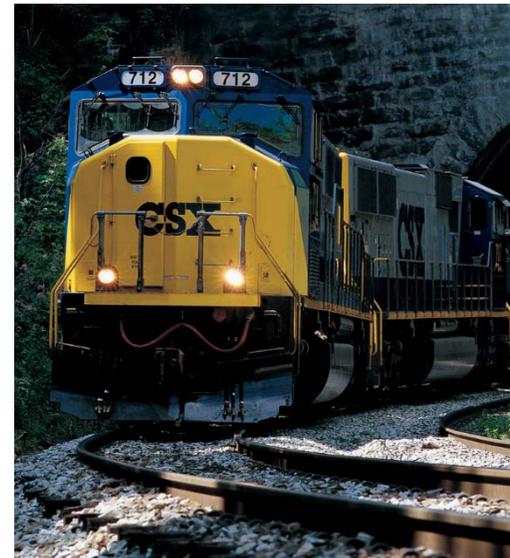


# Stakeholder Perspectives on the... Transport of Nuclear Waste

Ken Niles, Assistant Director, Oregon Department of Energy

June 13, 2018



# A State Perspective on the... Transport of Nuclear Waste

Ken Niles, Assistant  
Director, Oregon  
Department of Energy

June 13, 2018





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# Western Interstate Energy Board





# High-Level Radioactive Waste Committee





Western Governors' directive:

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“safe and uneventful”



181

Case

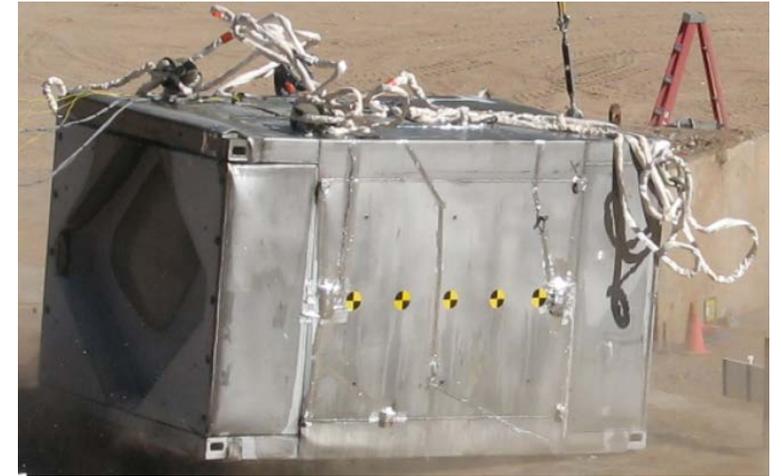
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Reinke  
www.reinke.com

E201741T

Reinke  
www.reinke.com

# Type B cask testing





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# Accident prevention measures





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## Western Governors' Association Policy Resolution 2016 - 03

### *Transportation of Radioactive Waste, Radioactive Materials, and Spent Nuclear Fuel*

#### A. BACKGROUND

1. Large amounts of radioactive waste have been, and will continue to be, transported through western states, both as a result of environmental cleanup of federal sites involved in the development and manufacture of nuclear weapons and for storage or disposal of spent nuclear fuel used to generate electricity.
2. The Waste Isolation Pilot Plant (WIPP) located in New Mexico was constructed to serve as a permanent repository for defense-related transuranic (TRU) waste. On March 26, 1999, WIPP received its first truck shipment of TRU waste from the Los Alamos National



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## Western Governors' Association Policy Resolution 2016 - 03

### *Transportation of Radioactive Waste, Radioactive Materials, and Spent Nuclear Fuel*

- safe and uneventful transport...must be paramount
- early coordination and effective communication...is essential
- the WIPP transportation program is an excellent model...a similar guide should be used for planning for shipments of spent fuel
- full commitment and cooperation from the rail industry is needed
- all costs paid for by nuclear generators and federal government

# DOE funding to states

- DOE provided sufficient funding to Western states to develop the WIPP transport program
- DOE continues to provide funding while shipments continue
- For NWPA shipments, DOE has provided limited funding for meetings and regional staff support, but not to fund state personnel
- DOE not consistent through the years on level of engagement it wants from the states



# High-Level Radioactive Waste Committee



## High-Level Radioactive Waste Committee Position Paper

### The "WIPP Transportation Mode" and its Application to SNF/HLW Transport Number A-1

Version Final, September 2017  
Date Adopted by Committee: September 22, 2017

#### Statement of Policy

DOE should work collaboratively with Western states to develop a comprehensive transport safety program for the shipment of spent nuclear fuel and high-level radioactive waste (SNF/HLW) to consolidated storage sites and/or a repository. A previous collaboration resulted in the development of a highly-regarded transport safety program for shipments of transuranic waste to the Waste Isolation Pilot Plant (WIPP).

#### Background and Context

1. The Western Governors' policy use the WIPP process. The policy of the twenty-one Western Governors provides that: "The WIPP transportation safety program implementation guide is an excellent model for transportation planning and a similar guide should be used as a base document for DOE transportation programs for shipments of spent nuclear fuel, high-level waste, and/or Greater Than Class C (GTCC) waste to any storage and/or disposal facility."<sup>1</sup>
2. The Blue Ribbon Commission recommendation: WIPP provides a "successful model." In its January 2012 final report, the Blue Ribbon Commission (BRC) strongly recommended the WIPP transportation program as a model for federal partnership with states, recognizing that "[t]he WIPP facility...provides a longstanding and highly successful model for partnering with states to achieve shared success in addressing issues related to the transport of nuclear materials."<sup>2</sup> The BRC found that "States have extensive experience with transportation issues and important roles to fulfill with respect to issues such as routing, inspections, training, emergency preparedness, communications, public information and security for radioactive materials and other hazardous shipments."<sup>3</sup>

<sup>1</sup> Western Governors' Association Policy Resolution 10 (2014).  
<sup>2</sup> BRC Report to the Secretary of Energy, Jan. 2012, pg. 85.  
<sup>3</sup> Ibid.



## High-Level Radioactive Waste Committee Position Paper

### Physical Protection Requirements for SNF Transport Number B-2

Version Final, September 2017  
Date Adopted by Committee: September 22, 2017

#### Statement of Policy and Objective

The Nuclear Regulatory Commission's (NRC) physical protection requirements<sup>1</sup> should be in place for all shipments of spent nuclear fuel and high-level radioactive waste (SNF/HLW). Utility shipments are currently subject to these NRC regulations. Current DOE spent fuel shipments, and future DOE shipments to storage or disposal facilities, are not in present subject to these regulations. The objective of this policy is to ensure the physical security of SNF and HLW shipments through Western states. The threat environment in which future shipments will take place is uncertain. It is vital that the shipments receive the highest possible degree of protection regardless of the entity shipping them.

#### Background and Context

1. DOE's ability to self-regulate may mean shipment security requirements. Under the Nuclear Waste Policy Act (NWPA) as amended, DOE shipments to a storage facility or repository by DOE would be largely self-regulated. That would be the case if DOE already owns the material shipped, or if DOE assumes title at the time of shipment. This policy disposition could create an incoherent situation in which the NRC physical protection regulations would apply to the estimated 20 or so license shipments each year, but would not apply to the projected 250-500 or more DOE shipments per year to NPPA facilities.<sup>2</sup>

<sup>1</sup> 10 CFR 73.33.

<sup>2</sup> J. J. Mahler, R. J. Mahler, & J. J. Mahler, "Physical Protection of Spent Fuel Shipments: Resolutions of Stakeholders Gained Through Stakeholder 11224," Fall 2012 Session, February 26-March 1, 2013, Phoenix, AZ, available at [http://www.atac-nw.com/administrator/index.php?option=com\\_content&view=article&id=11224](http://www.atac-nw.com/administrator/index.php?option=com_content&view=article&id=11224).



## High-Level Radioactive Waste Committee Position Paper

### Ship Oldest Fuel First Number C-1

Version Final, September 2017  
Date Adopted by Committee: September 22, 2017

#### Statement of Policy

To reduce the potential radiological exposure from spent nuclear fuel (SNF) casks in transport, and to reduce potential radiological releases in the event of a severe accident, DOE should adopt a policy of shipping "oldest fuel first." By designing the initial transport program around the policy of shipping oldest fuel first from shut-down nuclear reactor sites, the potential radiological impacts of SNF shipments to either an interim storage facility or a repository will be lessened.

#### Background & Context

1. The pressure to move SNF away from reactors continues to grow. As of September 2015, there was approximately 32,030 metric tons of UO<sub>2</sub> at 16 shut-down nuclear reactors in 13 utility sites in 10 states. At least three additional reactor sites are scheduled to shut down over the next five years. While the NRC's contested 2010 "Passive Confidence" decision determined that SNF can be safely stored on-site indefinitely, the local political pressures for removal are increasing. Communities near at-risk sites (such as facilities in earthquake or tsunami zones), continue to express concern over the lack of federal action.<sup>1</sup> The level of concern varies among reactor sites and how communities, as observed in a series of comment-based siting meetings hosted by DOE in 2014.<sup>2</sup>

<sup>1</sup> See the Public Comments Engagement Panel Meeting on Consolidated Interim Storage (CIS) June 27, 2014. Information available at [http://www.atac-nw.com/administrator/index.php?option=com\\_content&view=article&id=11224](http://www.atac-nw.com/administrator/index.php?option=com_content&view=article&id=11224).  
<sup>2</sup> Department of Energy Comments Report 2014 meeting, [http://www.atac-nw.com/administrator/index.php?option=com\\_content&view=article&id=11224](http://www.atac-nw.com/administrator/index.php?option=com_content&view=article&id=11224).



## High-Level Radioactive Waste Committee Position Paper

### Rail Route Safety: Track, Grade Crossings, Bridges, and Switches Number C-4

Version Final, September 2017  
Date Adopted by Committee: September 22, 2017

#### Statement of Policy

The U.S. Department of Transportation Federal Railroad Administration (FRA) Rail Safety Program and revised Safety Compliance Oversight Plan (SCOP) should be fully implemented to help ensure the safe transport of spent nuclear fuel and high-level radioactive waste (SNF/HLW).

#### Background and Context

1. Though the railroads have done much to reduce the accident rate, rail accidents are not rare. According to FRA statistics for 2013-2015, about 1,850 railroad accidents occur each year. Many cause no injuries and are cleared within one day. Some accidents involve hazardous materials and result in evacuations, injuries, and deaths.
2. Rail accidents have several causes. Steel wheels on steel rail provide low "rolling friction" on high-quality track and enable efficient transport of very heavy loads. But the system is sensitive to curves, speed, and track geometry. Many derailments involve defects in track such as broken rails or poor track geometry, or weather conditions in combination with track deficiencies. Accidents are also caused by problems in rail equipment, like bearing failure or broken wheels, or problems in train handling, like inadequate signaling.
3. Train collisions with vehicles are common. Operation Lifesaver, a non-profit public education program, reports that "about every three hours, a person or vehicle is hit by a train."<sup>1</sup> Grade crossings of railroads and highways provide plentiful opportunities for such collisions. There are over 60,000 rail-highway crossings in twelve Western states including Texas and Nebraska, including over 27,500 Operation Lifesaver crossings.<sup>2</sup>

<sup>1</sup> Operation Lifesaver homepage, <http://www.ols.org/>.



## High-Level Radioactive Waste Committee Position Paper

### Rail Shipment Inspection Number C-5

Version Final, September 2017  
Date Adopted by Committee: September 22, 2017

#### Statement of Policy

Trains transporting spent nuclear fuel and high-level radioactive waste (SNF/HLW) should be inspected by fully qualified inspectors, using a consistent approach which has been developed cooperatively with the Western states. The inspection protocol, to the extent practical, should be commensurate with the Commercial Vehicle Safety Alliance (CVSA) Level VI inspection program.

#### Background and Context

1. The CVSA Level VI Inspection for Highway Shipments. The level VI inspection for highway shipment of radioactive materials, developed in the 1990s by the CVSA in anticipation of spent nuclear fuel shipments, has been successful. Such inspections are conducted at the shipment origin, when the truck is loaded and ready to go, when the inspector creates a record of initial shipment conditions. Some states inspect shipments en route, and the shipment is inspected upon arrival at the destination. The level VI inspection criteria require that equipment be "defect free." Any defects detected as a result of the inspection must be corrected before a shipment continues.
2. Designing comparable inspections for rail shipments. Several initiatives have been undertaken through the years to develop a comparable protocol for rail shipment of SNF/HLW. The initiatives suggest that, compared to truck shipments on public highways, rail inspection standards will be more complex, and the inspection process more time consuming. A current initiative in this vein is being undertaken by the National Transportation Stakeholder's Forum "Rail/Roadside Ad Hoc Working Group."<sup>3</sup>



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## **High-Level Radioactive Waste Committee Paper**

### **The “WIPP Transportation Model” and its Application to SNF/HLW Transport Number A-1**

**Version: Final, September 2017  
Date Adopted by Committee: September 22, 2017**

#### **Statement of Policy**

**DOE should work collaboratively with Western states to develop a comprehensive transport safety program for the shipment of spent nuclear fuel and high-level radioactive waste (SNF/HLW) to consolidated storage sites and/or a repository. A previous collaboration resulted in the development of a highly-regarded transport safety program for shipments of transuranic waste to the Waste Isolation Pilot Plant (WIPP).**



**Western Interstate  
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## **High-Level Radioactive Waste Committee Paper**

### **The “WIPP Transportation Model” and its Application to SNF/HLW Transport Number A-1**

- develop and maintain a “safe and uneventful” transport program
- follow the WIPP model as closely as possible for highway shipments
- use the WIPP transport safety program as a starting point for rail
- commit to a collaborative approach to develop a rail safety program





E-22838

*Alloy*

*Alloy*

CAST

# Waste Isolation Pilot Plant

## Rail Transportation Safety Program Implementation Guide



Draft

December 2003



**Western Interstate  
Energy Board**

# Approved Policy Papers



- Physical protection requirements for spent fuel transport



- Ship oldest fuel first



- Rail route safety



- Rail shipment inspection

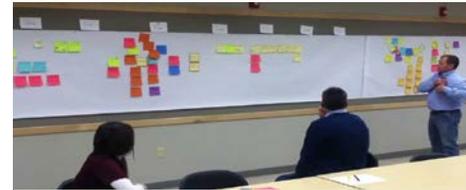
# Policy Papers in Draft



- Social risks in spent nuclear fuel transport



- Full scale cask testing and cask confidence



- Origin site coordination



- State and local emergency response

# Nuclear Waste Policy Act (as amended)

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## Section 180 (c)

“The Secretary shall provide technical assistance and funds to States for training for public safety officials of appropriate units of local government and Indian tribes through whose jurisdiction the Secretary plans to transport spent nuclear fuel or high-level radioactive waste...The Waste Fund shall be the source of funds...”

# HB 3053

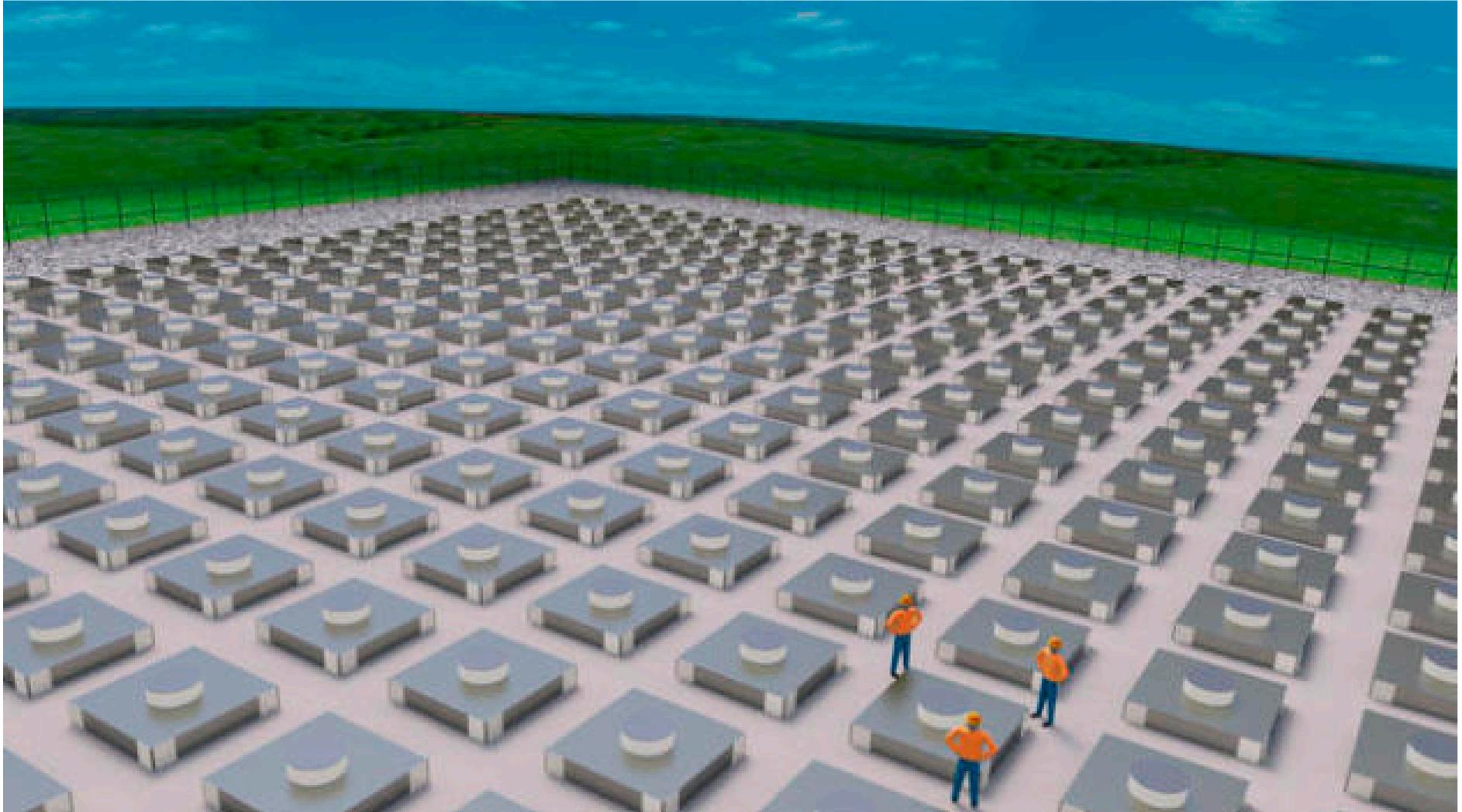


# HB 3053

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16           “(2) ASSISTANCE.—The Secretary shall, subject  
17           to the availability of appropriations, provide in-kind,  
18           financial, technical, and other appropriate assist-  
19           ance, **for safety activities** related to the transpor-  
20           tation of high-level radioactive waste or spent nu-  
21           clear fuel, to any entity receiving technical assist-  
22           ance or funds under paragraph (1).

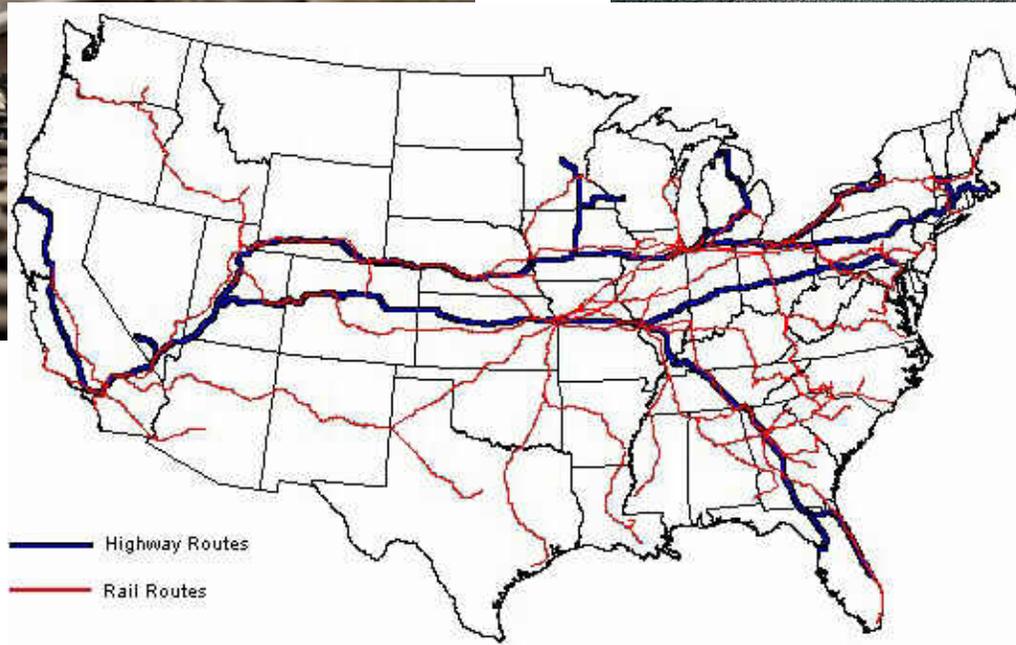
# Eddy-Lea Energy Alliance Storage Concept



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**THERE'S A LOT  
LEFT TO DO.**

# Minimum 3 years for training







# GOING THE DISTANCE ?

THE SAFE TRANSPORT OF SPENT  
NUCLEAR FUEL AND HIGH-LEVEL  
RADIOACTIVE WASTE IN THE  
UNITED STATES

NATIONAL RESEARCH COUNCIL  
OF THE NATIONAL ACADEMIES

# What are your questions?

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