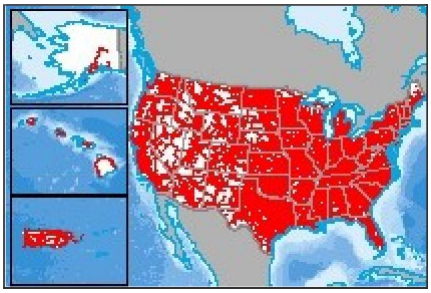
Transmission Lines



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.

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

West -159.779336 **East** 144.823499
North 65.017210 **South** 13.447581

Scale Range

Maximum (zoomed in) 1:5,000
Minimum (zoomed out) 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_v2

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_v2
* Object type composite
* Object count 83207

ArcGIS Feature Class Properties
Feature class name transmission_line_hifld_v2
* Feature type Simple
* Geometry type Polyline
* Has topology FALSE
* Feature count 83207
* Spatial index TRUE
* Linear referencing FALSE

Distribution

Distribution format
* Name File Geodatabase Feature Class

Fields

Details for object transmission_line_hifld_v2
* Type Feature Class
* Row count 83207

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; UNDERGOUND")

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 2022-05-25
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 2019-12-04
Last modified in ArcGIS for the item 2022-05-25
Automatic updates
Have been performed Yes
Last update 2022-05-25