b>	1:5,000
<b>Minimum (zoomed out)</b>	1:150,000,000

## Topics and Keywords

\* CONTENT TYPE   Downloadable Data

## Citation

TITLE Transmission Lines  
PRESENTATION FORMATS \* digital map

## Resource Details

DATASET LANGUAGES \* English (UNITED STATES)  
SPATIAL REPRESENTATION TYPE \* vector  
\* PROCESSING ENVIRONMENT Version 6.2 (Build 9200) ; Esri ArcGIS 10.8.0.12790  
CREDITS  
Oak Ridge National Laboratory (ORNL), Los Alamos National Laboratory (LANL), Idaho National Laboratory (INL), National Geospatial-Intelligence Agency (NGA) Homeland Security Infrastructure Program (HSIP) Team  
ARCGIS ITEM PROPERTIES  
\* NAME transmission\_line\_hifld\_v5

## Extents

EXTENT  
GEOGRAPHIC EXTENT  
BOUNDING RECTANGLE  
EXTENT TYPE Extent used for searching  
\* WEST LONGITUDE -159.779336  
\* EAST LONGITUDE 144.823499  
\* NORTH LATITUDE 65.017210  
\* SOUTH LATITUDE 13.447581  
\* EXTENT CONTAINS THE RESOURCE Yes  
EXTENT IN THE ITEM'S COORDINATE SYSTEM  
\* WEST LONGITUDE -17786554.342500  
\* EAST LONGITUDE 16121678.218300  
\* SOUTH LATITUDE 1510914.037100  
\* NORTH LATITUDE 9612906.159600  
\* EXTENT CONTAINS THE RESOURCE Yes

## Resource Constraints

CONSTRAINTS  
LIMITATIONS OF USE  
None (Public Use). Users are advised to read the data set's metadata thoroughly to understand appropriate use and data limitations.

## Spatial Reference

ARCGIS COORDINATE SYSTEM  
\* TYPE Projected  
\* GEOGRAPHIC COORDINATE REFERENCE GCS\_WGS\_1984  
\* PROJECTION WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
\* COORDINATE REFERENCE DETAILS  
PROJECTED COORDINATE SYSTEM  
WELL-KNOWN IDENTIFIER 102100  
X ORIGIN -22041257.77387803  
Y ORIGIN -30241100  
XY SCALE 144148035.89861274  
Z ORIGIN -100000  
Z SCALE 10000  
M ORIGIN -100000  
M SCALE 10000  
XY TOLERANCE 0.001  
Z TOLERANCE 0.001  
M TOLERANCE 0.001  
HIGH PRECISION true  
LATEST WELL-KNOWN IDENTIFIER 3857  
WELL-KNOWN TEXT PROJCS["WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere",GEOGCS  
["GCS\_WGS\_1984",DATUM["D\_WGS\_1984",SPHEROID

```
["WGS_1984",6378137.0,298.257223563]],PRIMEM["Greenwich",0.0],UNIT
["Degree",0.0174532925199433]],PROJECTION["Mercator_Auxiliary_Sphere"],PARAMETER
["False_Easting",0.0],PARAMETER["False_Northing",0.0],PARAMETER
["Central_Meridian",0.0],PARAMETER["Standard_Parallel_1",0.0],PARAMETER
["Auxiliary_Sphere_Type",0.0],UNIT["Meter",1.0],AUTHORITY["EPSG",3857]]
```

#### REFERENCE SYSTEM IDENTIFIER

- \* VALUE 3857
- \* CODESPACE EPSG
- \* VERSION 8.8(9.3.1.2)

## Spatial Data Properties

#### VECTOR

- \* LEVEL OF TOPOLOGY FOR THIS DATASET geometry only

#### GEOMETRIC OBJECTS

- FEATURE CLASS NAME transmission\_line\_hifld\_v5
- \* OBJECT TYPE composite

#### ARCGIS FEATURE CLASS PROPERTIES

- FEATURE CLASS NAME transmission\_line\_hifld\_v5
- \* FEATURE TYPE Simple
- \* GEOMETRY TYPE Polyline
- \* HAS TOPOLOGY FALSE
- \* SPATIAL INDEX TRUE
- \* LINEAR REFERENCING FALSE

## Distribution

#### DISTRIBUTION FORMAT

- \* NAME File Geodatabase Feature Class

## Fields

#### DETAILS FOR OBJECT transmission\_line\_hifld\_v5

- \* TYPE Feature Class

#### DEFINITION

Attribute fields were populated using sources identified in the SOURCE field for the period covered in the Time Period metadata and other open source data. For string and date data types, NOT AVAILABLE values denote missing data that was not present in the source data. For numeric data types, -999999 denote missing data that was not present in the source data. However, the missing data may be present in other sources not yet discovered and used in the creation and/or maintenance of this dataset. These records may be populated with valid information in future update cycles.

#### DEFINITION SOURCE

Originator defined

#### FIELD OBJECTID

- \* ALIAS OBJECTID
- \* DATA TYPE OID
- \* WIDTH 4
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

Internal feature number.

#### DESCRIPTION SOURCE

Esri

#### DESCRIPTION OF VALUES

Sequential unique whole numbers that are automatically generated.

#### FIELD SHAPE

- \* ALIAS SHAPE
- \* DATA TYPE Geometry
- \* WIDTH 0
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

Feature geometry.

#### DESCRIPTION SOURCE

Esri

#### DESCRIPTION OF VALUES

Coordinates defining the features.

#### FIELD ID

- \* ALIAS ID
- \* DATA TYPE String
- \* WIDTH 10
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

Unique ID for each feature. ID values are unique to this dataset ONLY and may have changed from the previous versions of the dataset, and/or change in a future version of the dataset.

#### DESCRIPTION SOURCE

Originator defined

#### FIELD TYPE

- \* ALIAS TYPE
- \* DATA TYPE String
- \* WIDTH 60
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

Specific categorical breakdown for the feature. Categories are not mutually exclusive (ex. "AC; OVERHEAD" and "DC; UNDERGROUND")

#### DESCRIPTION SOURCE

Originator defined

#### LIST OF VALUES

VALUE AC

DESCRIPTION Alternating current transmission line.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE DC

DESCRIPTION Direct current transmission line.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE OVERHEAD

DESCRIPTION Overhead transmission line.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE UNDERGROUND

DESCRIPTION Underground transmission line.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE NOT AVAILABLE

DESCRIPTION Please see "Entity Type Definition" section

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

#### FIELD STATUS

- \* ALIAS STATUS
- \* DATA TYPE String
- \* WIDTH 60
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

Operational status of the feature.

#### DESCRIPTION SOURCE

The responsible organization as identified in the SOURCE field.

#### LIST OF VALUES

VALUE IN SERVICE

DESCRIPTION Operational

ENUMERATED DOMAIN VALUE DEFINITION SOURCE The responsible organization as identified in the SOURCE field.

VALUE INACTIVE

DESCRIPTION Not operational

ENUMERATED DOMAIN VALUE DEFINITION SOURCE The responsible organization as identified in the SOURCE field.

VALUE PROPOSED

DESCRIPTION Proposed

ENUMERATED DOMAIN VALUE DEFINITION SOURCE The responsible organization as identified in the SOURCE field.

VALUE UNDER CONST

DESCRIPTION Under construction as of the publication date

ENUMERATED DOMAIN VALUE DEFINITION SOURCE The responsible organization as identified in the SOURCE field.

VALUE NOT AVAILABLE

DESCRIPTION Please see "Entity Type Definition" section

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

#### FIELD NAICS\_CODE

- \* ALIAS NAICS\_CODE
- \* DATA TYPE String
- \* WIDTH 6
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

The North American Industry Classification System (NAICS) code is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

#### DESCRIPTION SOURCE

Originator defined

#### CODED VALUES

NAME OF CODELIST North American Industry Classification System, 2017

SOURCE US Census (<http://www.census.gov/eos/www/naics/>)

#### FIELD NAICS\_DESC

- \* ALIAS NAICS\_DESC
- \* DATA TYPE String
- \* WIDTH 50
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

The North American Industry Classification System (NAICS) definition is the standard

used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

DESCRIPTION SOURCE

Originator defined

CODED VALUES

NAME OF CODELIST North American Industry Classification System, 2017

SOURCE US Census (<http://www.census.gov/eos/www/naics/>)

FIELD SOURCE

\* ALIAS SOURCE

\* DATA TYPE String

\* WIDTH 250

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Original source used to identify geospatial location and/or attribution for the feature.

DESCRIPTION SOURCE

Originator defined

FIELD SOURCEDATE

\* ALIAS SOURCEDATE

\* DATA TYPE Date

\* WIDTH 8

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Date of the source, or, if not available, the date the originator accessed the source.

DESCRIPTION SOURCE

Originator defined

RANGE OF VALUES

MINIMUM VALUE 12/13/2005

MAXIMUM VALUE 07/08/2019

UNITS OF MEASURE Date

FIELD VAL\_METHOD

\* ALIAS VAL\_METHOD

\* DATA TYPE String

\* WIDTH 100

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Methodology used to validate geospatial location of the feature.

DESCRIPTION SOURCE

Originator defined

LIST OF VALUES

VALUE IMAGERY

DESCRIPTION The best available imagery used to determine the location.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE IMAGERY/OTHER

DESCRIPTION Imagery and supplemental open source information used to determine the location.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE OTHER

DESCRIPTION Open source information used to determine the location.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE UNVERIFIED

DESCRIPTION Feature could not be located or the feature has not yet been validated.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

FIELD VAL\_DATE

\* ALIAS VAL\_DATE

\* DATA TYPE Date

\* WIDTH 8

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Date when geospatial location was last validated for the feature.

DESCRIPTION SOURCE

Originator defined

RANGE OF VALUES

MINIMUM VALUE 04/07/2014

MAXIMUM VALUE 07/08/2019

FIELD OWNER

\* ALIAS OWNER

\* DATA TYPE String

\* WIDTH 80

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Owner of the transmission line.

DESCRIPTION SOURCE

The responsible organization as identified in the SOURCE field.

FIELD VOLTAGE

\* ALIAS VOLTAGE

\* DATA TYPE Single

\* WIDTH 4

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Carrying capacity of the transmission line in kilovolts.

DESCRIPTION SOURCE

The responsible organization as identified in the SOURCE field.

RANGE OF VALUES

MINIMUM VALUE 1

MAXIMUM VALUE 1000

UNITS OF MEASURE Kilovolt (kV)

FIELD VOLT\_CLASS

\* ALIAS VOLT\_CLASS

\* DATA TYPE String

\* WIDTH 50

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Voltage of the transmission line grouped in industry standard classifications.

DESCRIPTION SOURCE

Originator defined

LIST OF VALUES

VALUE 100-161

DESCRIPTION 100 to 161 Kilovolts

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE 220-287  
DESCRIPTION 220 - 287 Kilovolts  
ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE 345  
DESCRIPTION 345 Kilovolts  
ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE 500  
DESCRIPTION 500 Kilovolts  
ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE 735 AND ABOVE  
DESCRIPTION Greater than or equal to 735 Kilovolts  
ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE DC  
DESCRIPTION Direct current transmission line  
ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE UNDER 100  
DESCRIPTION Less than 100 Kilovolts  
ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE NOT AVAILABLE  
DESCRIPTION Please see "Entity Type Definition" section  
ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

#### FIELD INFERRED

\* ALIAS INFERRED  
\* DATA TYPE String  
\* WIDTH 13  
\* PRECISION 0  
\* SCALE 0

#### FIELD DESCRIPTION

Indicates whether or not VOLTAGE and/or VOLT\_CLASS was inferred using one of the methods outlined in the Process Description.

#### DESCRIPTION SOURCE

Originator defined

#### LIST OF VALUES

VALUE Y  
DESCRIPTION Voltage was inferred  
ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

VALUE N  
DESCRIPTION Voltage was not inferred  
ENUMERATED DOMAIN VALUE DEFINITION SOURCE Originator defined

#### FIELD SUB\_1

\* ALIAS SUB\_1  
\* DATA TYPE String  
\* WIDTH 80  
\* PRECISION 0  
\* SCALE 0

#### FIELD DESCRIPTION

The name of the associated substation from the substations feature class/shapefile.

#### DESCRIPTION SOURCE

The responsible organization as identified in the SOURCE field.



FIELD SUB\_2

- \* ALIAS SUB\_2
- \* DATA TYPE String
- \* WIDTH 80
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

The name of the associated substation from the substations feature class/shapefile.

DESCRIPTION SOURCE

The responsible organization as identified in the SOURCE field.

FIELD SHAPE\_Length

- \* ALIAS SHAPE\_Length
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Length of feature in internal units.

DESCRIPTION SOURCE

Esri

RANGE OF VALUES

- MINIMUM VALUE 0.000005
- MAXIMUM VALUE 12.781856194252

DESCRIPTION OF VALUES

Positive real numbers that are automatically generated.

OVERVIEW DESCRIPTION

ENTITY AND ATTRIBUTE OVERVIEW

The entity and attribute information provided here describes the tabular data associated with the data set. Please review the detailed descriptions that are provided (the individual attribute descriptions) for information on the values that appear as fields/table entries of the data set. Please see the "Processing Steps" section for further methodology. For string and date data types, NOT AVAILABLE values denote missing data that was not present in the source data. For numeric data types, -999999 denote missing data that was not present in the source data. However, the missing data may be present in other sources not yet discovered and used in the creation and/or maintenance of this dataset. These records may be populated with valid information in future update cycles.

ENTITY AND ATTRIBUTE DETAIL CITATION

Oak Ridge National Laboratory

## Metadata Details

- \* METADATA LANGUAGE English (UNITED STATES)
- SCOPE OF THE DATA DESCRIBED BY THE METADATA dataset
- SCOPE NAME \* dataset
- \* LAST UPDATE 2024-01-25
- ARCGIS METADATA PROPERTIES
  - METADATA FORMAT ArcGIS 1.0
  - STANDARD OR PROFILE USED TO EDIT METADATA FGDC
  - METADATA STYLE FGDC CSDGM Metadata
  - CREATED IN ARCGIS FOR THE ITEM 2024-01-25
  - LAST MODIFIED IN ARCGIS FOR THE ITEM 2024-01-25
  - AUTOMATIC UPDATES
    - HAVE BEEN PERFORMED Yes
    - LAST UPDATE 2024-01-25