



Association of State Rail Safety Managers

2010 Annual Meeting

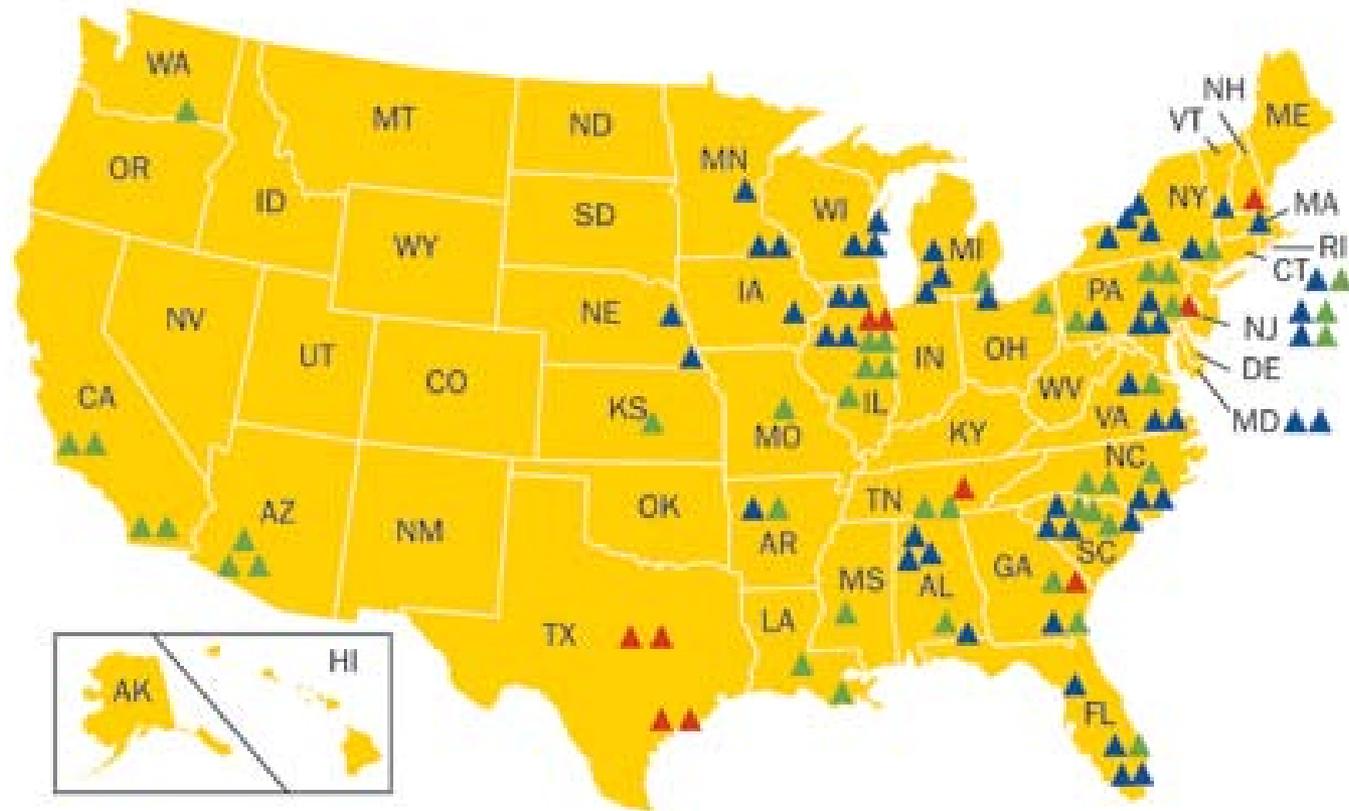
August 24, 2010

Update Managers

Evaluation of Shortline Railroads

Tasked for the Transportation of Spent Nuclear Fuel

U.S. Commercial Nuclear Power Reactors—Years of Operation



Years of Commercial Operation

- △ 0-9
- ▲ 10-19
- ▲ 20-29
- ▲ 30-39

Number of Reactors

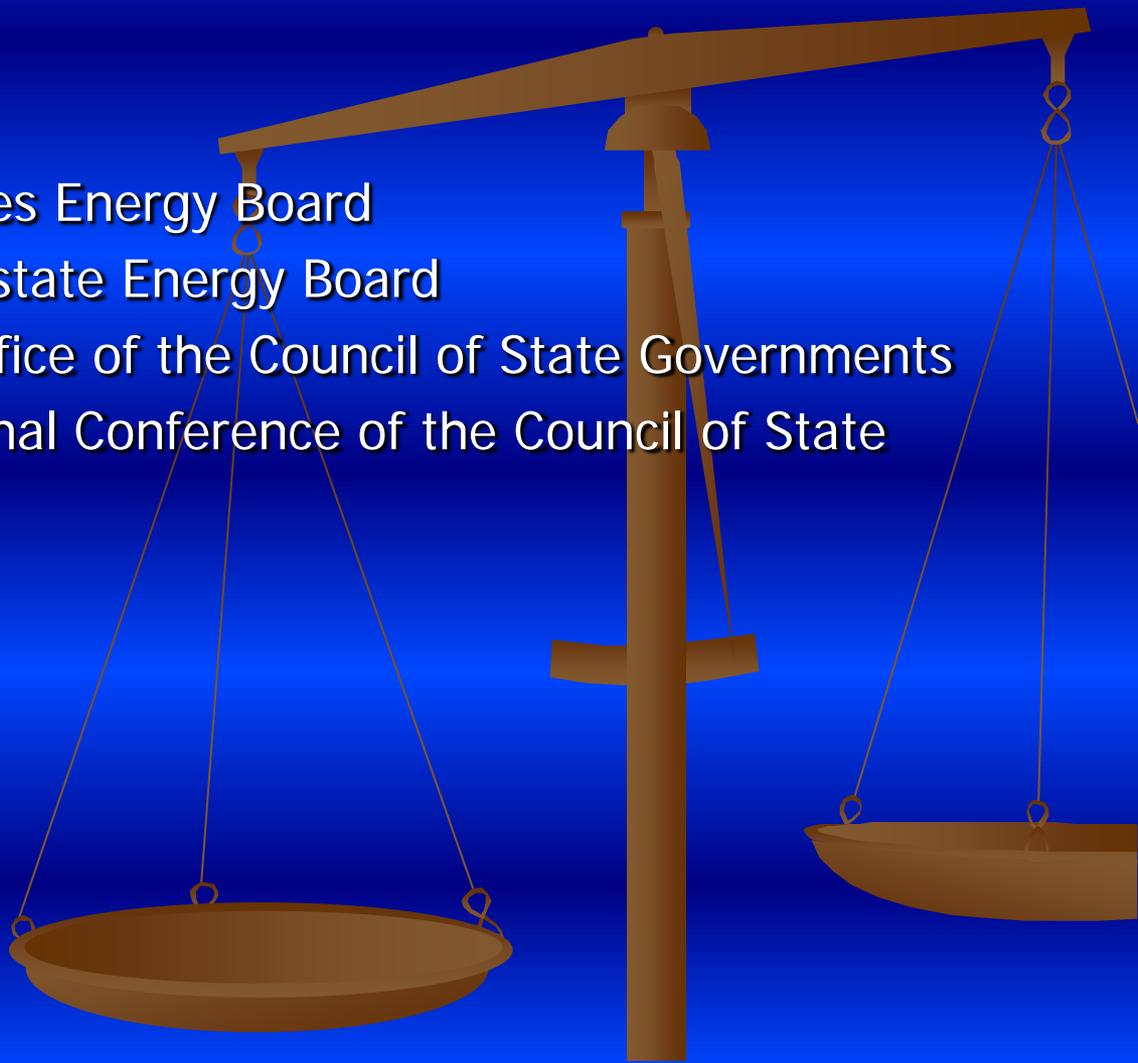
- 0
- 10
- 42
- 52

Source: U.S. Nuclear Regulatory Commission



Four State Regional Groups Anchor the Collaborative Process:

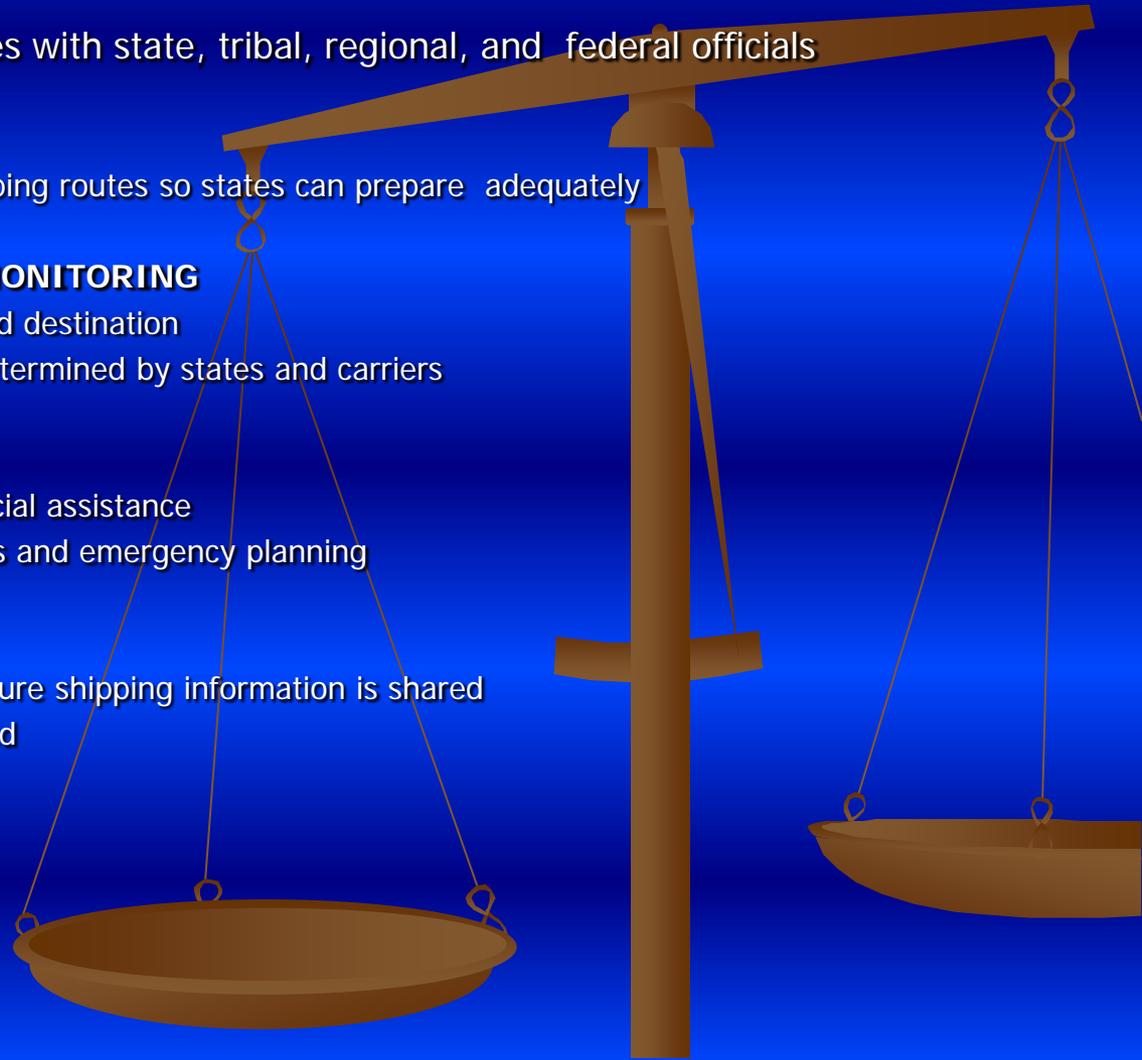
- Southern States Energy Board
- Western Interstate Energy Board
- Midwestern office of the Council of State Governments
- Eastern Regional Conference of the Council of State Governments.



Regional Group Task Force

The Task Force (TF) engages with state, tribal, regional, and federal officials

1. **ROUTING**
TF works with DOE to select shipping routes so states can prepare adequately
2. **INSPECTION & RADIATION MONITORING**
Inspection conducted at origin and destination
Enroute inspections conducted determined by states and carriers
3. **FEDERAL ASSISTANCE**
DOE provides technical and financial assistance
Funds used to train safety officials and emergency planning
4. **SHIPMENT PLANNING**
TF and DOE work together to ensure shipping information is shared
Needs and concerns are addressed



CURRENT TRANSPORTATION ISSUES

September 24, 2008

Hearing on the safety and security of SNF

House Committee on Commerce, Science & Technology

1. Safety record: 1500 shipments of Commercial SNF-no releases

2. Regulatory Rules

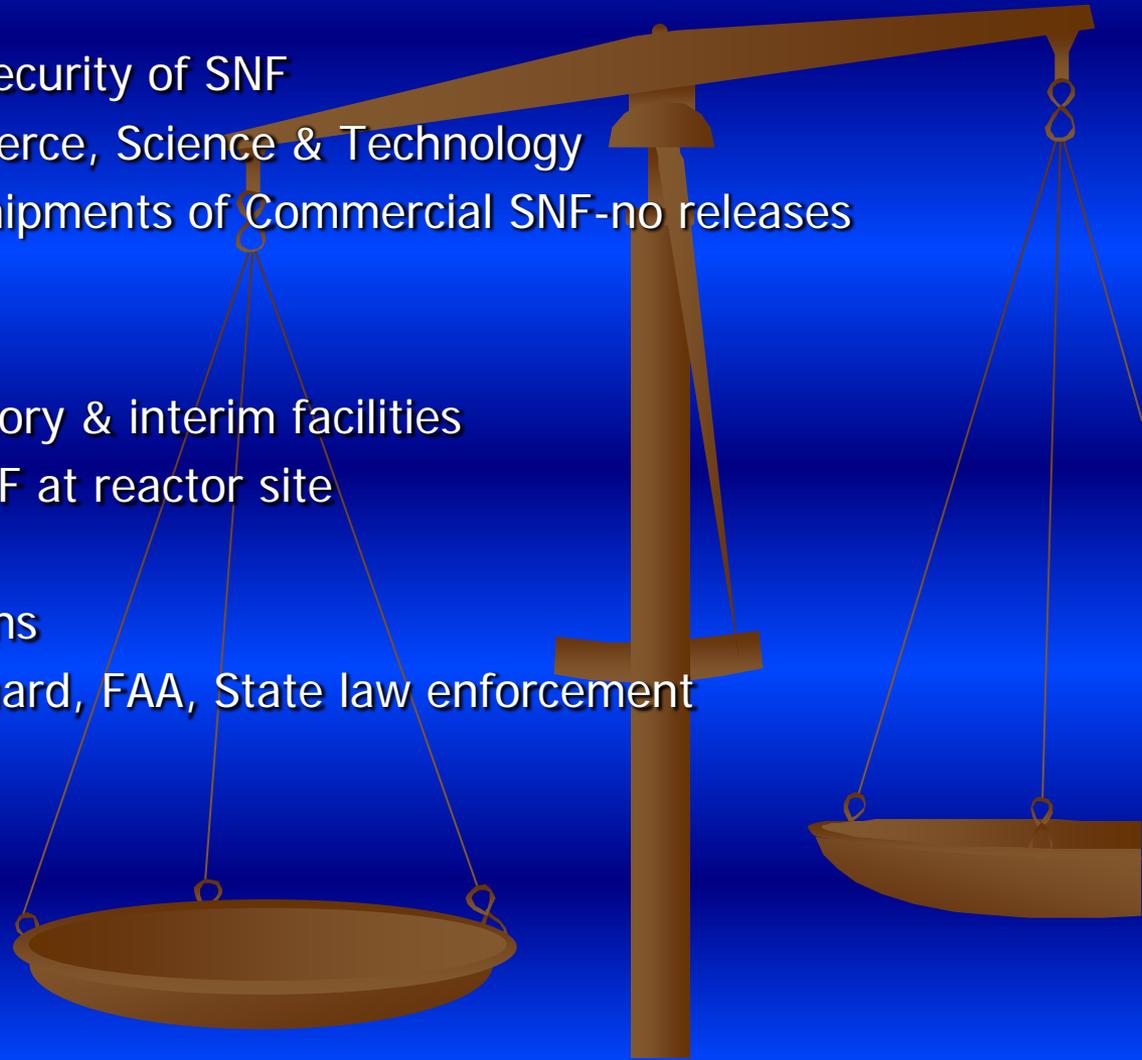
NRC- Licensing repository & interim facilities

DOE- Takes title to SNF at reactor site

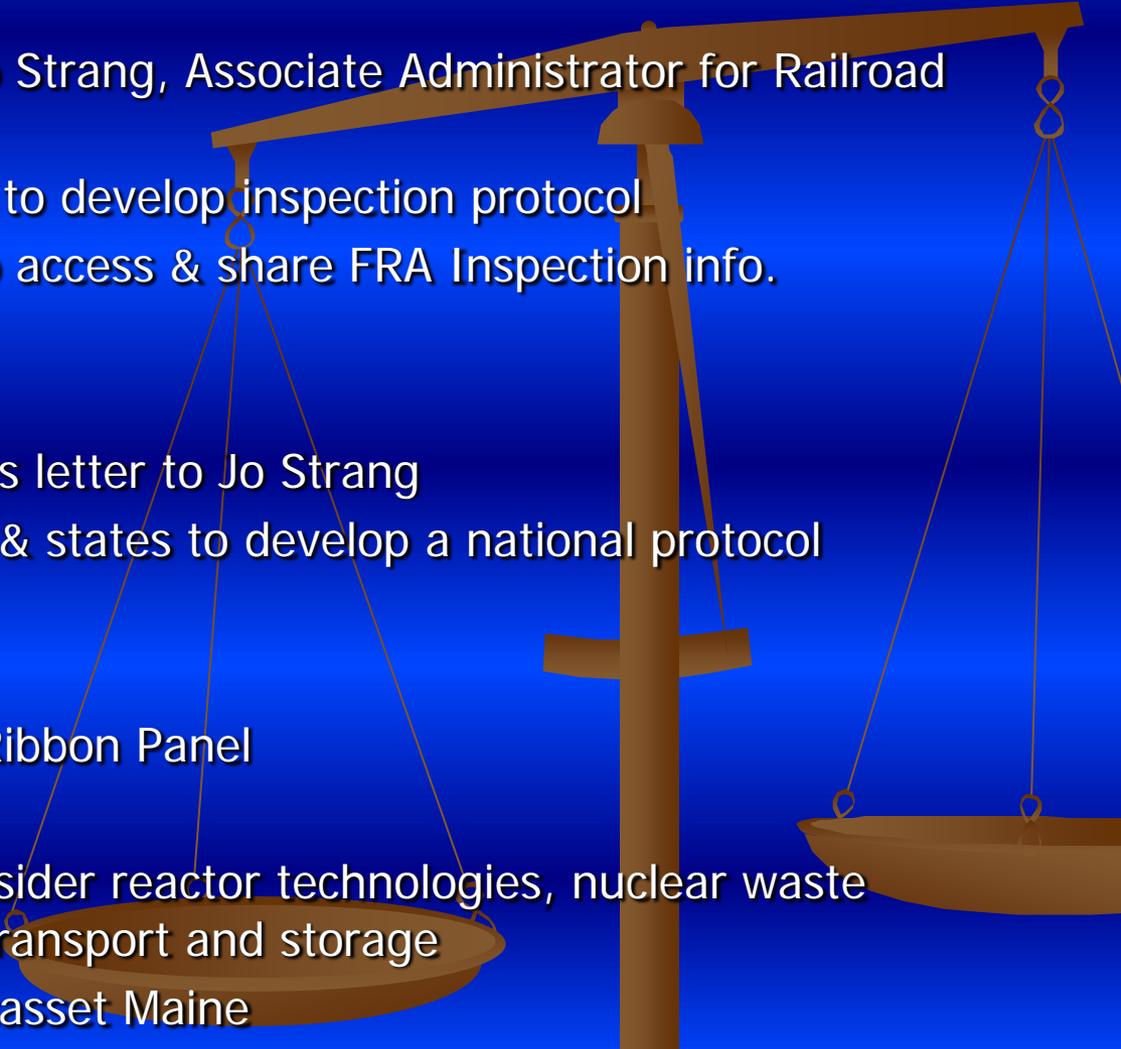
DOT-

PHMSA - HM regulations

FRA, FMCSA, Coast Guard, FAA, State law enforcement



CURRENT TRANSPORTATION ISSUES



December 2, 2009

Letter from Rob Marvin to Jo Strang, Associate Administrator for Railroad Safety/Chief Safety Officer

Encouraging communication to develop inspection protocol

Expressed need for States to access & share FRA Inspection info.

January 19, 2010

Council of State Governments letter to Jo Strang

Encouraging support of FRA & states to develop a national protocol

March 2010

President appointed a Blue Ribbon Panel

Establish SNF policy

Three subcommittees to consider reactor technologies, nuclear waste disposal and nuclear waste transport and storage

Met August 10, 2010 in Wiscasset Maine

CURRENT TRANSPORTATION ISSUES

2010

NRC developed new Integrated Spent Fuel Management Program
Long term storage at the power plant sites up to 120 years
Interim storage facility
Potential reprocessing
Eventual permanent repository

June 29, 2010

Judicial panel of Administration Law Judges ruled that the current Administration has no legal authority to withdraw construction application for Yucca Mountain

July 16, 2010

Response to Rob's letter.
FRA working on allowing State Inspectors/Managers access to FRA reports



CURRENT TRANSPORTATION ISSUES

June 30, 2010

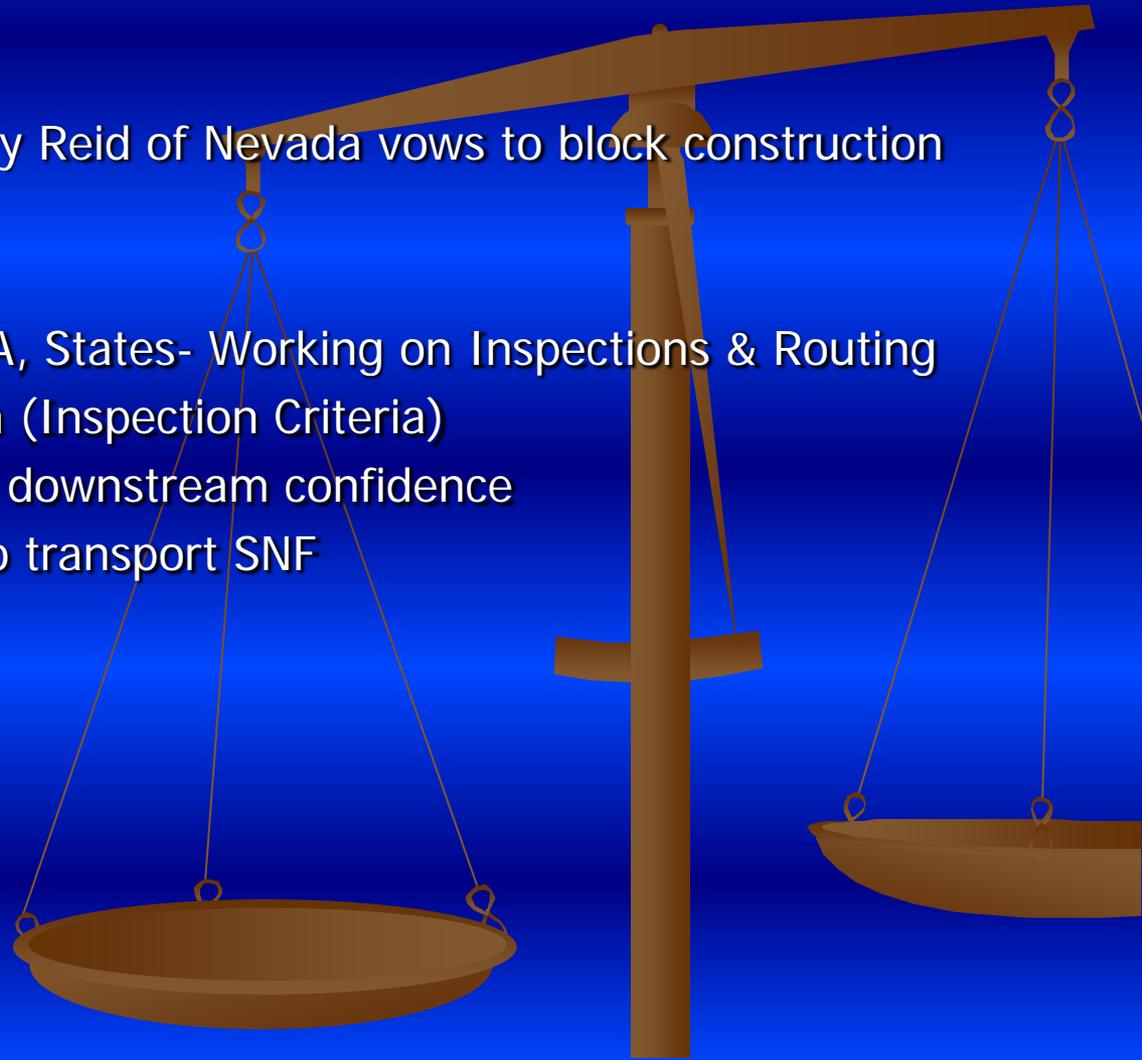
Senate Majority Leader Harry Reid of Nevada vows to block construction

2010

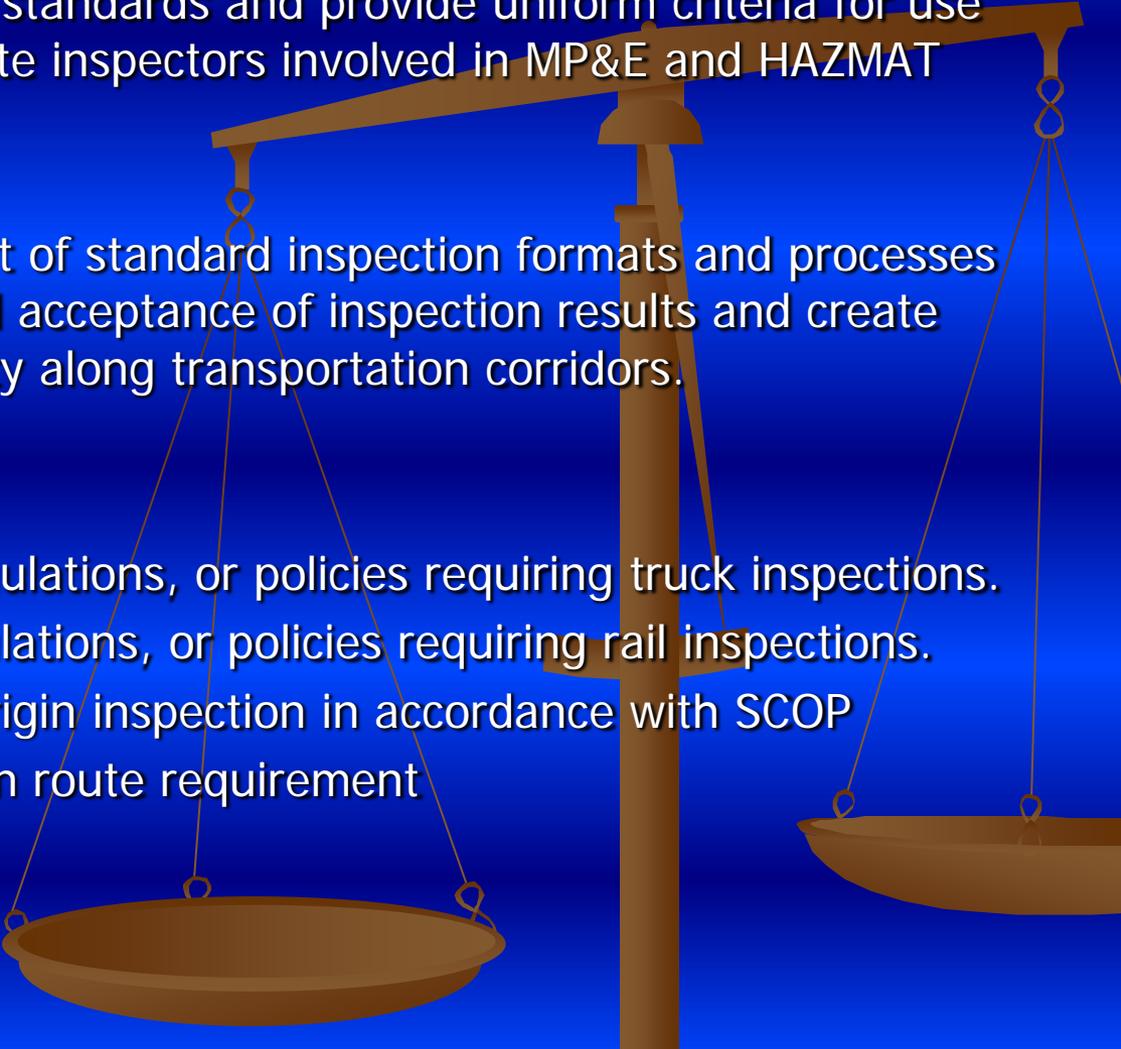
Northeast/Midwest CSG, FRA, States- Working on Inspections & Routing
National Inspection Program (Inspection Criteria)

Inspection Report to ensure downstream confidence

Short line Railroads ability to transport SNF



Safety Inspections



Purpose: to identify inspection standards and provide uniform criteria for use by FRA and FRA certified state inspectors involved in MP&E and HAZMAT inspections.

Intended Result: development of standard inspection formats and processes that allow for availability and acceptance of inspection results and create the opportunity for reciprocity along transportation corridors.

Current procedures:

- 15 states have rules, regulations, or policies requiring truck inspections.
- 6 states have rules, regulations, or policies requiring rail inspections.
- FRA conducts point-of-origin inspection in accordance with SCOP
1,000 mile air brake test – en route requirement

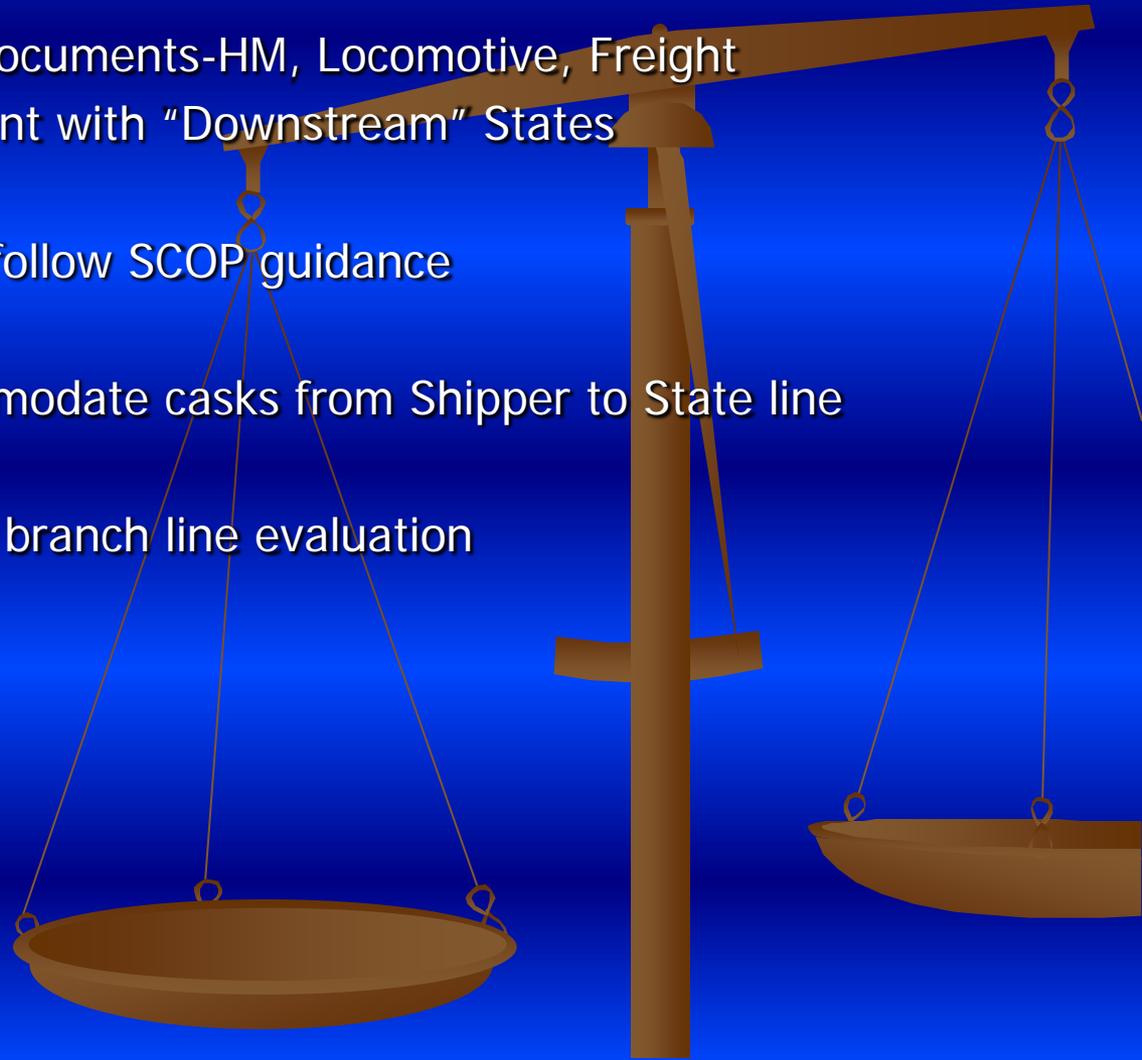
Safety Inspections

Origin/Enroute Inspection Documents-HM, Locomotive, Freight
Communicate Document with "Downstream" States

Other Safety Inspections - follow SCOP guidance

Ensure all tracks can accommodate casks from Shipper to State line

Need for Short line study or branch line evaluation



Evaluation of Shortline Railroads

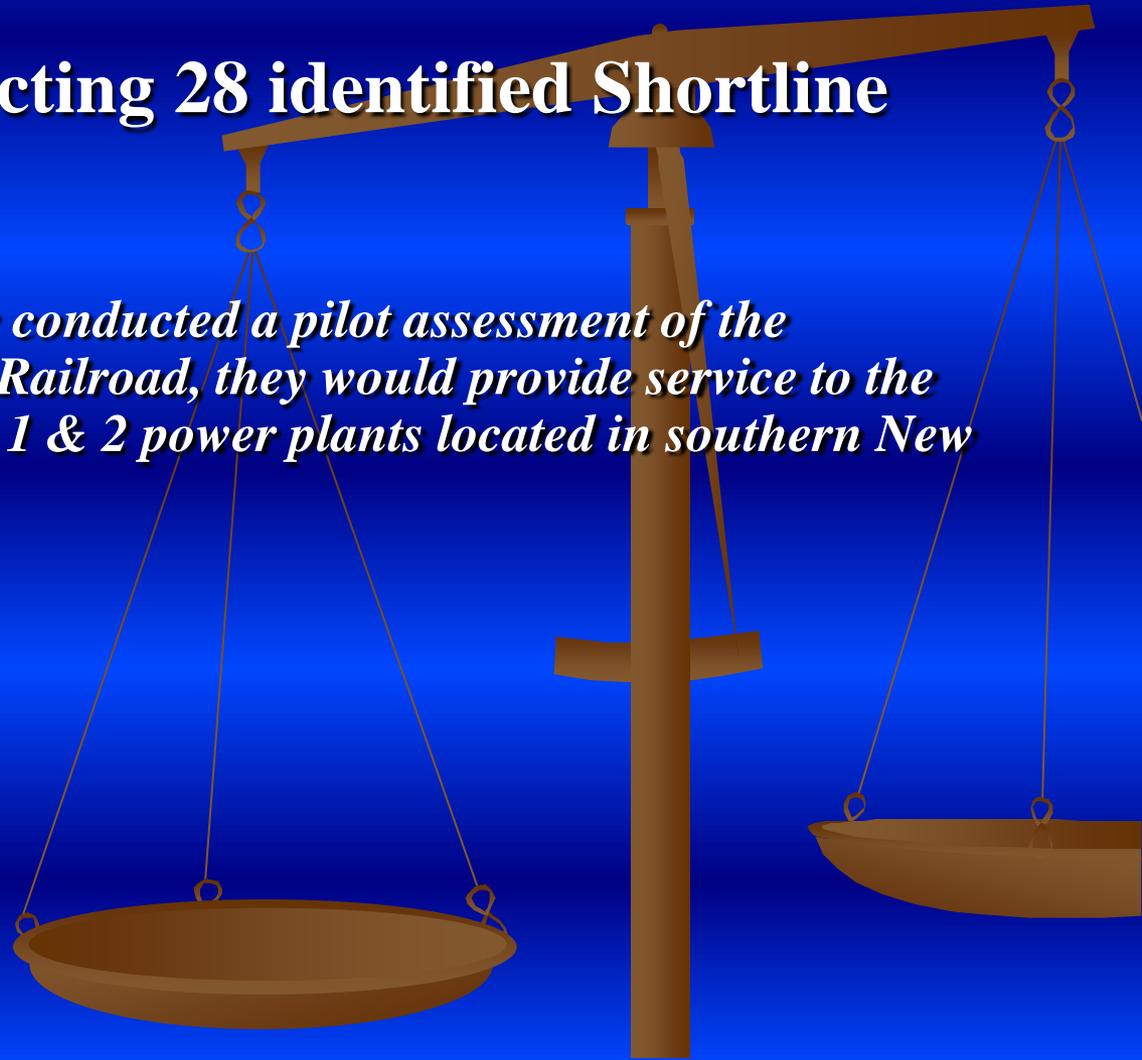
■ **Task:**

- **Identify Shortline Railroads Serving Nuclear Power Plants**
- **Establish Contact Information with Railroads Officials**
- **Field Review of each Railroad's Physical and Operational Infrastructure**
- **Facilitate Upgrades to Meet Safe Acceptable Standards**



Evaluation of Shortline Railroads

- **Began by Contacting 28 identified Shortline Railroads**
- *In September, 2007, we conducted a pilot assessment of the Winchester & Western Railroad, they would provide service to the Hope Creek and Salem 1 & 2 power plants located in southern New Jersey*



Evaluation of Shortline Railroads

- Physical and Operational Infrastructure Survey Information

TRACK INFORMATION

CLASS ONE RAILROAD CONNECTION -

CLASS of TRACK -

RAIL WEIGHT

≥100 LBS -

<100 LBS -

TRACK OWNERSHIP -

TRACK RESTRICTIONS -



Evaluation of Shortline Railroads

- Physical and Operational Infrastructure Survey Information

O P INFORMATION

METHOD of OPERATION –

Signaled Territory -

Dispatched -

Joint Operations -

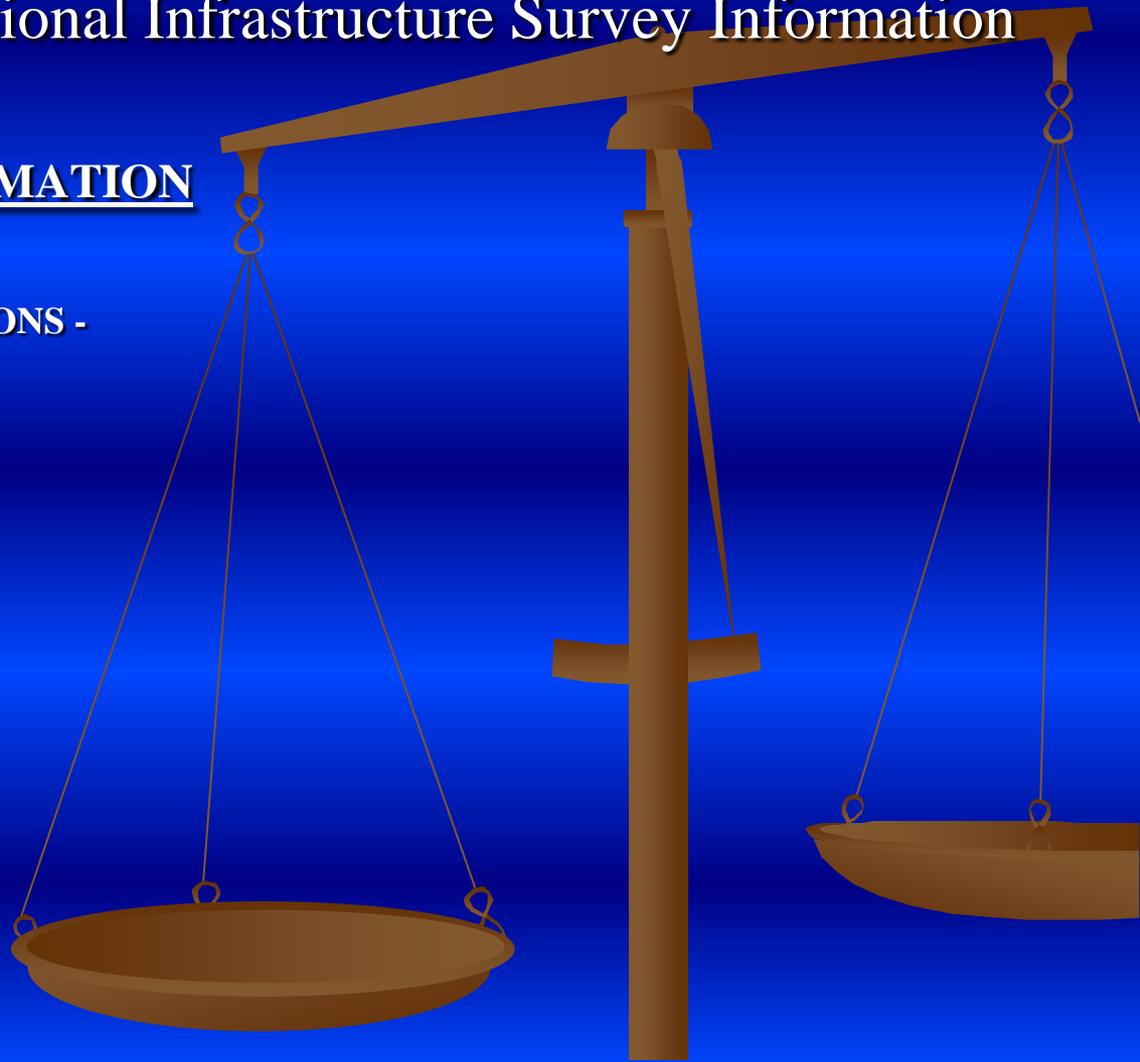


Evaluation of Shortline Railroads

- Physical and Operational Infrastructure Survey Information

MECHANICAL INFORMATION

EQUIPMENT RESTRICTIONS -



Evaluation of Shortline Railroads

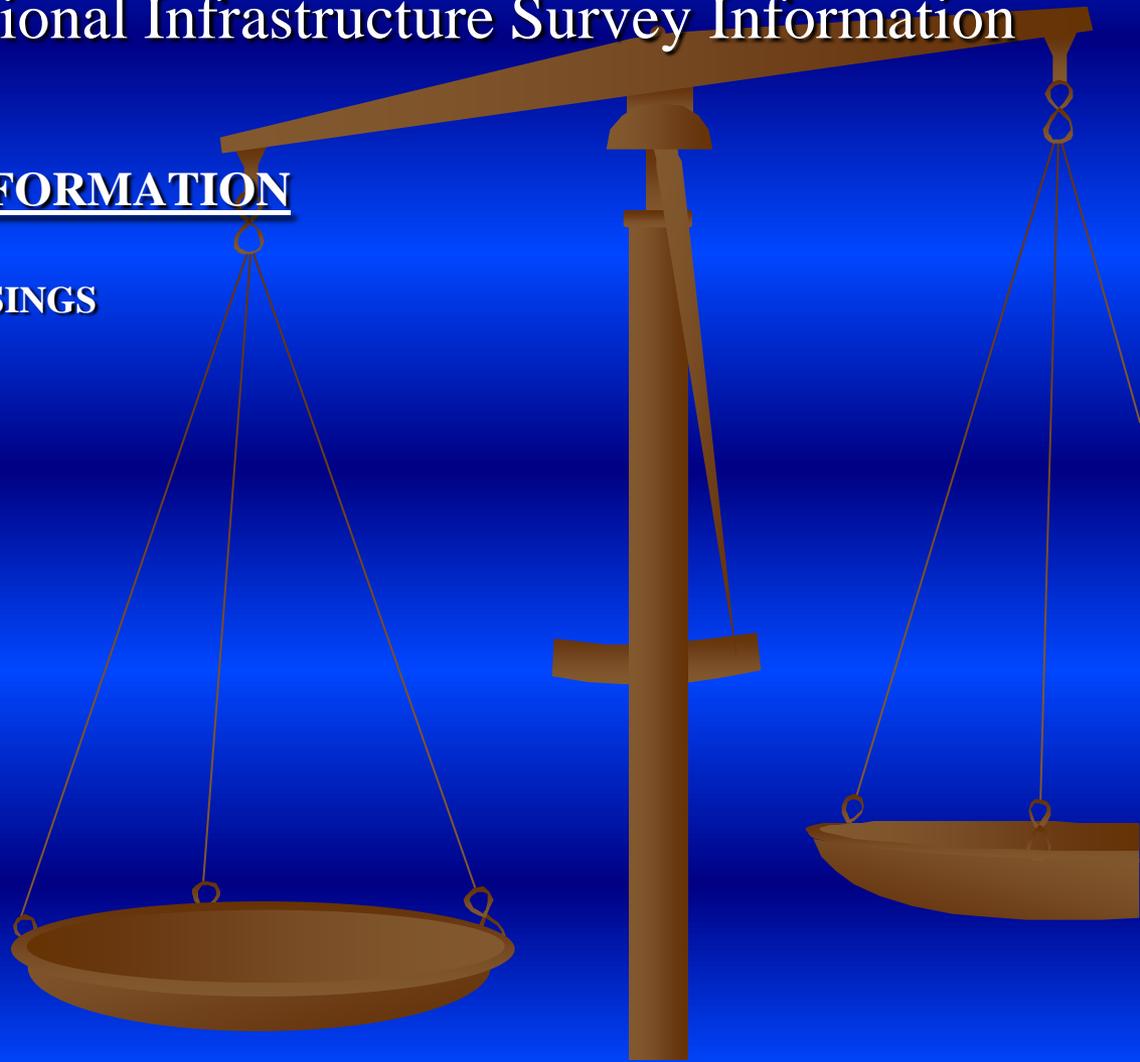
- Physical and Operational Infrastructure Survey Information

GRADE CROSSING INFORMATION

NUMBER of GRADE CROSSINGS

ACTIVE -

PASSIVE -



Evaluation of Shortline Railroads

CLASS 3 vs. EXCEPTED TRACK



Evaluation of Shortline Railroads

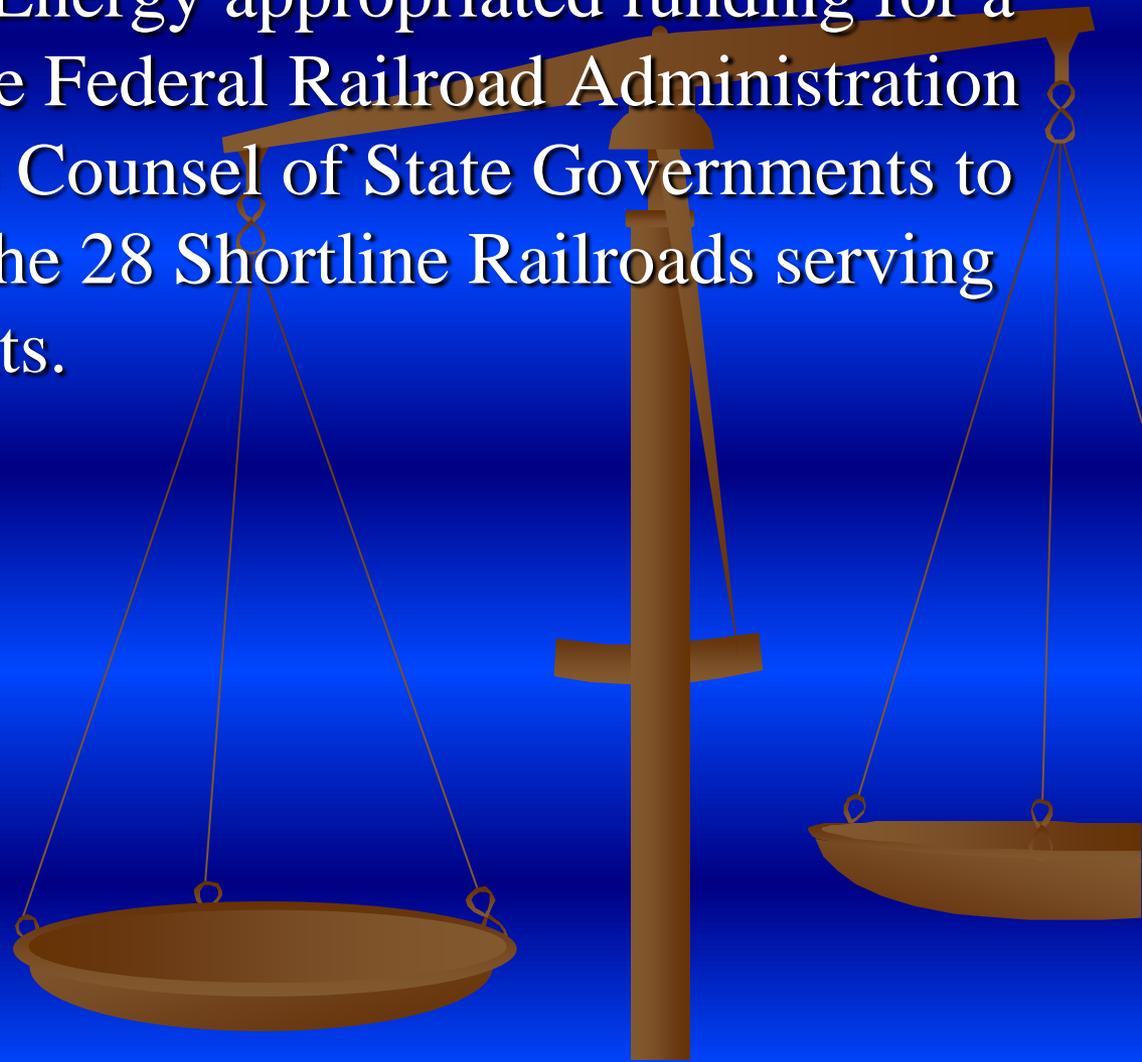
The following maximum allowable operating speeds apply

Track Class	Maximum Speed	
	Freight	Passenger
Excepted	10	N/A
1	10	15
2	25	30
3	40	60
4	60	80
5	80	90

The word "occupied" in (e)(2) refers to paying and non-paying passengers. It does not include train crew members, track maintenance crews, and other railroad employees who must travel over the track to attend to their work duties.

Evaluation of Shortline Railroads

- The Department of Energy appropriated funding for a joint project with the Federal Railroad Administration accompanied by the Counsel of State Governments to conduct a study of the 28 Shortline Railroads serving Nuclear Power Plants.

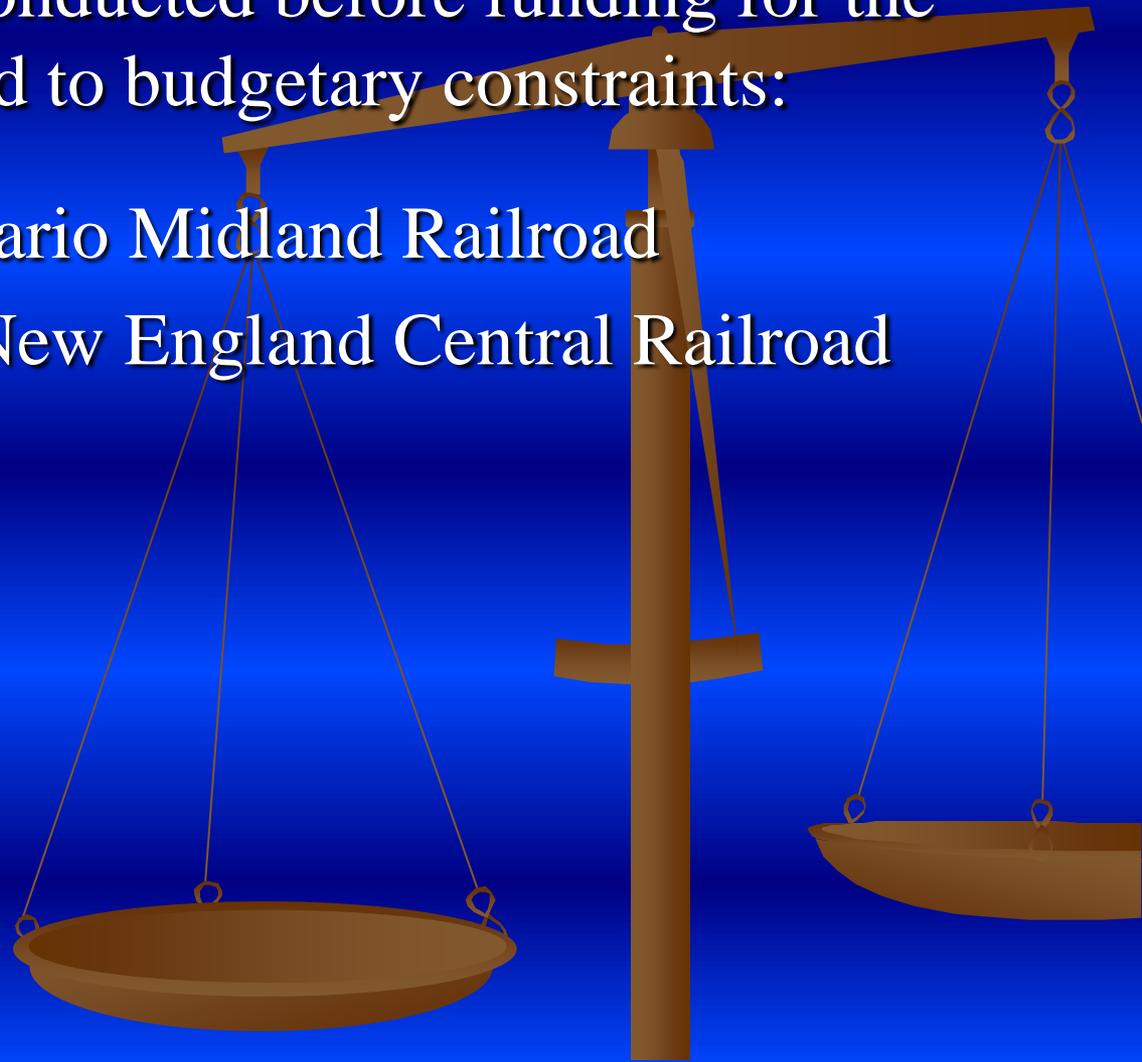


Evaluation of Shortline Railroads

- Two studies were conducted before funding for the study was suspended to budgetary constraints:

GINNA NPP/Ontario Midland Railroad

Vermont NPP/New England Central Railroad

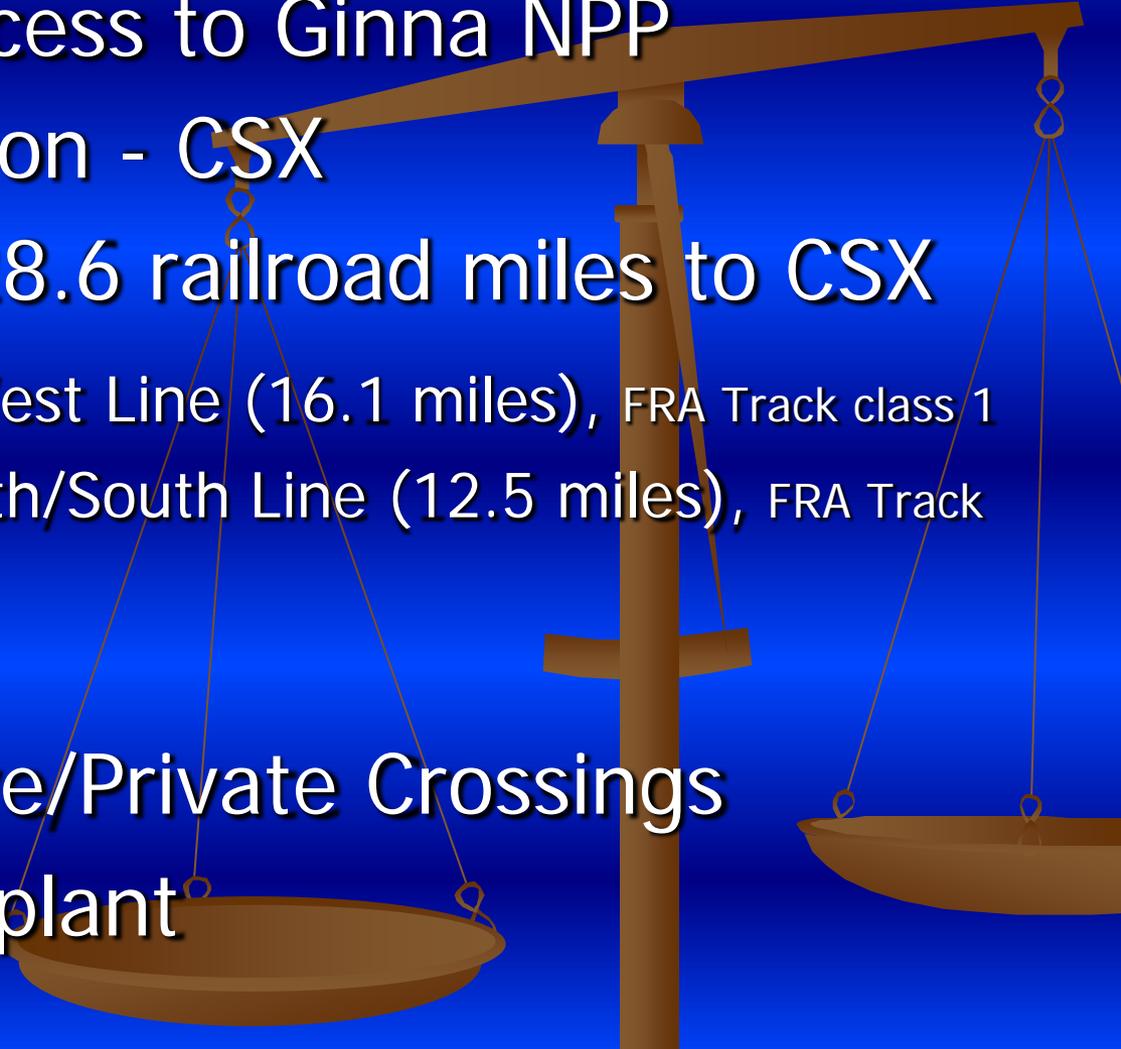


Evaluation of Shortline Railroads

Ginna/Ontario and Midland Railroad

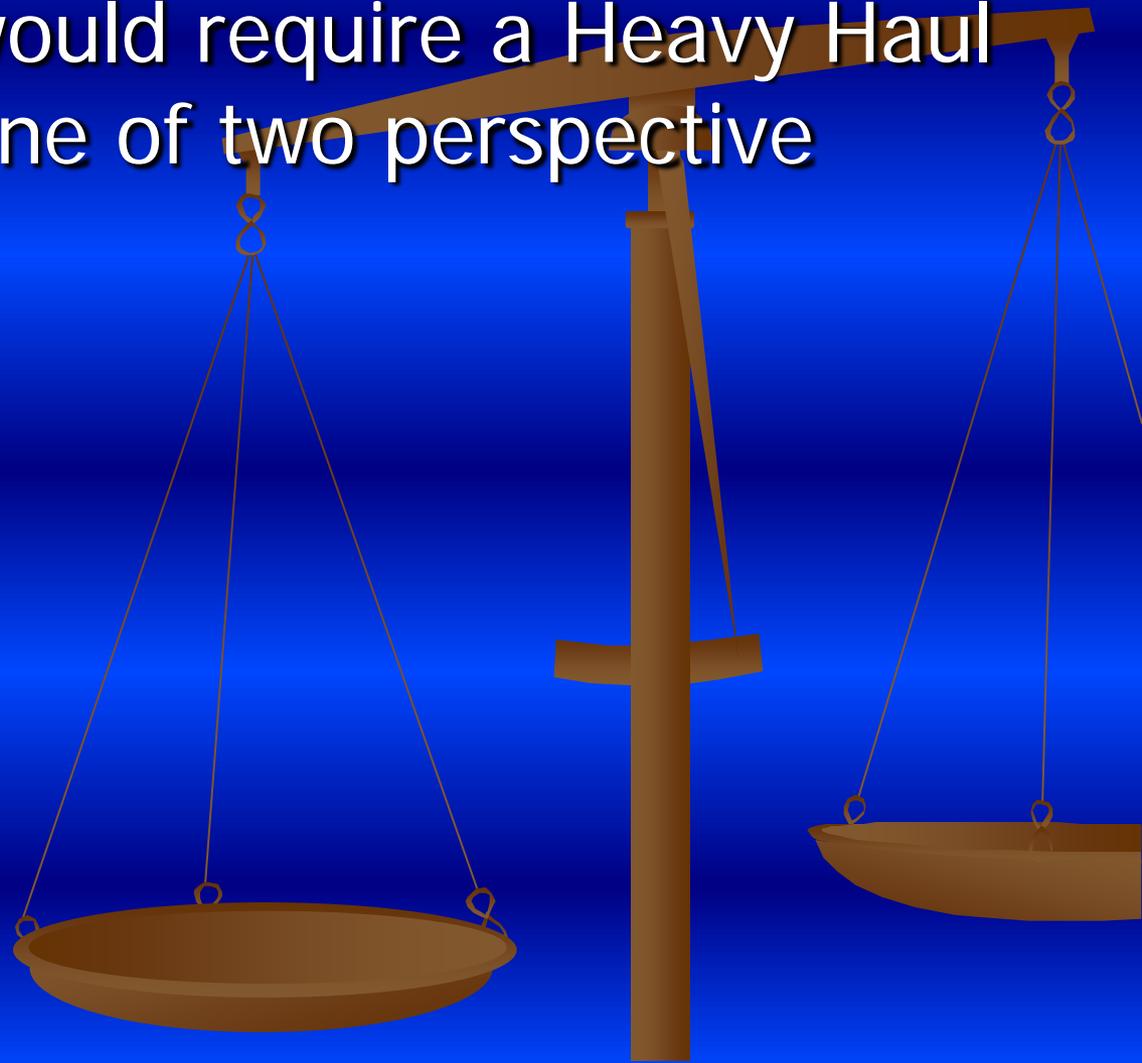


Evaluation of Shortline Railroads

- No direct rail access to Ginna NPP
 - Class 1 connection - CSX
 - Approximately 28.6 railroad miles to CSX
 - Ontario Line - East/West Line (16.1 miles), FRA Track class 1
 - Sodus Bay Line - North/South Line (12.5 miles), FRA Track class 2
 - Dark Territory
 - 28 Active/Passive/Private Crossings
 - Barge Slip near plant
- 

Evaluation of Shortline Railroads

- The shipment would require a Heavy Haul from Ginna to one of two perspective sites;



Evaluation of Shortline Railroads

Ontario Center Road (Route 350) Site 3.8 miles from Ginna



Evaluation of Shortline Railroads

Knickerbocker Road Site 4.8 miles from Ginna



Evaluation of Shortline Railroads

80 lb. Dudley rail on the Ontario Line
(milled using the open hearth process in the early 1900s)



Because this rolling process was utilized, the rail has internal impurities, including slag, air pockets, and so on which makes the rail prone to breaks when heavy lateral forces are imposed; heavy cars like the ones proposed to transport the spent fuel rods would have an adverse effect on this size rail.

Evaluation of Shortline Railroads

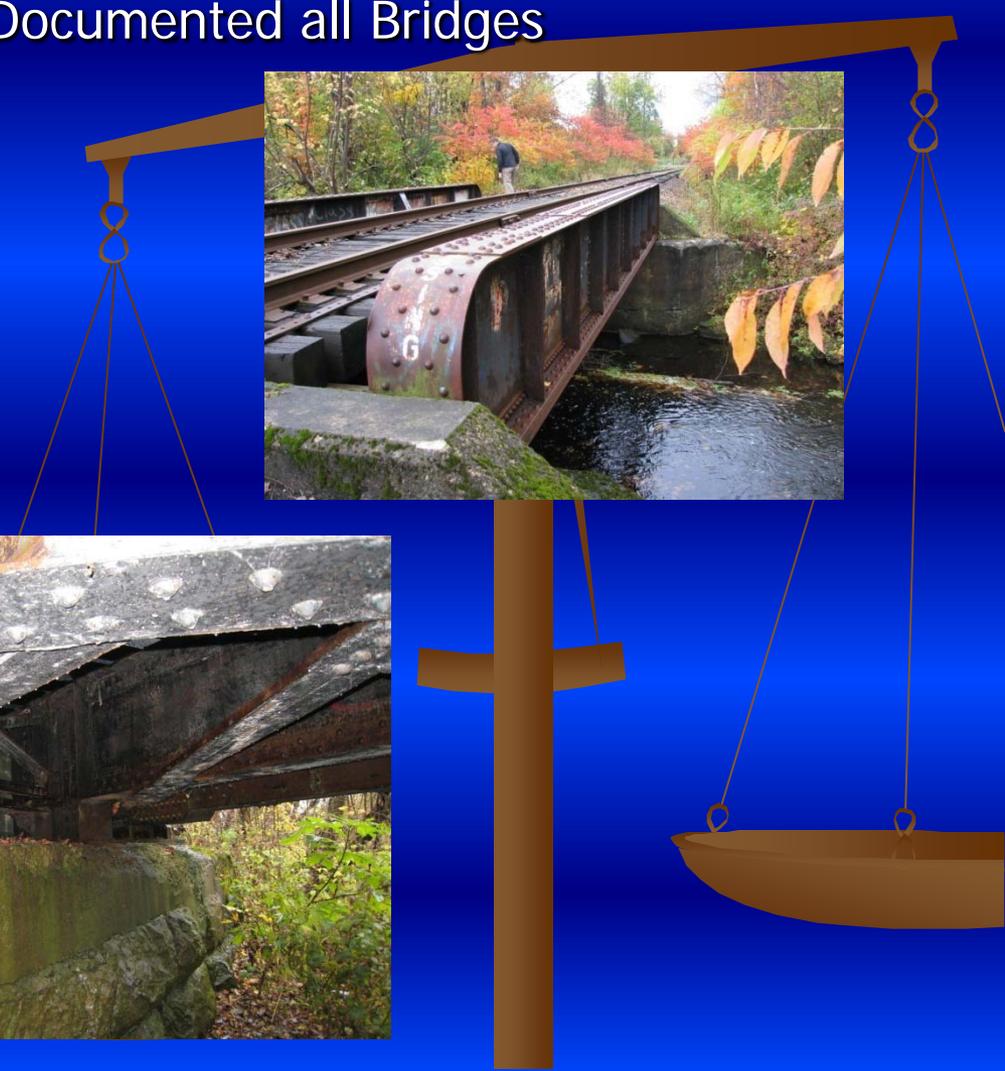
130 lb. PS rail on the Sodus Bay Line



A series of S-curves between the CSX interchange and MP 18.0 on the Sodus Bay Line have sharp curves of 10, 11, 12, and 13 degrees. A curve greater than 8 degrees limits the type of rolling stock able to negotiate over them. A rigid frame triple axle truck could easily derail trying to negotiate these curves.

Evaluation of Shortline Railroads

Photographed and Documented all Bridges



Evaluation of Shortline Railroads

Photographed and Documented all Crossings



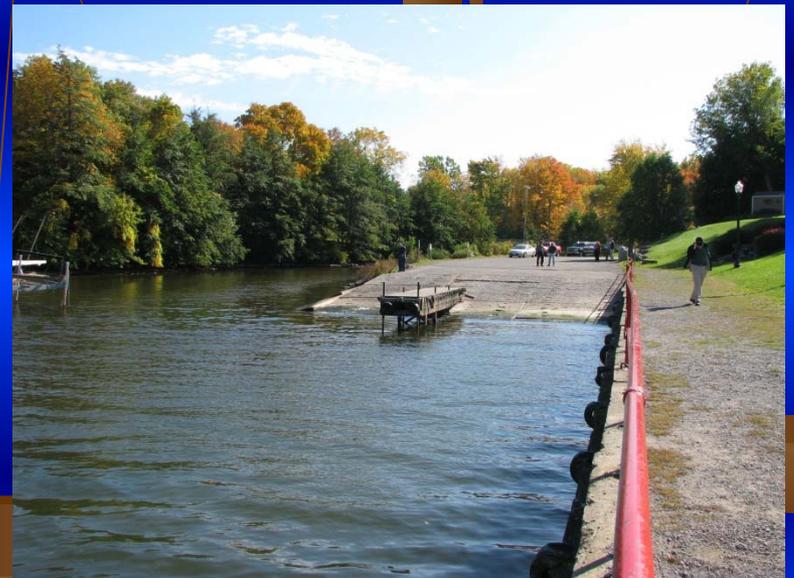
Evaluation of Shortline Railroads

Possible Safe Havens



Evaluation of Shortline Railroads

Barge Site Option - used previously by Ginna



Evaluation of Shortline Railroads

Areas of Concern:

Ontario Line

80lb. Dudley Rail

Poor Tie Condition

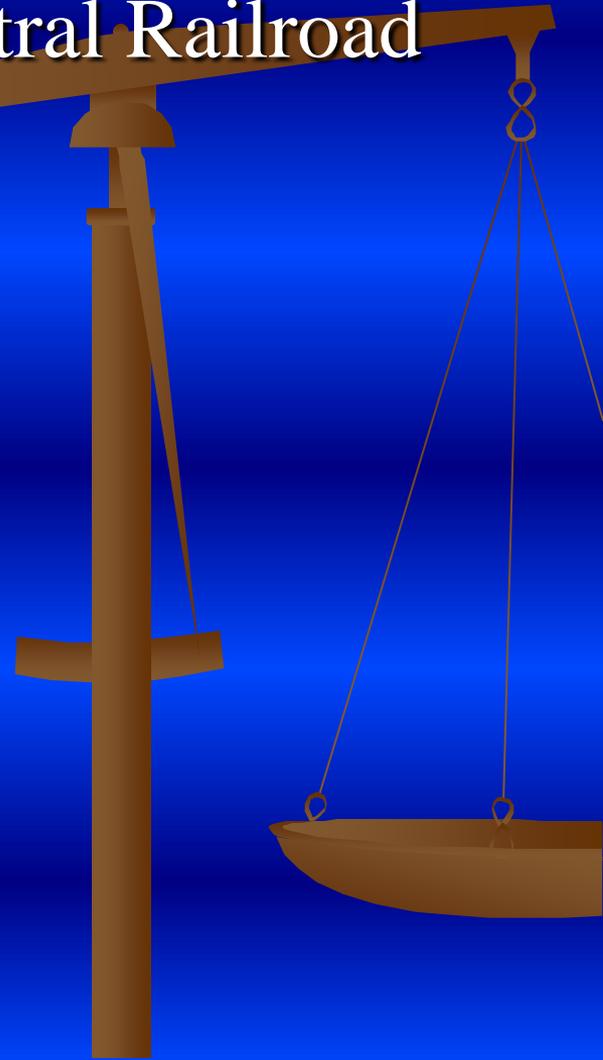
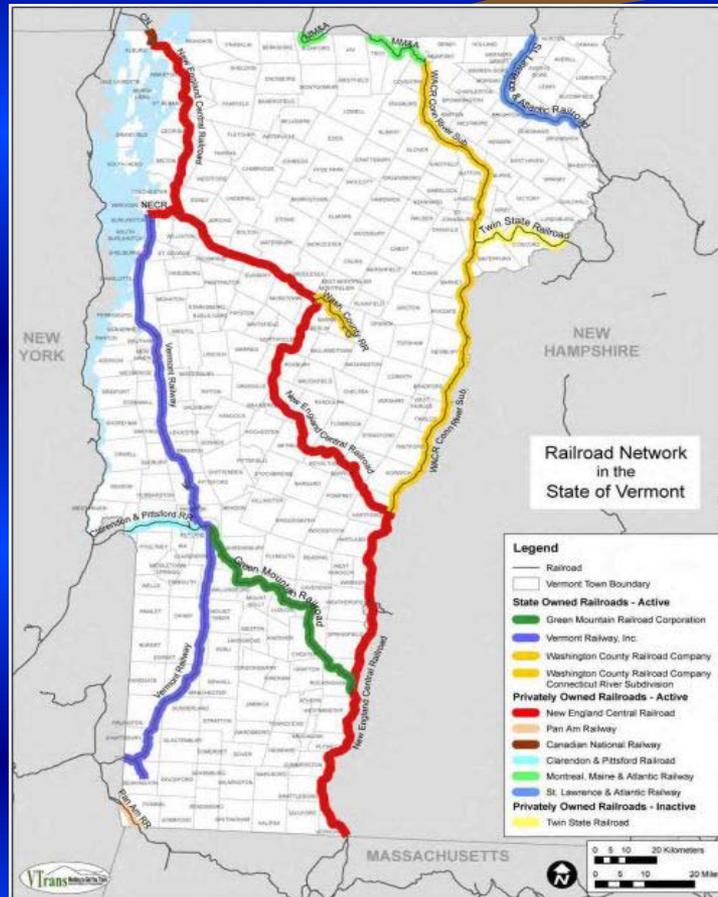
Sodus Bay Line

Sharp "S" Curves at Interchange



Evaluation of Shortline Railroads

Vermont NPP/New England Central Railroad

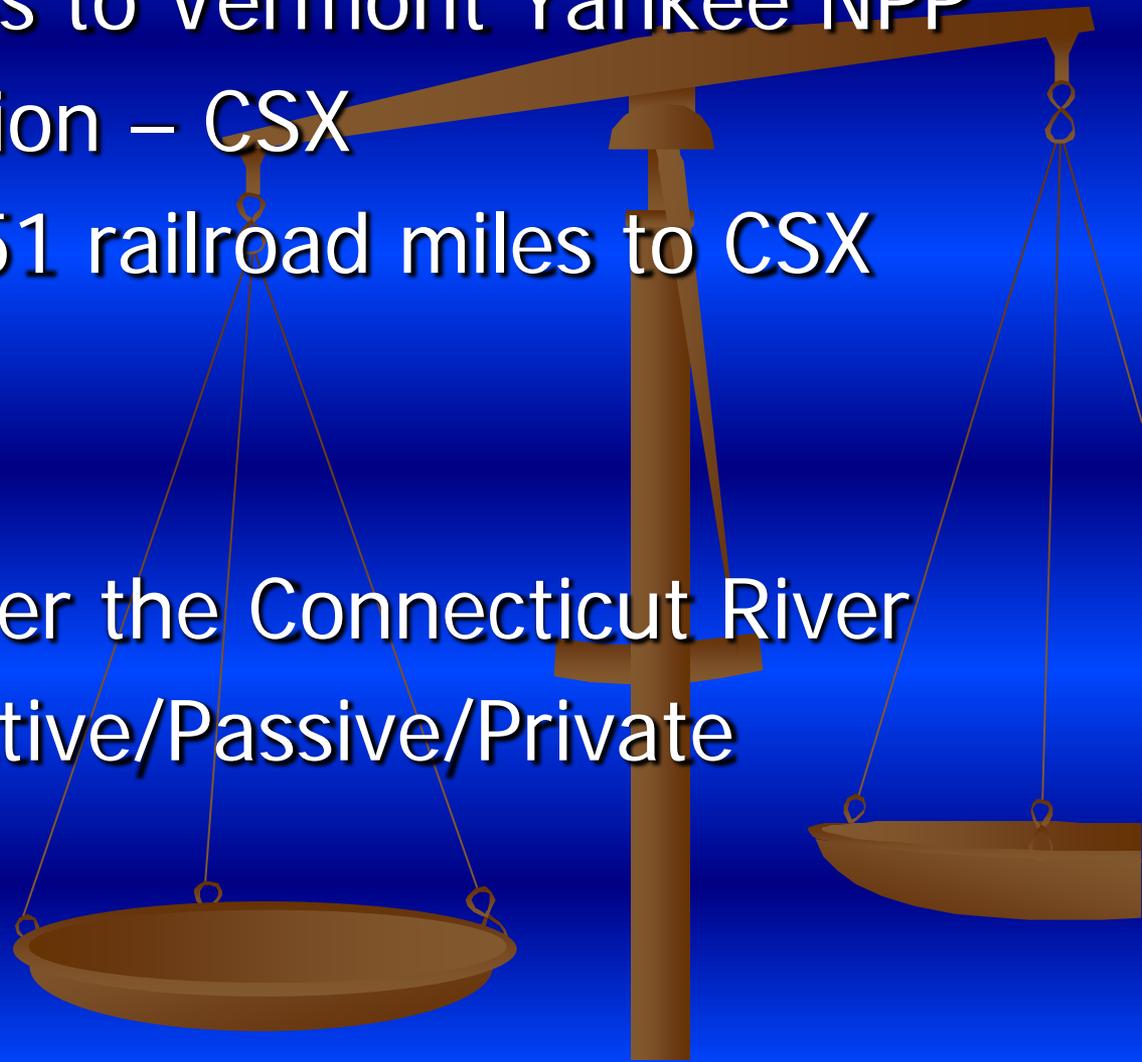


Evaluation of Shortline Railroads

- Direct rail access to Vermont Yankee NPP
- Class 1 connection – CSX
- Approximately 51 railroad miles to CSX

FRA Track Class 2 and 3

- Amtrak Route
- Major Bridge over the Connecticut River
- 17 Crossings Active/Passive/Private
- 13 Bridges



Evaluation of Shortline Railroads

Connecticut River Bridge



Evaluation of Shortline Railroads

Connecticut River Bridge



Evaluation of Shortline Railroads

Under Grade Bridges



Evaluation of Shortline Railroads

Over Grade Bridges



Evaluation of Shortline Railroads

Small Bridges



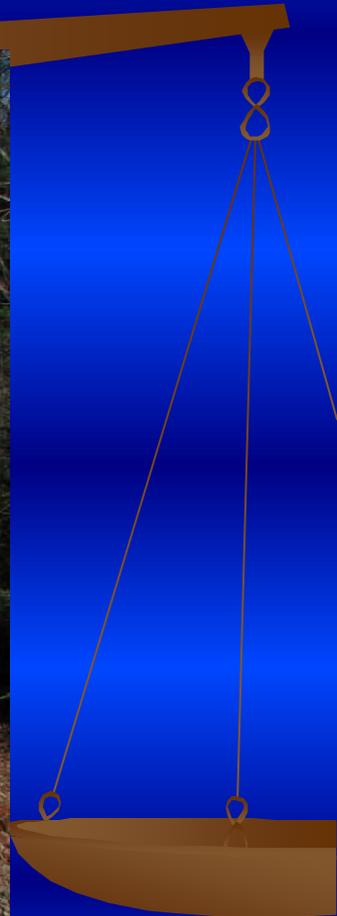
Evaluation of Shortline Railroads

Active Crossings



Evaluation of Shortline Railroads

Passive Crossings



Evaluation of Shortline Railroads

Private Crossings



Evaluation of Shortline Railroads

Switches



Evaluation of Shortline Railroads

Clearances



Evaluation of Shortline Railroads

Areas of Concern:

Amtrak Route

Comprehensive Bridge Inspection



Evaluation of Shortline Railroads

■ VERMONT YANKEE NP

■

■ NORTHERN ROUTE

■

■ 1st Leg NECR Railroad. Plant to East Northfield, Vermont.

■

■ 2nd Leg Choice #1 ST Railroad. East Northfield, VT To South Schenectady, NY.

■

■ Choice #2 ST Railroad. East Northfield, VT to Springfield, Mass.
CSX Railroad. Springfield, Mass. to South Schenectady, NY.

■

■ 3rd Leg Choice#1 CSX Railroad. South Schenectady, NY to Ashtabula, Ohio

■

■ Choice#2 CPRS Railway. South Schenectady, NY to Binghamton, NY
NS Railway. Binghamton, NY to Hornell, NY.

■

■ WNYP Railroad. Hornell, NY to Olean, NY.
NS Railway. Olean, NY to Driftwood, Pa.

■

■ BPRR Railroad. Driftwood, Pa. to New Castle, Pa.
CSX Railroad. New Castle, Pa. to Youngstown, Ohio.

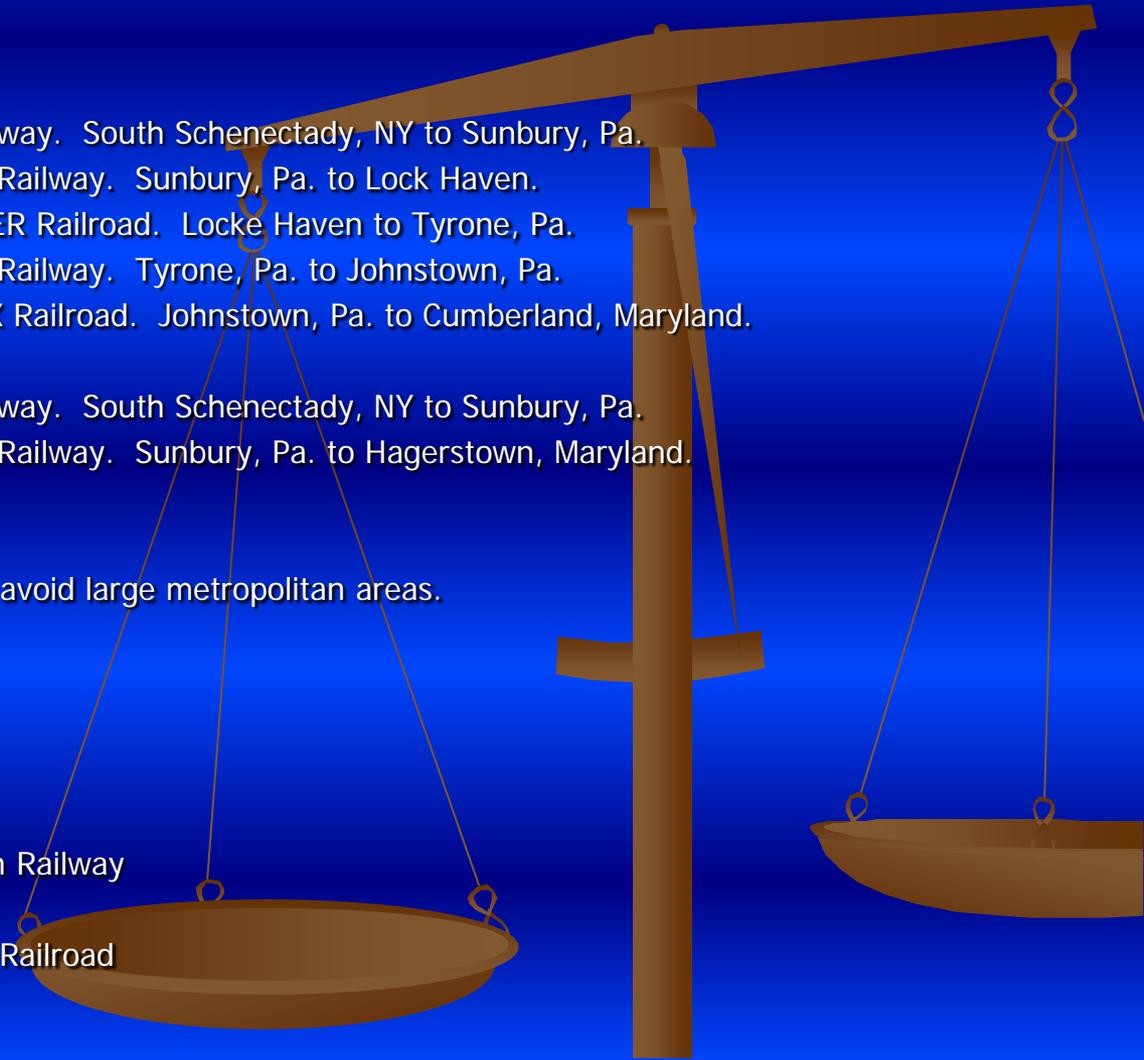
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Evaluation of Shortline Railroads

SOUTHERN ROUTE

- 1st Leg and 2nd Leg as above
-
- 3rd Leg
 - Choice#1 CPRS Railway. South Schenectady, NY to Sunbury, Pa.
 - NS Railway. Sunbury, Pa. to Lock Haven.
 - NBER Railroad. Locke Haven to Tyrone, Pa.
 - NS Railway. Tyrone, Pa. to Johnstown, Pa.
 - CSX Railroad. Johnstown, Pa. to Cumberland, Maryland.
 -
 - Choice#2 CPRS Railway. South Schenectady, NY to Sunbury, Pa.
 - NS Railway. Sunbury, Pa. to Hagerstown, Maryland.
 -
 -
 - Routes in RED indicate preferred route to avoid large metropolitan areas.
 - BPRR- Buffalo Pittsburgh Railroad
 - CPRS-Canadian Pacific Railway
 - NBER-Nittany Bald Eagle Railroad
 - NECR-New England Central Railroad
 - NS-Norfolk Southern Railway
 - NYSW-New York, Susquehanna & Western Railway
 - ST-Guilford Rail System
 - WNYP-Western New York & Pennsylvania Railroad



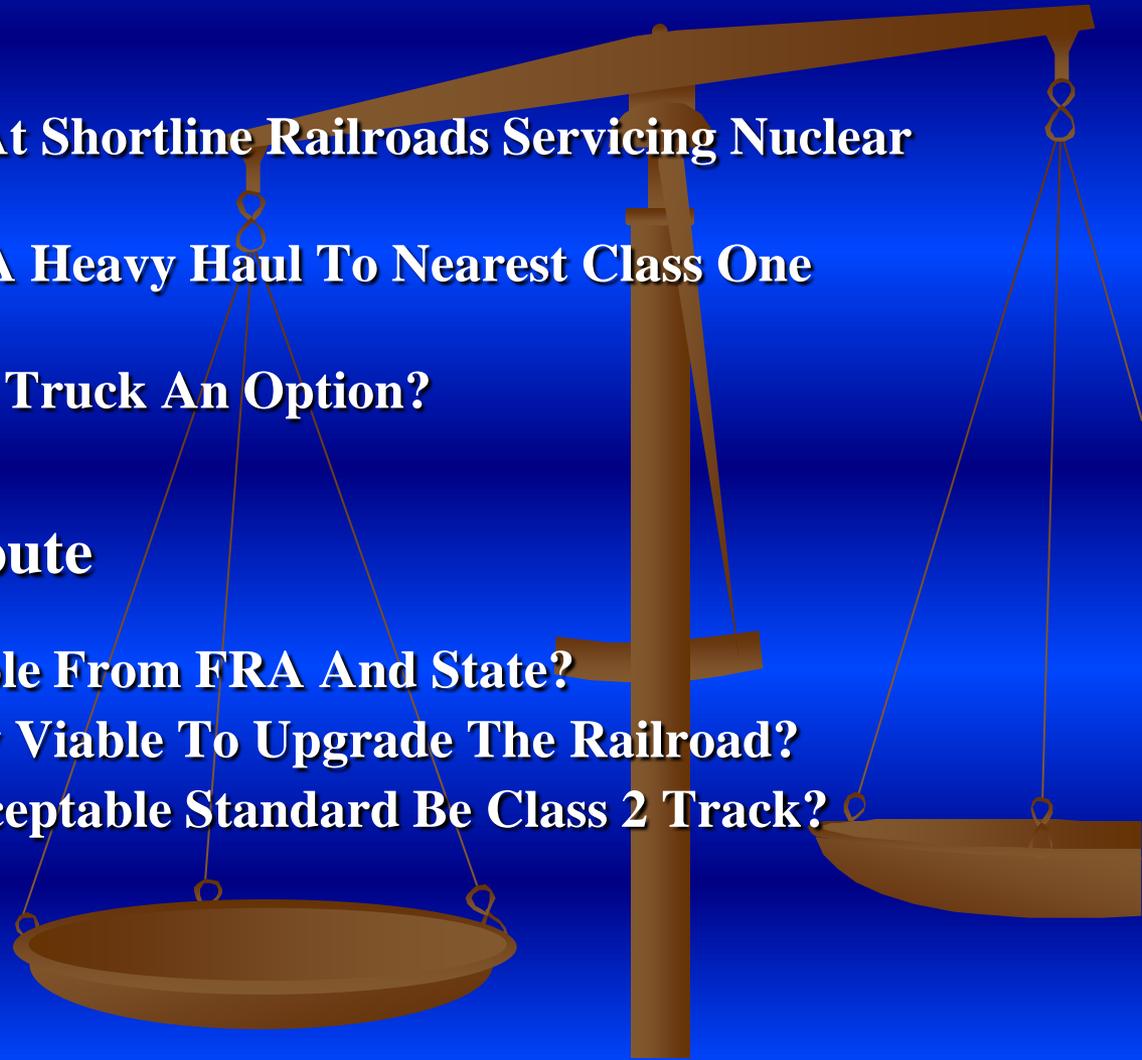
Evaluation of Shortline Railroads

Conclusions,

- **Need For In-depth Look At Shortline Railroads Servicing Nuclear Power Plants!**
- **Options To Transport VIA Heavy Haul To Nearest Class One Railroad!**
- **Is Barge Or Legal Weight Truck An Option?**

If Rail Is The Logical Route

- **Are There Grants Available From FRA And State?**
- **Would It Be Economically Viable To Upgrade The Railroad?**
- **Should The Minimum Acceptable Standard Be Class 2 Track?**





Evaluation of Shortline Railroads

The Ginna NPP/Ontario Midland Railroad and
Vermont NPP/New England Central Railroad studies
facilitated by:

Lee Finewood – DOE

Cort Richardson – NE CSG

Mel Massaro – FRA

Presented by: Mel Massaro
Federal Railroad Administration

