

NATIONAL HIGHWAY FREIGHT NETWORK (NHFN) TOOL

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U.S. Department of Transportation

Federal Highway Administration

PURPOSE



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- This application was created to help public and private users understand, access, explore and analyze the NHFN in a user friendly geospatial application.
- This application allows users to find comprehensive NHFN data in a one stop shop.

National Highway Freight Network

The NHFN includes the following subsystems of roadways:

- **Primary Highway Freight System (PHFS):** This is a network of highways identified as the most critical highway portions of the U.S. freight transportation system determined by measurable and objective national data. The network consists of 41,519 centerline miles, including 37,436 centerline miles of Interstate and 4,083 centerline miles of non-Interstate roads.
- **Other Interstate Portions not on the PHFS:** These highways consist of the remaining portion of Interstate roads not included in the PHFS. These routes provide important continuity and access to freight transportation facilities. These portions amount to an estimated 9,843 centerline miles of Interstate, nationwide, and will fluctuate with additions and deletions to the Interstate Highway System.
- **Critical Rural Freight Corridors (CRFC):** These are public roads not in an urbanized area which provide access and connection to the PHFS and the Interstate with other important ports, public transportation facilities, or other intermodal freight facilities. Nationwide, there are 4,112 centerline miles designated as CRFCs.
- **Critical Urban Freight Corridors (CUFC):** These are public roads in urbanized areas which provide access and connection to the PHFS and the Interstate with other ports, public transportation facilities, or other intermodal transportation facilities. Nationwide, there are 2,213 centerline miles designated as CUFCs.

NHFN Data Sources:

NHFN Component	Data Source
Primary Highway Freight System (PHFS)	Designated PHFS, shapefile from FHWA and facilities developed from the 2012 FHMS data
Other Interstate portions	All Interstates that are not designated as PHFS, shapefile

NHFN	State Name	State Number	Functional Classification	Facility Type	National Highway System (NHS)	Strategic Highway Network (STRANHNET)	Facility ID	Connector Description	Route Name	Route ID	Route Number	International Roadways Index
PHFS	Colorado	8	1	2	1	6				G25A	0	0
PHFS	Colorado	8	1	2	1	4				G25A	0	0
PHFS	Colorado	8	1	2	1	4				G25A	0	0
PHFS	California	8	1	2	1	4				G25A	0	0
PHFS	California	8	1	2	1	4				G25A	0	0

30294 features 0 selected

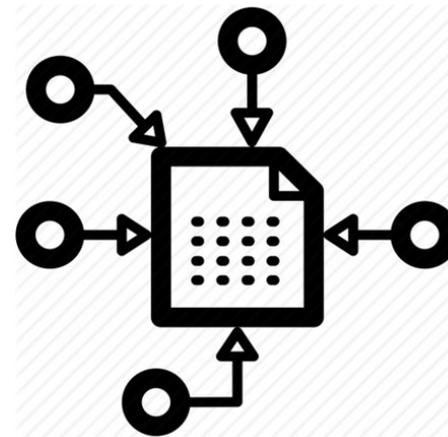
Source: NHFN

BACKGROUND



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This application was created to allow users to visualize the NHFN network and associated data. Prior to 2015, users had no access to a visualization tool for the NHFN. The tool includes the Primary Highway Freight System (PHFS), non-PHFS Interstates, and Critical Urban and Critical Rural Freight corridors (from State DOTs).



BACKGROUND (CONTINUED)



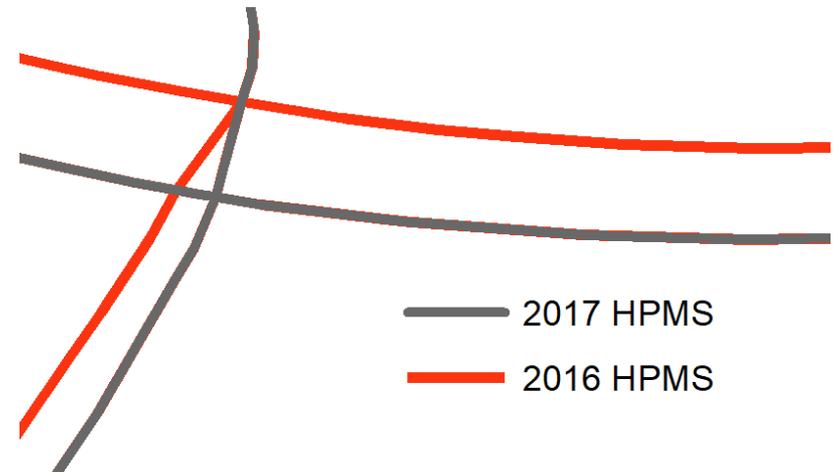
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Data Conflation Challenges

- PHFS data based on 2012 data
- Non-PHFS Interstate needed to be updated from 2016 HPMS to 2017
- CUFC and CRFC provided by States came in various formats
- Data pieced together State by State



Source: FHWA



Source: FHWA

BACKGROUND (CONTINUED)



Incorporating IRI data

- International Roughness Index (IRI) is a metric we wanted to have associated with the NHFN – the IRI comes from Highway Performance Monitoring System (HPMS).
- Challenge updating to latest HPMS data (2017) benefit/cost segmentation of roads changes from each year.

1 segment in 2016 (IRI 105)
split into 2 segments
in 2017 (IRI of 149 & 91)



KEY FEATURES



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- Data is updated yearly
- IRI and mileage included
- Condition and freight data allows users to download one dataset instead of conflating data from 50 States
- Allows a user to drill down into hundredths of a mile road segments
- Provides the data that can tell the “freight story” in the United States



Source: FHWA

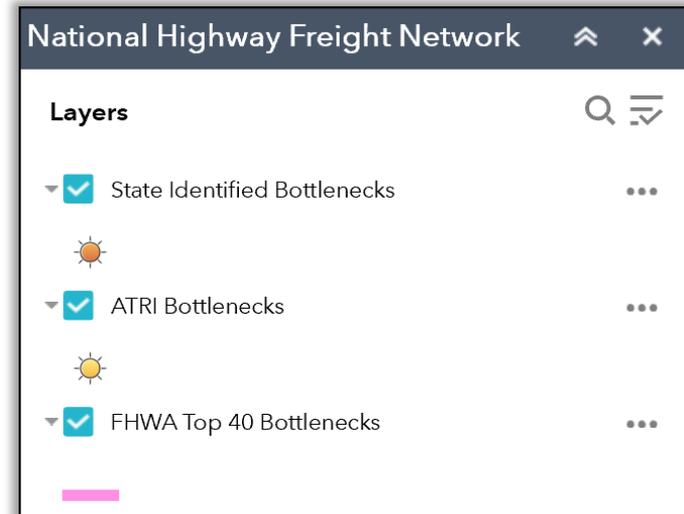
APPLICATION



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This tool can help federal policymakers, State DOTs, private industry, metropolitan planning organizations (MPOs), research organizations by providing accurate, comprehensive data and visualization of that data to help improve freight policy and decisions.

- **Public Application:** PHFS layer, Non-PHFS layer, Critical Rural and Critical Urban Freight Corridor Layers.
- **Private Application:** Includes public data layers.



Source: NHFN

EXAMPLE



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- Application is built using the ArcGIS Online Suite
- Data Processing is done in ArcMap and ArcGIS Pro
- Complete geographic information system (GIS) visualization application

UPCOMING ACTIVITIES



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- Accuracy Assessment:
 - How to get data to be 100% accurate instead of just 99%?
- Application Enhancements:
 - Analytics and More Data
- Example “More Data”:
 - Intermodal Connectors
- Accessing how to conflate new datasets for usage in the tool that could provide useful information such as the National Performance Management Research Data Set (NPMRDS) (this would not only help the application but all of DOT in terms of its data quality and usability)

UPCOMING ACTIVITIES (CONTINUED)



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Moving Forward – Data Maintenance

- Each year the freight network will change
 - New roads built, changes to existing roads
 - Road condition improvements / degradation
 - New input from States on CUFCs and CRFCs
 - Updated HPMS data
 - Re-designation of the PHFS every 5 years



Source: FHWA

MORE INFORMATION



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<https://usdot.maps.arcgis.com/apps/webappviewer/index.html?id=c4c0fdef029a4093b169e493e1883988>