

Status of US Spent Nuclear Fuel Transportation Planning

**A Presentation for the
Vermont Nuclear Decommissioning Citizens Advisory Panel
November 16, 2017**

Tony Leshinskie, VT State Nuclear Engineer
Anthony.Leshinskie@vermont.gov

PLEASE NOTE

This presentation highlights recent spent fuel storage transportation planning efforts.

It does not reflect the official Spent Nuclear Fuel transportation policy or position of any federal or state agency.

Nuclear Waste Policy Act of 1982 (NWPA)

- ▶ The NWPA (as passed in 1982 and subsequently amended in the late 1980s) governs virtually all national efforts regarding Spent Nuclear Fuel Management, including Spent Nuclear Fuel Transportation
- ▶ For Spent Nuclear Fuel Transportation, the NWPA as Amended identifies the US Department of Energy (DOE) as:
 - Responsible for shipping spent fuel to a designated national spent nuclear fuel storage facility
 - The owner of commercial spent fuel once it leaves an active or permanently shutdown nuclear power plant site
 - Requiring consultation with State and Tribal Governments for planning Spent Nuclear Fuel Transportation

Nuclear Waste Policy Act of 1982 (NWPA)

Although there is currently no national spent nuclear fuel storage facility available, most nuclear waste policy stakeholders agree that Spent Nuclear Fuel Transportation planning efforts need to continue.

- DOE's Office of Nuclear Energy leads planning efforts
- US Department of Transportation participates through agencies such as:
 - Federal Railroad Administration
 - Pipeline Hazardous Materials Safety Administration (guidelines address all hazmat shipments made via rail)
- Nuclear Regulatory Commission serves as regulator for commercial Spent Nuclear Fuel shipments
- DOE consults with State and Tribal Governments via the National Transportation Stakeholders Forum (NTSF)

National Transportation Stakeholders Forum

Brings together DOE, USDOT, NRC, other relevant Federal Agencies, and State and Tribal Government officials to plan future commercial Spent Nuclear Fuel shipments

- Planning focuses on moving spent fuel from power plant sites to “neutral” transportation centers in the central US (e.g. St. Louis or Kansas City for rail transportation)
- Potential shipping methods discussed:
 - Railroads (likely the primary shipment method)
 - Highways
 - Barge (available only for reactors adjacent to navigable waterways)
 - Combinations of the options considered too
- The State Nuclear Engineer represents Vermont at the NTSF

National Transportation Stakeholders Forum

DOE / NTSF Planning Efforts focus on:

- ▶ Applying experience from ongoing radioactive materials and hazmat shipments to commercial spent fuel shipments
- ▶ Developing / Updating safety inspection requirements for shipping equipment and transportation containers
- ▶ Develop a planning tool that a wide variety of Federal, State and Tribal Government can use to evaluate potential transportation routes
 - Many recent developments in creating planning tool
 - The State Nuclear Engineer has worked on planning tool

START 3.0



Stakeholder Tool for Assessing Radioactive Transportation, 3.0

START - For Official Use Only

Username (Your Email Address)

Password

Log in

OFFICIAL USE ONLY

May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552), exemption number and category: 7, Law Enforcement Information.

Department of Energy review required before public release

Name/Org: Jeff Garner/M-310 Date: 08/14/2014
Guidance (if applicable) CG-SS-4

[Register](#) if you don't have an account.

[Forgot your password?](#)

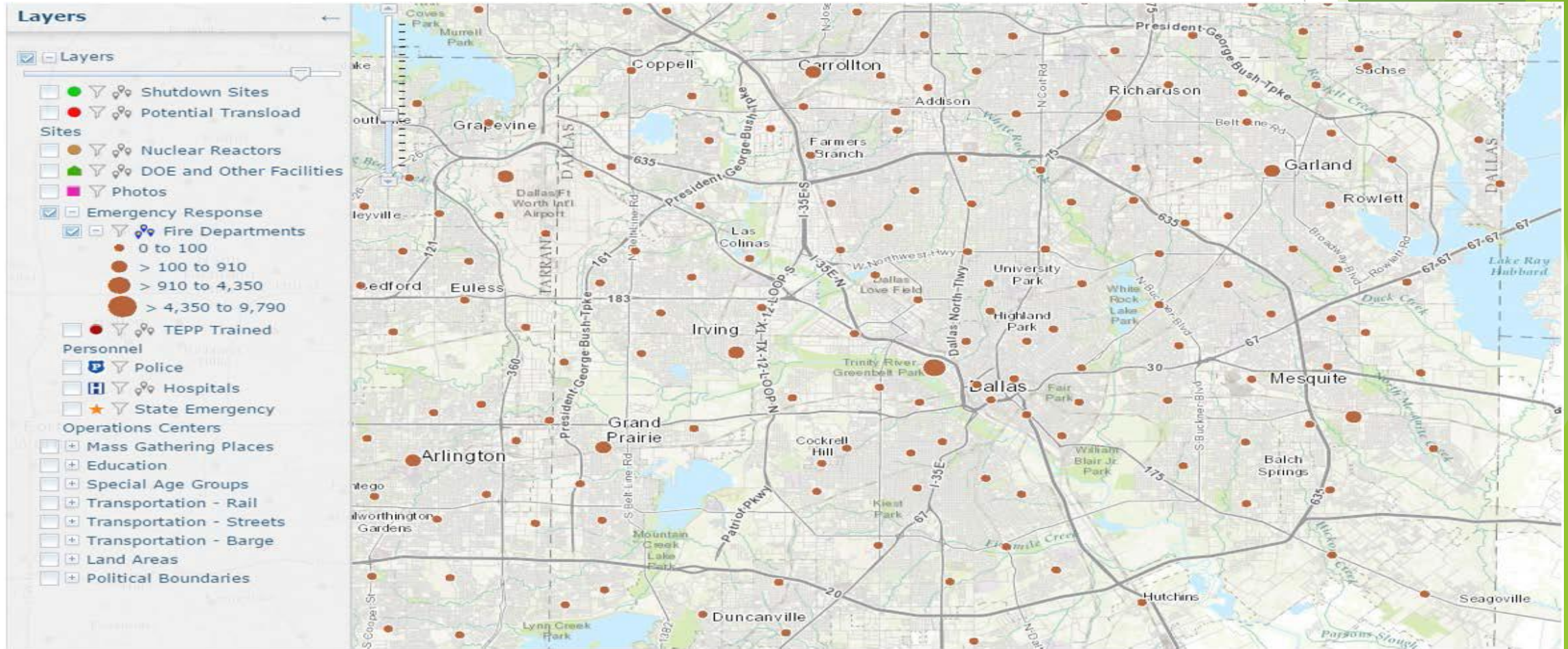


The Need for START

- ▶ Transportation companies (particularly railroads) have their own proprietary planning tools for selecting transportation routes
- ▶ Besides being proprietary, some aspects of these planning tools use National Security Sensitive information
- ▶ A tool relying on publicly available information allows state / local / tribal government officials opportunity to assess prospective routes without security clearances:
 - Identify impacted populations (general public & special needs)
 - Assess emergency response capabilities (e.g. where are first responders & hospitals)
 - Identify alternatives in response to weather conditions & real life events

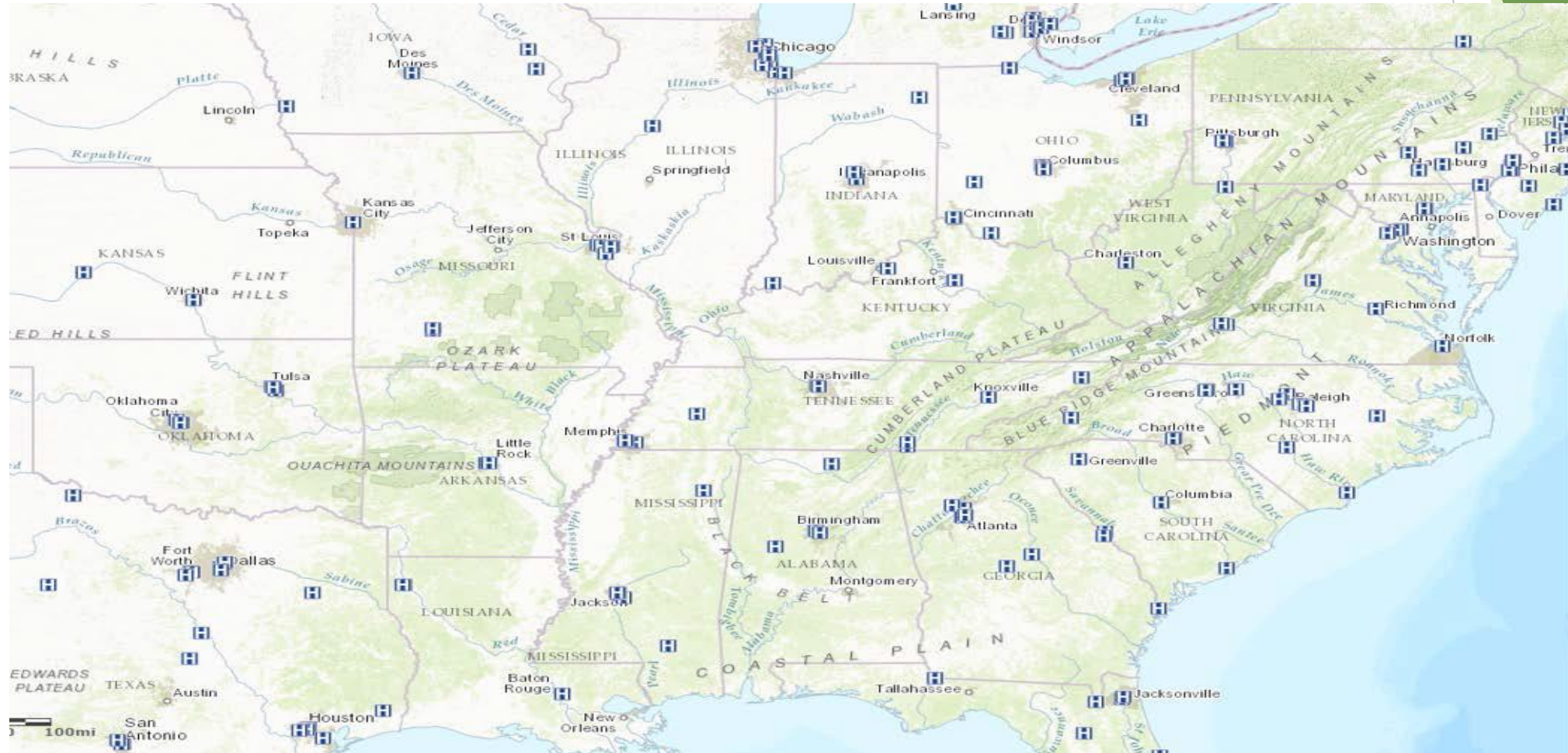
A Sample of START Capabilities

- Identify Number of Fire Department Personnel in a Region:



A Sample of START Capabilities

- Identify 500+ Bed Hospitals in a Region:



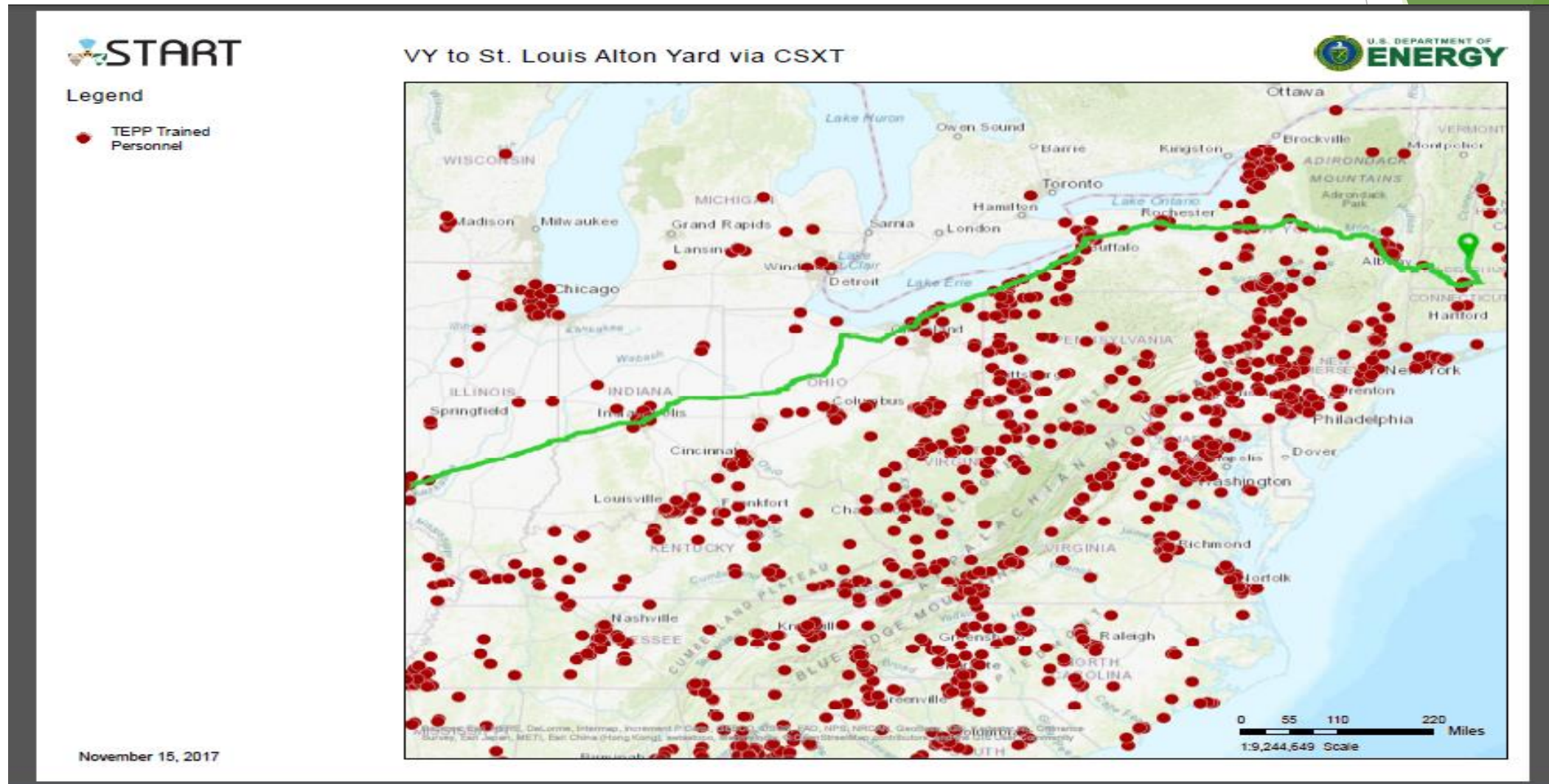
Assessment of START Capabilities

NTSF's Rail/Routing Working Group held a Routing Workshop in which eight members of the working group used START to evaluate hypothetical spent fuel transportation routes from one or more nuclear power plants in their region. Findings were presented at the workshop.

- ▶ Representatives from BNSF Railways, Union Pacific Railroad, CSX Transportation, Kansas City Southern Railway, and the Association of American Railroads provided feedback on the hypothetical routes (based on separate assessments using their own route selection tools)
- ▶ In general, routes identified by the Working Group volunteers were very similar to routes identified by the rail carriers. Exceptions were due to operational reasons:
 - One segment of track is currently used only for southbound traffic, with a *different* segment 50 miles west used for northbound traffic
 - Mountainous Appalachian terrain would be avoided due to steep grades.
- ▶ DOE is currently working on a publicly available version of START

START Rail Route Example

- ▶ VT Yankee to St. Louis Alton Yard via NECR & CSXT



START Rail Route Example

- ▶ VT Yankee to St. Louis via NECR & CSXT



VY to STL Detail VT & MA



Legend

- TEPP Trained Personnel
- 🏥 Hospitals

