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Transportation Analysis Routing  
Geographic Information System  
(TRAGIS)

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What is TRAGIS?

- The Transportation Routing Analysis Geographic Information System (TRAGIS) model is a powerful routing and GIS analysis tool developed for DOE
- Two user interfaces of the model
  - WebTRAGIS – for interactive runs of individual routes
  - BatchTRAGIS – for batch runs of multiple routes (needs further development)
- Replaces the legacy HIGHWAY and INTERLINE models

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TRAGIS Model

- Includes routings networks for
  - Rail
  - Truck
  - Barge
- Model provides population information for risk assessment
- Used to identify legally compliant routes



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How does TRAGIS work?

- WebTRAGIS software on user's PC is used to select routing parameters
- Information is sent over the Internet to the TRAGIS routing engine on central server
- Results are quickly returned to user's PC for display
- Routing networks on central server minimizes updates and ensures that all users access the most recent database

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TRAGIS web site

- TRAGIS home page has links for:
  - User registration
  - User login to download software
  - Installation instructions
  - User's manual
- Home page address is: [apps.ntp.doe.gov/tragis/tragis.htm](http://apps.ntp.doe.gov/tragis/tragis.htm)
- Easiest way to find it is to do a search on Google™ for "TRAGIS"



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TRAGIS Access

- New users need to register
- Requests are approved or rejected
  - No commercial users
  - No foreign users
- Access controlled through:
  - Username
  - Password
- After approval, login to download software



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TRAGIS Highway Routing

- Many commercial software packages and web applications are useful for planning trips
- Such routing tools are not suitable for planning HRCQ shipments because of the need to meet USDOT routing regulations
- Trucking firms may not select routes compliant with USDOT regulations for radioactive materials

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Why Use TRAGIS for Truck Routes?

- TRAGIS calculates truck route to comply with USDOT HRCQ regulations (49 CFR 397.101)
- TRAGIS highway network is frequently revised to maintain up-to-date information
- Network includes all nuclear sites (commercial reactors, research reactors, DOE sites)

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Rail Routing is Different than Truck

- No single railroad provides service across the U.S. – many trucking companies serve the entire country
- Railroad corporations own their right-of-way – trucks operate over public highways
- Four major U.S. and two Canadian railroads in the country
  - In the east: CSXT & NS
  - In the west: BNSF & UP
  - In central US: CN & CP

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### TRAGIS Rail Routing

- **TRAGIS calculates routes that reflect current rail shipping patterns**
  - Based on traffic density
  - Includes consideration of interchange locations between rail companies
- **Network includes rail lines to nuclear sites with rail access**
  - Rail corridors to Yucca Mountain included
- **TRAGIS rail network is frequently updated to reflect current ownership and attribute information**

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### Common Question about Rail Routing

- **Do you have track class in the network?**
- **Answer is No for the following reasons**
  - Track class can be dynamic
  - A line may have several sections of different track classes due to grade, curvature, bridges, etc. This complicates the use of track class as a routing criteria
  - High volume rail lines have the better track (higher track class) and TRAGIS maximizes the use of such lines

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### TRAGIS Barge Routing

- **Waterway network includes inland, coastal, and deep water channels**
- **Nuclear sites with possible barge facilities are included in the network**
- **Port facilities are in the network**

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### TRAGIS Routing Features

- **Model provides ability to temporarily modify the routing network by blocking**
  - Nodes
  - Links
  - States
  - Railroad companies
- **This feature is useful for analysis of**
  - Infrastructure damage or repair
  - Temporary traffic delays
  - User determined alternative routing

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### TRAGIS Route Listing Features

- **Model generates a listing that provides a description of the route and summary information**
- **Population information provided as:**
  - Table of population density by state
  - Summary information for input to RADTRAN model
  - Population count for buffer area for entire route and by state

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### TRAGIS Mapping Features

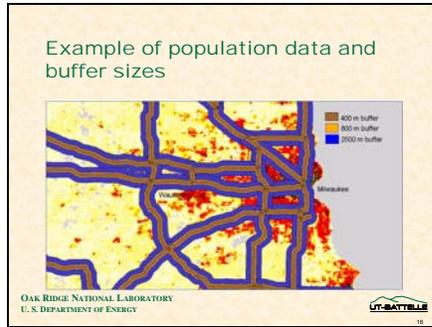
- **Map of route can be displayed by two methods**
  - Quickest is straight line segments
  - Actual shape file of route takes a minute to process
- **Transportation network can be added as background**
- **Native American tribal lands shown**
- **User files can be added to map**
- **Maps can be**
  - Saved as ESRI shape files or as bitmap files
  - Included in reports as color graphic images
  - Printed

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TRAGIS Demonstration

- Ask for what you would like to see

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UT-BATTILLE

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