

Mapping Your Infrastructure: Datasets for Infrastructure Identification

Homeland Infrastructure Foundation-Level Data (HIFLD) is a publicly accessible site (<https://hifld-geoplatform.opendata.arcgis.com/>) that provides basic, national geospatial data that can be used to support planning and assessment activities, and help communities improve their preparedness and resilience. HIFLD allows users to access federally derived and acquired data on several critical infrastructure sectors, including agriculture, chemicals, communications, education, emergency services, energy, finances, transportation, and water to assist in infrastructure identification and data visualization. The data is available for download as CSV, KML, or Shapefile, and is accessible via web services.

Datasets are being continuously updated. Each HIFLD dataset reports a timestamp of last edits. Please note that errors in data can occur. A user should validate the accuracy of data prior to being used in a manner that may affect human safety or other significant matters.

There are several software platforms that can be used to take advantage of HIFLD data. Below are options to consider.

- **Homeland Security Information Network (HSIN) Geospatial Information Infrastructure (GII)** allows users access to numerous geospatial capabilities to include web-based viewing, map services for web and desktop use, and analytic services. Individual GII users, both from within The Department of Homeland Security (DHS) and external to DHS, are required to obtain HSIN authentication credentials to access the GII information system. For assistance or additional information, please visit <https://www.dhs.gov/sites/default/files/publications/privacy-pia-dhs078-gii-november2019.pdf>.
- **CISA Gateway** serves as the single interface through which DHS partners can access a large range of integrated infrastructure protection tools and information to conduct comprehensive vulnerability assessments and risk analysis. All users must be Protected Critical Infrastructure Information (PCII) certified and must complete required CISA Gateway training to obtain access. For assistance or additional information, please visit <https://www.cisa.gov/cisa-gateway>.
- **ArcGIS MapViewer** can be used to create interactive web maps that users can share. It allows users to view and manage content in one area and customize/configure maps in another with real time updates. For assistance or additional information, please visit <https://doc.arcgis.com/en/arcgis-online/get-started/get-started-with-mv.htm>.
- **ArcGIS StoryMaps** is a web-based application that allows users to share maps in the context of narrative text and other multimedia content. Stories can be published and shared within an organization, to specific groups, or with everyone. For assistance or additional information, please visit <https://doc.arcgis.com/en/arcgis-storymaps/get-started/what-is-arcgis-storymaps.htm>.
- **API Explorer** is a tool for navigating application programming interface (API) methods without writing code. It is available on most representational state transfer API method documentation pages. For assistance or additional information, please visit <https://developers.google.com/explorer-help>.
- **ArcGIS Online** is a collaborative geographic information system (GIS) that allows users to use, create, and share maps, scenes, apps, layers, analytics, and data. The federal community users on ArcGIS Online has a layer of content sourced from authoritative sources and

present geospatial information through web maps, map services and layer packages. For general information on ArcGIS Online, please visit <https://doc.arcgis.com/en/arcgis-online/reference/faq.htm#:~:text=ArcGIS%20Online%20is%20a%20collaborative,maps%20%20apps%20%20and%20scenes>.

HOW TO USE HOMELAND INFRASTRUCTURE FOUNDATION-LEVEL DATA (HIFLD)

The following features can be utilized on the HIFLD site to manipulate the datasets:

- **Create a Map**
 - Start a simple or advanced map (ArcGIS MapViewer)
 - Add layers to properly view the data
- **Create a Story**
 - Open in ArcGIS StoryMaps – create stories by combining text, interactive maps, and other multimedia content
- **View API Resources**
 - Try out API Explorer – allows users to navigate the application programming interface (API) using hyperlinks
- **View Data Source**
 - Select to open in a new tab
- **Open in ArcGIS Online**
 - Select to open in a new tab – geographic information system (GIS) for general planning, analytical, and research purposes

OPEN-SOURCE DATA CATEGORIES TO EXPLORE

For quick access, below are links to open-source datasets for some key infrastructure sectors sorted by category along with a dataset description. While many of these datasets are native to HIFLD, a few are drawn from other sources. This list of available resources is limited to those of national focus. Planners are encouraged to explore other data resources that may exist within their region; state, local, tribal, and territorial (SLTT) governments; and academic community to provide additional insights.

COMMUNICATION

- [AM Transmission](#): This data represents AM transmission tower locations as recorded by the Federal Communications Commission.
- [Cellular Towers](#): This dataset represents cellular service areas aggregated by callsign as recorded by the Federal Communications Commission.
- [FM Transmission](#): This data represents FM transmission tower locations as recorded by the Federal Communications Commission.

- [Land Mobile Broadcast Towers](#): This dataset pinpoints the Land Mobile Broadcast tower locations as recorded by the Federal Communications Commission.
- [TV Broadcast Contours](#): This dataset represents the broadcast service contours for TV stations. In U.S. broadcasting, a service contour (or protected contour) refers to the area in which the Federal Communications Commission (FCC) predicts coverage.
- [Land Mobile Commercial Transmission Towers](#): This dataset represents Land Mobile Commercial transmission tower locations as recorded by the Federal Communications Commission.
- [TV Analog Station Transmitters](#): This dataset represents the locations of television analog station transmitters as recorded by the Federal Communications Commission Data.
- [TV Digital Station Transmitters](#): This dataset consists of Digital Television broadcasters, including noncommercial educational TV broadcast stations and, where indicated, low power TV and TV translator stations in the United States, its Territories and possessions. It represents an extract from the Consolidated Database System (CDBS) licensed by the Media Bureau.
- [Federal Communications Commission](#): FCC maps support publication of geospatial visualizations related to reports, public notices, and other activities. Data is available for download for visualization and analysis purposes.

ENERGY

- [Electric Power Transmission Lines](#): This dataset represents electric power transmission lines recorded by Oak Ridge National Laboratory (ORNL). 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.
- [Electric Substations](#): This dataset represents electric power substations primarily associated with electric power transmission recorded by Oak Ridge National Laboratory (ORNL).
- [Power Plants](#): This shapefile represents electric power plants, including land and land rights, structures and improvements, boiler or reactor vessel equipment, engines and engine-driven generators, turbo generator units, accessory electric equipment, and miscellaneous power plant equipment grouped together for each individual facility recorded by Oak Ridge National Laboratory (ORNL).
- [Ethanol Plants](#): This dataset pinpoints ethanol plants recorded by the Federal Communications Commission Data. An ethanol plant is a facility that uses various biomass sources to produce ethanol for use as a fuel.
- [Natural Gas Processing Plants](#): This dataset represents natural gas processing plants recorded by Oak Ridge National Laboratory (ORNL). A natural gas processing plant is a facility designed to remove impurities and non-methane hydro-carbons from raw natural gas to produce pipeline ready dry natural gas.
- [Natural Gas Market Hubs](#): This dataset represents natural gas transmission hubs in the contiguous United States recorded by the U.S. Energy Information Administration. A market center is a hub where the operator offers services that facilitate the buying, selling, and transportation of natural gas.
- [Natural Gas Pipelines](#): This dataset represents the major natural gas transmission pipelines in the United States including interstate, intrastate, and gathering pipelines recorded by the U.S. Energy Information Administration. The pipeline network has about 3 million miles of

mainline and other pipelines that link natural gas production areas and storage facilities with consumers.

- [Oil Refineries](#): This shapefile represents oil refineries recorded by Oak Ridge National Laboratory (ORNL). An oil refinery is a facility that processes crude oil to generate a variety of petroleum-based products.
- [Petroleum Terminals](#): This dataset represents petroleum terminals recorded by the Federal Communications Commission Data. Petroleum terminals are used to provide storage of both crude oil and refined petroleum products.
- [Pipeline Areas](#): This dataset pinpoints areas along navigable waterways containing one or more pipelines based on U.S. Army Corps of Engineers inland electronic navigational charts (IENCs). IENCs were developed from available data used in maintenance of navigation channels and may have inaccuracies due to changing waterway conditions.
- [Overhead Pipeline Locations](#): This data displays a string of interconnected pipes used for the transport of matter, primarily for oil or gas based on U.S. Army Corps of Engineers inland electronic navigational charts (IENCs). An overhead pipeline is a pipeline supported by pylons and passing over or nearby navigable waters.
- [Submarine Pipeline Locations](#): This data displays a string of interconnected pipes used for the transport of matter, primarily for oil or gas based on U.S. Army Corps of Engineers inland electronic navigational charts (IENCs). A submarine or land pipeline is a pipeline lying on or buried under the seabed or the land.
- [U.S. Energy Atlas](#): This site is a comprehensive reference for data and interactive maps of energy infrastructure and resources. Data is available for download to discover and analyze.

TRANSPORTATION

- [Aircraft Landing Facilities](#): This dataset represents aircraft landing facilities in the United States and U.S. Territories recorded from the Federal Aviation Administration's National Airspace System Resource Aeronautical Data Product.
- [Intermodal Freight Facilities Pipelines](#): This dataset contains pipeline intermodal terminal recorded by the National Transportation Atlas Database (NTAD). Pipeline intermodal terminals have the ability to receive or deliver freight commodities via pipeline, truck, rail, or water.
- [National Bridge Inventory](#): The National Bridge Inventory is a collection of information (database) describing the more than 600,000 of the Nation's bridges located on public roads, including Interstate Highways, U.S. highways, State and county roads, as well as publicly-accessible bridges on federal lands. It presents a State-by-State summary analysis of the number, location, and general condition of highway bridges within each State.
- [Port Facilities](#): This dataset represents port facilities and provides physical information on commercial facilities at U.S. coastal, Great Lakes and inland ports recorded by the National Transportation Atlas Database (NTAD).
- [Railroads](#): This dataset supports the topological network that provides location and attributes information for use in the network analysis applications from the Federal Railroad Administration's (FRA) North American Rail Network (NARN) public rail lines.
- [Railroad Bridges](#): This dataset represents rail bridges in the United States according to the National Bridge Inspection Standards published in the Code of Federal Regulations. The current state of this dataset is given by the publication year of 2009. An up-to-date dataset

cannot be provided since this is dependent on the National Bridge Inventory (NBI) and the source of imagery used during processing.

- [Rail Junctions](#): This dataset supports the topological network that provides location and attributes information for use in network analysis applications, covering all 50 States plus the District of Columbia from the Federal Railroad Administration's (FRA) North American Rail Network (NARN) public rail junctions/nodes.
- [Railways](#): This dataset displays a rail or set of parallel rails on which a train or tram runs based on U.S. Army Corps of Engineers inland electronic navigational charts (IENCs).
- [Road and Railroad Tunnels](#): This dataset represents the locations of tunnels for roads within the continental United States, Alaska and Hawaii based on the U.S. Department of Transportation's National Bridge Inventory (NBI).
- [United States Department of Transportation – Bureau of Transportation Statistics \(BTS\)](#): This open data site allows users to browse geospatial data that is part of the BTS National Transportation Atlas Database (NTAD). NTAD is a set of geographic databases of public information for transportation facilities and networks. NTAD data is available for download for visualization and analysis purposes.

WATER

- [Wastewater Treatment Plants](#): This dataset combines facility data from US EPA's Facility Registry Service (FRS) and Integrated Compliance Information System (ICIS) for wastewater treatment plants.
- [U.S. Geological Survey \(USGS\) National Water Dashboard](#): This viewer shows provisional real-time water data collected at the USGS observation stations in context with weather-related data from other public sources.

OTHER

- [Dams Lines](#): This dataset displays dam lines based on U.S. Army Corps of Engineers inland electronic navigational charts (IENCs). A dam is a barrier to check or confine anything in motion; particularly one constructed to hold back water and raise its level to form a reservoir, or to prevent flooding.
- [EPA Emergency Response Toxic Release Inventory Facilities](#): This dataset represents integrated facility information from Facility Registry System (FRS), limited to the subset of facilities that link to the Toxic Release Inventory (TRI).
- [EPA Emergency Response Toxic Substance Control Act Facilities](#): This subset of data was identified as information that can be used in the Hazardous Materials Emergency Support Function. The purpose of this web feature service is to provide users with access to integrated facility information from Facility Registry System (FRS), limited to the subset of facilities that link to the Toxic Substances Control Act (TSCA).
- [EPA Waste Treatment Storage and Disposal Facilities](#): This dataset represents integrated facility information from Facility Registry System (FRS), limited to the subset of hazardous waste Treatment, Storage, and Disposal (TSD) facilities that link to the Resource Conservation and Recovery Act Information System (RCRAInfo).
- [Floodwalls](#): This dataset displays a natural or man-made barrier used as an enclosure or boundary or for protection based on U.S. Army Corps of Engineers inland electronic navigational charts (IENCs).

- [Hospitals](#): The dataset only includes hospital facilities based on data acquired from various state departments or federal sources. This feature class/shapefile contains locations of hospitals for 50 U.S. states, Washington D.C., U.S. territories of Puerto Rico, Guam, American Samoa, Northern Mariana Islands, Palau, and Virgin Islands.

HAZARDS

- [Historical Fire Perimeters](#): This data set is part of an ongoing project to consolidate interagency fire perimeter data recorded by the National Interagency Fire Center (NIFC). Currently only certified perimeters and perimeters captured in 2021 are included.
- [Hydrography](#): The National Hydrography Dataset (NHD) is a feature-based database that interconnects and uniquely identifies the stream segments or reaches that make up the nation's surface water drainage system. The NHD contains reach codes for networked features, flow direction, names, and centerline representations for areal water bodies.
- [Landslide Regions](#): This dataset represents a digital version of U.S. Geological Survey Professional Paper 1183, Landslide Overview Map of the Conterminous United States. The map and digital data delineate areas in the conterminous United States where large numbers of landslides have occurred and areas which are susceptible to landslides.
- [National Flood Hazard Layer](#): The National Flood Hazard Layer (NFHL) is a compilation of GIS data that comprises a nationwide digital Flood Insurance Rate Map. The GIS data and services are designed to provide the user with the ability to determine the flood zone, base flood elevation, and floodway status for a particular location.
- [National Oceanic and Atmospheric Administration \(NOAA\) Sea Level Rise Viewer](#): This tool, by the National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management, visualizes community-level impacts from coastal flooding or sea level rise and simulations of how flooding might impact local landmarks. It also provides data related to water depth, connectivity, flood frequency, socio-economic vulnerability, wetland loss and migration.
- [Seismic Hazard](#): Probabilistic seismic-hazard maps were prepared for the contiguous United States portraying peak horizontal acceleration and horizontal spectral response acceleration for 0.2- and 1.0-second periods with probabilities of exceedance of 10 percent in 50 years and 2 percent in 50 years. This particular data set, last updated in January of 2022, is for peak horizontal acceleration with a 10 percent probability of exceedance in 50 years. All of the maps were prepared by combining the hazard derived from spatially smoothed historic seismicity with the hazard from fault-specific sources by the US Geological Survey National Seismic Hazard Mapping Program.
- [Active Hurricanes, Cyclones and Typhoons](#): This data, provided by the National Oceanic and Atmospheric Administration (NOAA) National Hurricane Center, describes the observed path, forecast track, and intensity of tropical cyclone activity (hurricanes, typhoons, cyclones) from the National Hurricane Center (NHC) and Joint Typhoon Warning Center (JTWC).
- [Weather Radar Imagery](#): This service provides maps of National Oceanic and Atmospheric Administration (NOAA) National Weather Service assortments of base reflectivity images across the Continental United States. The colors on the map represent the strength of the energy reflected back toward the radar.
- [Federal Emergency Management Agency \(FEMA\) Geospatial Resource Center](#): FEMA geographic information system (GIS) supports the emergency management community with geospatial information, services, and technologies to prepare for, protect against, respond to,

recover from and mitigate against all hazards. Data catalogs are available divided into hazard specific categories.

- [Climate Mapping for Resilience and Adaptation \(CRMA\)](#): CMRA integrates information from across the federal government to help people consider their local exposure to climate-related hazards. This site displays real-time statistics and maps documenting where people, property, and infrastructure may be exposed to hazards.