

# 2025 Transportation Research Board Annual Meeting

January 5-9, 2025  
Washington, D.C.





All 10 of us made it to the group photo!



# AOT at TRB 2025



- 10 people from AOT attended the 2025 TRB Annual Meeting
  - Emily Parkany – Research Manager
  - Jayna Morse, Finance and Administration Division Director
  - Ashley Atkins, District Maintenance and Fleet Deputy Division Director
  - Zoe Neaderland – Systems Planning Coordinator
  - Dan Currier – Public Transit Program Coordinator
  - Ari Lattanzi – Climate Programs Administrator
  - Nick Van Den Berg – Materials and Certification Manager
  - Faith Dall – Planning Coordinator
  - Todd Eaton – Vermont Local Roads Director
  - Rachel Wassel – Continuous Improvement Program Manager



# What Happens at TRB

Signage Needed!  
Workshops,  
Sessions, Posters,  
Exhibits, Committee  
Meetings, etc.





# Many Posters All Week!



# Workshops and Lectern Sessions

## Workshops

- More interactive, engaging attendees in some form of creative activity
- Participant training, development of a research agenda around a specific topic, or some other product or deliverable, etc.
- Typically outcome driven where the conversation leads to a product or defined content

## Lectern Sessions


- Presenting papers that went through peer review process and were accepted by committee
- Speakers invited to presentation on a topic for which they are an expert without needing to prepare a paper for review
- Papers and speakers are organized around a common theme

# Exhibit Hall

Exhibitor List
Adv. Search
My Exhibitors
2025 TRB
Home
Legend
Print
Help
Login

Only in Company Name
328 Exhibitors

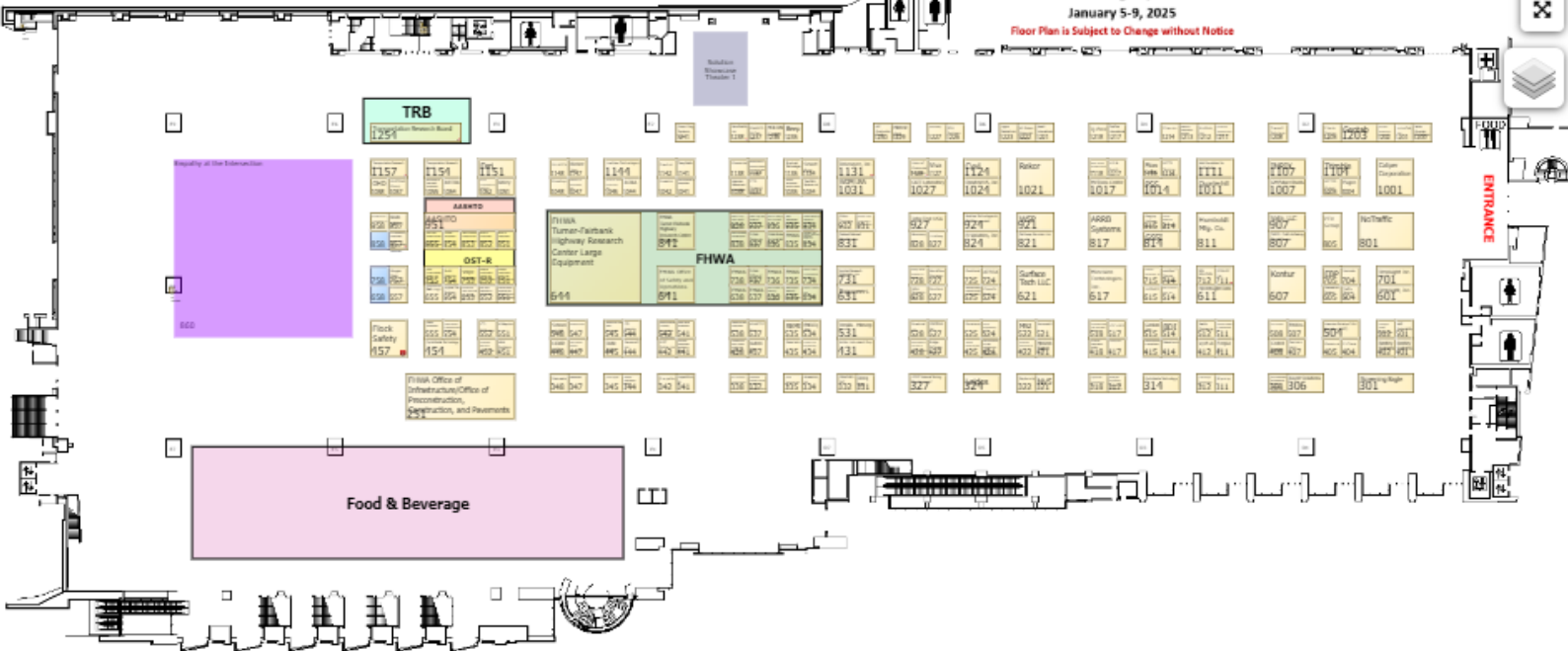
EXHIBITOR NAME
Booth



☆ Eco Material Technologies
338

☆ Ecobeton-USA
547

**TRB 104<sup>th</sup> Annual Meeting**  
 Walter E. Washington Convention Center  
 Washington, DC  
 January 5-9, 2025  
*Floor Plan is Subject to Change without Notice*







# Takeaways and Highlights

Dan Carrier Public Transit Section



# Takeaway 1 – Intercity Bus Research






## Conclusions

- **The network provides baseline mobility with acceptable speed** (e.g., average speed around 37 mph)
- **While there are outliers**, most trips in the 25 – 42 mph range. Each stop has only small effect
- **Average fare** roughly equates to operating costs of driving but is far lower than total driving costs
- **Metro-area population has a small effect** on duration
- **FlixBus's inclusion in network** is important to trip quality

- Vermont Context
  - Interlining to other intercity routes is important
  - Transfers cause delays on trips
  - Flix bus operations are an improvement



# Takeaway 2 – Access in Appalachia Pilot Study

For People				For Business
 <p><b>Drive Access Score</b></p> <p>Reflects travel time to:</p> <ul style="list-style-type: none"> <li>• Town Centers</li> <li>• Colleges &amp; Universities</li> <li>• Jobs</li> <li>• Healthcare</li> </ul>	 <p><b>Total Fixed Route Transit Access Score</b></p> <p>Reflects travel time to:</p> <ul style="list-style-type: none"> <li>• Town Centers</li> <li>• Colleges &amp; Universities</li> <li>• Jobs</li> <li>• Healthcare</li> </ul>	 <p><b>Demand Response Transit Access Score</b></p> <p>Reflects:</p> <ul style="list-style-type: none"> <li>• Vehicle Hours</li> <li>• Operating Hours</li> <li>• Service Days</li> <li>• Scheduling Options</li> <li>• Trip Scheduling</li> <li>• Connectivity</li> </ul>	 <p><b>Bicycle and Pedestrian Access Score</b></p> <p>Reflects:</p> <ul style="list-style-type: none"> <li>• Low Stress Network</li> <li>• Sidewalk Ratio</li> <li>• Intersection Density</li> <li>• Nearest Neighbor</li> </ul>	 <p><b>Drive Access Score</b></p> <p>Reflects travel time to:</p> <ul style="list-style-type: none"> <li>• Labor</li> <li>• Commercial Airport</li> <li>• Major Seaport</li> <li>• Other Intermodal</li> </ul>

- Vermont Context
  - Connect measures of access to indicators of relative need to identify locations with the greatest opportunity for improvement through targeted transportation investments.

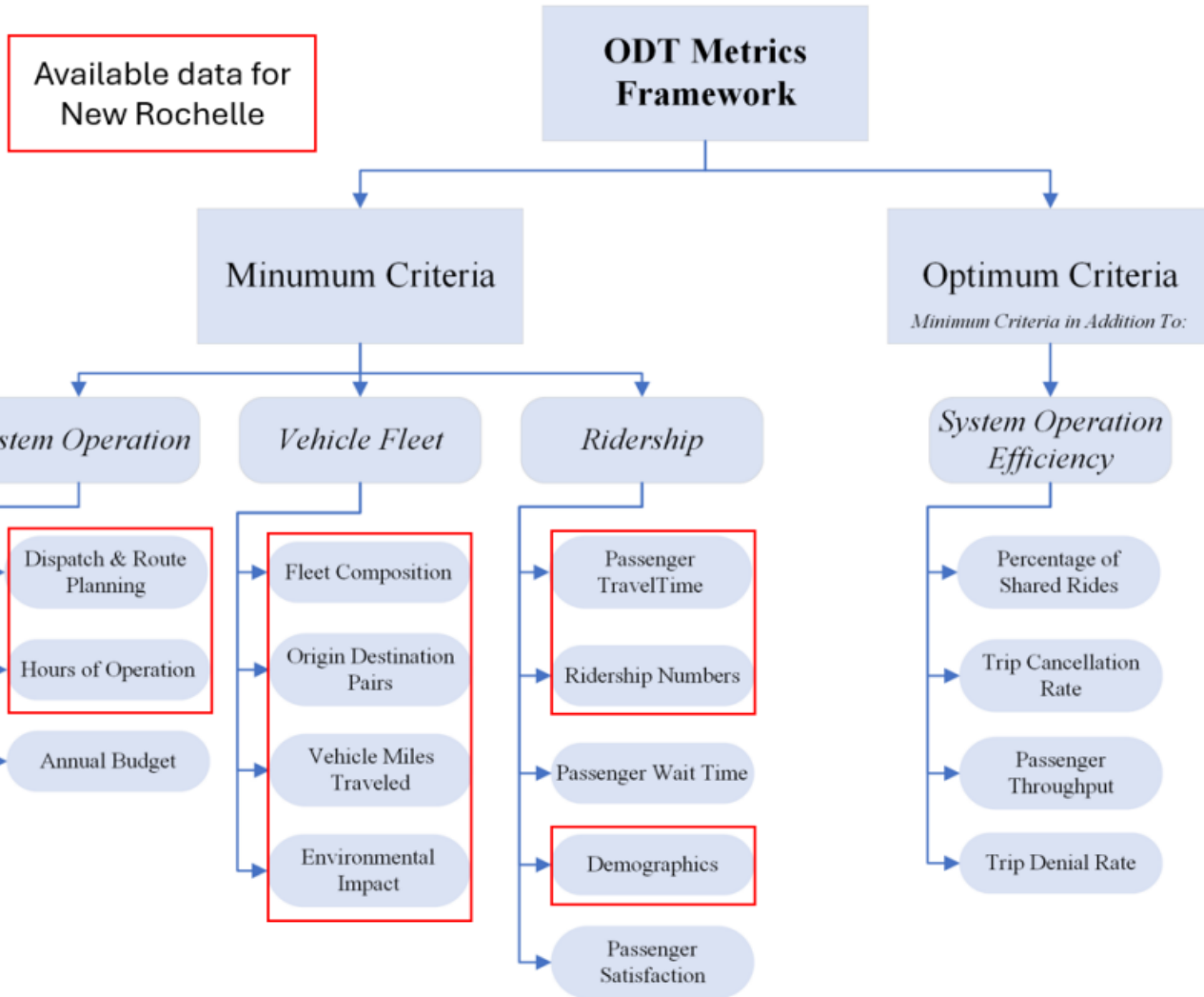


Figure E1. Access for People and Business in North Carolina

<https://www.arc.gov/report/access-in-appalachia-north-carolina-dot-pilot-study/>



# Takeaway 3 – On-Demand EV Transit Study



- Vermont Context

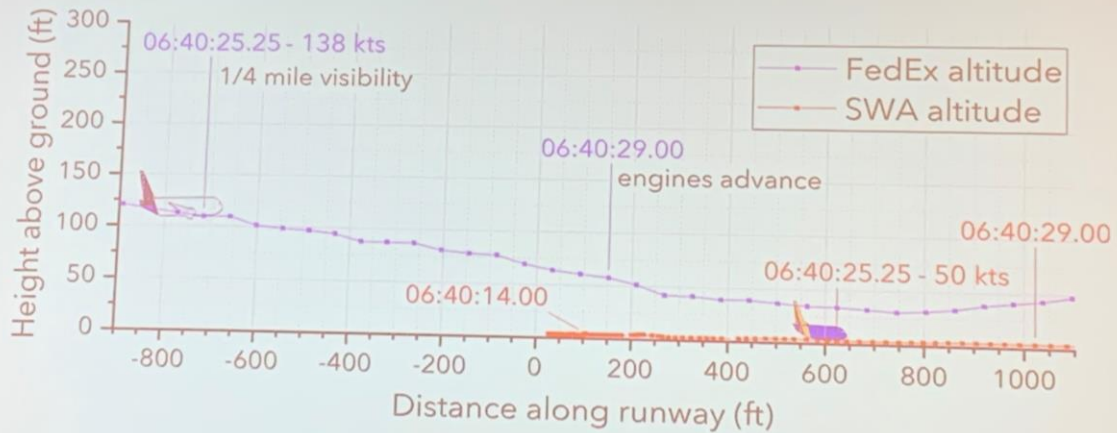
- Assess VT's 6 On-Demand Transit services to determine service performance



# Highlights

## NTSB Investigations – Near miss in Austin

At -3 s to the threshold, FedEx was within 1/4 mile of Southwest



20 Near-Miss at Austin

NTSB

## NYC Congestion Pricing



Snow





# **Takeaways and Highlights**

Faith Dall, Planning Coordinator



# Takeaway – Importance of Signage & Wayfinding

- Metro Silver line expansion to reach Dulles International Airport was a 6-Billion-dollar investment
- Lack of signage in Airport for the inter-modal connection deters users from completing their trip on the Metro



# Takeaway – TDM as Construction Mitigation

## Alaskan Way Viaduct in Seattle



Total Trip Reduction Need: 11,130 weekday peak period round trips  
TDM / Transit Target: 4,130 of these trips  
TDM / Transit Performance: 13,379 trips

### Some TDM Strategies Employed:

- Encouraging Remote work during construction window (pre-COVID times)
- Working with employers to shift starting hours/ employ flex time policies to reduce congestion during peak time
- Increase bus service during construction window

AWV: Before  
and After



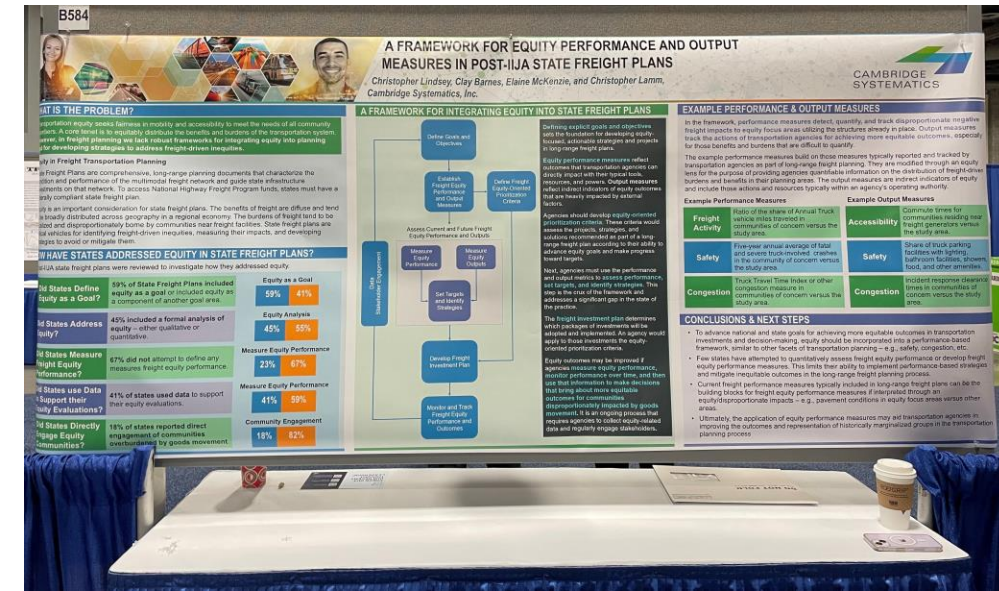


# Takeaway – Freight Transportation Planning

- Planning for shock events
  - Movement of goods to communities impacted
  - Ability to continue exportation of goods out of impacted area

- Research on measuring impacts to communities adjacent to freight transportation through State Freight Plans

- TRB Freight Transportation and Planning Logistics Committee created a Primer on Freight Planning for different audiences <https://freightplanning.org/freight-modeling-primer/>

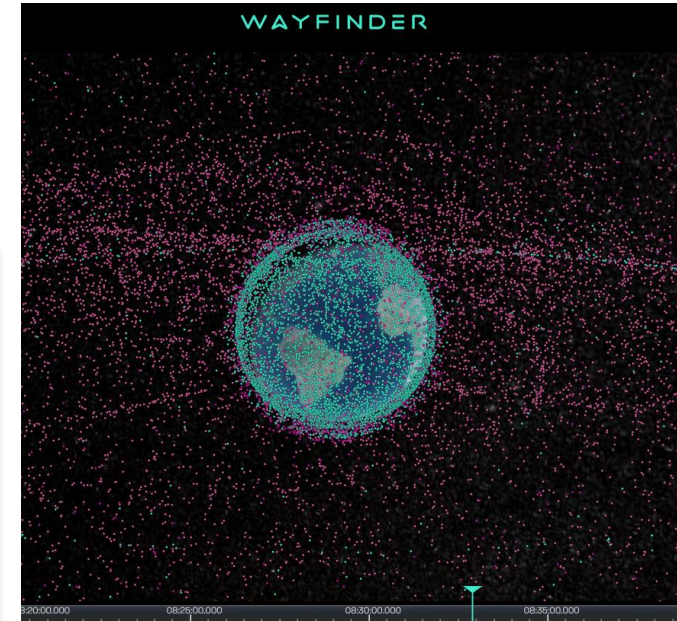
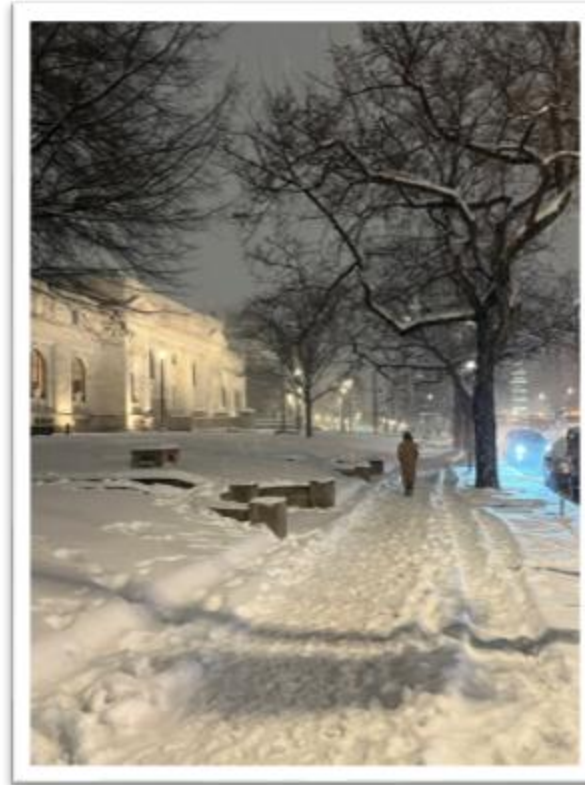


Picture from <https://youvegotfreight.nl/en/>



# Highlights

- **USDOT Intercity Rail Planning for Major Events:** Presentation from Deputy Assistant Secretary for Transportation Policy Felicia Alexander at Passenger Rail Committee
  - At least 7 Major Events in 10 years:
    - FIFA Club World Cup ('25)
    - Concacafa Gold Cup ('25)
    - WC26 FIFA Men's World Cup ('26)
    - LA25 Summer Olympics ('28)
    - Paralympics ('28)
    - Men's Rugby World Cup ('31)
    - Women's Ruby World Cup ('31)
    - Salt Lake Winter Games ('34)
    - Bonus: 250th Anniversary
- **DC in the snow**
- **Responsibilities in shared air space**





# **Takeaways and Highlights**

Todd Eaton, Vermont Local Roads



Vermont Local Roads (VLR) is Vermont's Local Technical Assistance Program (LTAP) sponsored by the Federal Highway Administration (FHWA) and the Vermont Agency of Transportation (AOT).





# Low Volume Roads, What is it really?

- Low Volume Roads Committee
- Participating in the conversation on tightening the definition of low-volume roads
- Help generate funding opportunities for smaller agencies and communities and to focus research



# Professional Development and Workforce

- Impacted by the research around internships as a pathway for success in construction management
- Sparked my exploring the opportunities if offering internship and mentoring services through the VLR program

# Roadway Resilience

- Still an emerging focus of research
- Metrics are still in their infancy
- Motivated me further in our Vermont-based research in this area





# Takeaways and Highlights

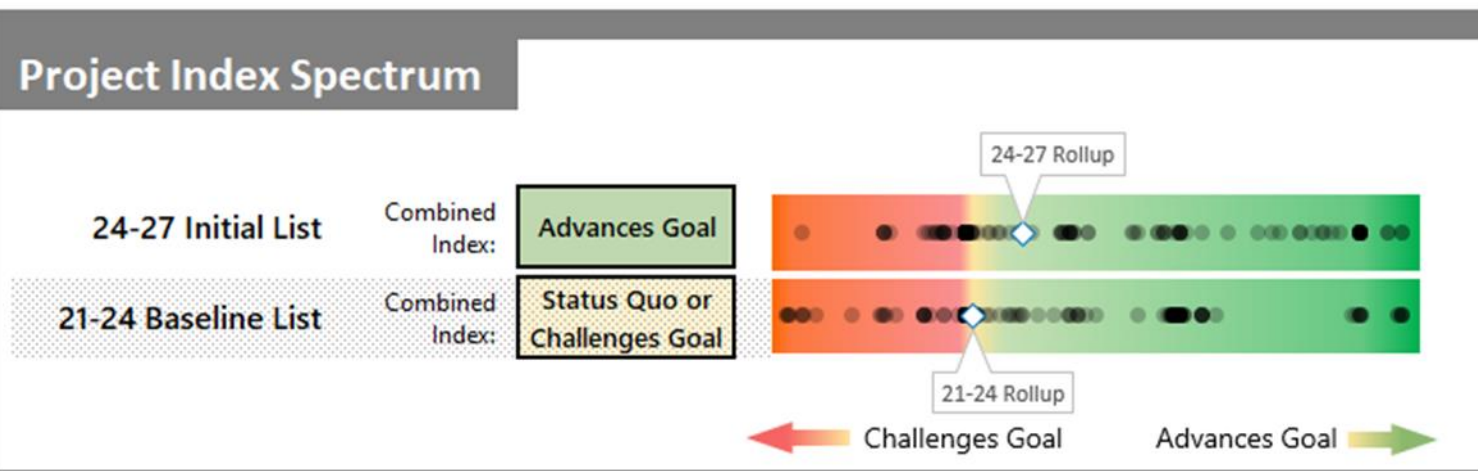
Ari Lattanzi, Environmental Policy and  
Sustainability

# Takeaway 1 – Quantify Funding Outcomes

PROJECT INFORMATION		GHG INDEX CALCULATION							Phase 2 *
Project team input		CC ADAPT	CC MITIG	CONG (FRT)	Equity	MM	SAFETY	SOGR	GHG MITIG
27,108,000	OR99: Glenwood	1	0	0	0	0	1	1	0
0%	Bridge 1: replacement, deck repair, seismic	1	0	0	0	0	1	1	0
0%	Bridge 2: scour, erosion, paint, cathodic, monitor/inspect	1	0	0	0	0	0	1	0
10%	O&M 1: culverts, stormwater, vegetation, other basic maintenance	1	0	0	0	0	1	1	0
0%	O&M 2: landslides, rockfall, other roadway hazards or emergencies	1	0	0	0	0	1	1	0
25%	O&M 3: paving, repaving, striping, signs	0	0	0	0	0	0	1	0
5%	ITS 1: signal repair and timing	0	0	1	0	0	1	1	0
5%	ITS 2: signal priority or other ITS for transit/bike/ped	0	1	1	0	1	1	0	2.4
0%	ITS 3: variable signs, curve warnings, other TSMO	0	1	1	0	0	1	0	2.4
0%	Road Expand: (capacity) new lanes, new road or bridge, new connection	0	-1	1	0	0	0	-1	-1
0%	Road Expand: (safety) turn lane, intersection redesign, interchange	0	-1	1	0	0	1	0	-1
21%	Road Safety 1: rumble strips, guardrails, curve correction, realignment, lig	0	0	0	0	0	1	0	0
0%	Road Safety 2: roundabout, pullouts, truck climbing lane	0	1	1	0	0	1	0	0
0%	Noise abatement	0	0	0	1	0	1	0	0
0%	Freight: eliminate height/weight restriction, rail, weigh station	0	0	1	0	0	0	0	0
0%	TDM: park & ride, HOV, vanpool, other trip reduction	0	1	1	1	1	0	0	1.3
1%	Bike-Ped 1: road diet, median, traffic calming, b/p signals	0	1	-1	1	1	1	0	1.3
30%	Bike-Ped 2: ADA, new or improved b/p facility, b/p crossing, off-road path,	0	1	0	1	1	1	0	1.3
1%	Transit 1: bus pullout, transit road infrastructure, new/expanded service	0	1	1	1	1	0	0	1.3
0%	Transit 2: new bus, retrofit bus, transit shelter	0	1	0	1	1	0	0	1.3
1%	Low Carbon Infrastructure: EV charging, EV parking, alt fuel station	0	0	0	0	0	0	0	0
1%	Materials: recycled materials, low carbon fuel/material, LED lighting	0	0	0	0	0	0	1	0
0%	Pricing: tolling	0	1	1	0	1	0	0	1
0%	Other	0	0	0	0	0	0	0	0
100%		0	0	0	0	0	0	0	0

\*NHRP 25-56-based scoring  
Methods for State DOTs to Reduce GHG Emissions from the Transportation Sector

- Vermont Context
  - Quantify the impact of all transportation dollars
  - Simple overall analysis of advancing or challenging goals
  - Could be applied to STIP or part of VPSP2



# Takeaway 2 – Measuring Resilience

## Robustness

the ability to withstand disaster forces without significant degradation or loss of performance.

## Redundancy

the extent to which the systems can satisfy functional requirements if significant degradation or loss of functionality occurs.

## Resourcefulness

the ability to diagnose and prioritize problems and to initiate solutions by identifying and mobilizing resources;

## Rapidity

the capacity to restore functionality, contain losses, and avoiding disruptions.

- Vermont Context
  - Standardize metrics
  - Streamline data collection
  - Enable simplified reporting
  - Harmonize between state and local road reporting
  - Prioritize investment based on findings
  - One place to find all relevant resilience data for transportation infrastructure



# Takeaway 3 – Decline of Rail Industry

**Reviving American Rail: Examining the Managed Decline of the Rail Industry and How It Might Be Reversed**  
 Maddock Thomas  
 Brown University

**Introduction**  
 This poster is the product of a research project on the American freight rail system that began in December 2022 following conversations with dozens of rail workers around the state of the rail industry, issues have emerged from all corners throughout the past year.

**Capital (under)-Investment**  
 A study commissioned by the Association of American Railroads (AAR) in 2007 concluded that Class I railroads would need to invest more than triple their annual capacity expansion spending, from \$1.5 to \$4.8 billion (2007 dollars), to meet the Department of Transportation's freight demand forecast for 2035. The report identified a \$9 billion gap in the \$15 billion required from Class I railroads. The AAR proposed public subsidies.

**Undermining Growth with High Rates and Poor Service**  
 Rail cartloads (excluding intermodal) have fallen by roughly 30% since 2000. This traffic loss has been offset by several factors, decreasing around railroads' desire to focus on long-distance unit trains instead of more complex manifest traffic.

**Reversing Managed Decline and Planning for Sustainable Growth**  
 A return to pre-1980s regulations is unlikely to rectify the present issues with the US rail system. Transportation is a fundamentally different business now than it was before 1980. Nonetheless, it is clear that change is needed in the rail industry.

**Minimal Staffing and Rising Accident Rates**  
 Railroads have shrunk their workforces by nearly 60,000 employees from their 2015 peak. These staffing cuts have resulted in erratic schedules and increased, and FRA study found 60% of operating employees are highly fatigued, largely due to irregular and long work hours. Employees also face widespread intimidation and retaliation for reporting safety issues—risks that railroads have been admonished for in court.

**Passenger Impacts**  
 Passenger trains have also been harmed by the Class I railroads' aversion to capital investment. Amtrak, based on 2.2 million hours of delays from lost railroads in 2023. On top of this, because railroads have reduced double tracking to a minimum, Amtrak's efforts to expand passenger service will come at an extreme cost, unless when it was created in 1970.

**Days Worth of Delay by Responsibility (2023)**

Responsibility	Days Worth of Delay
Amtrak	~100
Federal Railroad	~1500
Other	~100

**Indian Railway Electrification**

Year	Railway Electrification (Route Kilometers)	Percent Electrified
14	~10,000	~10%
15	~15,000	~15%
16	~20,000	~20%
17	~25,000	~25%
18	~30,000	~30%
19	~35,000	~35%
20	~40,000	~40%
21	~45,000	~45%
22	~50,000	~50%
23	~55,000	~55%
24	~60,000	~60%

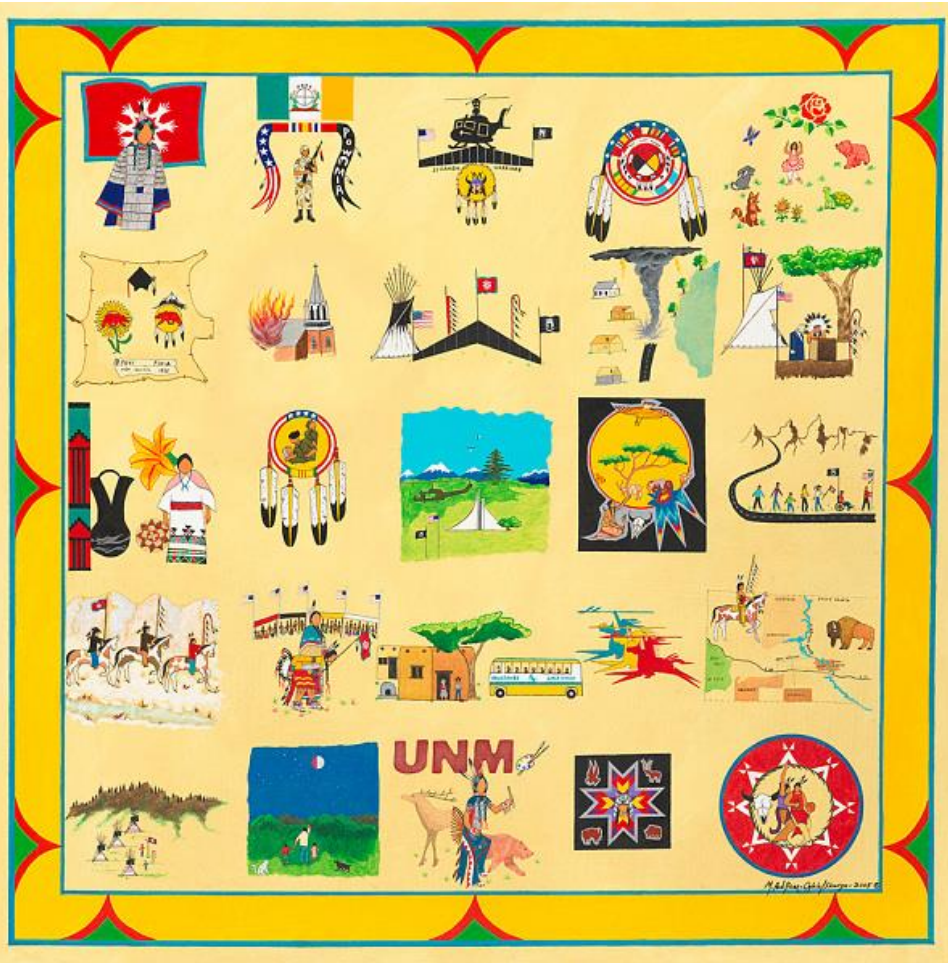
**Electrified freight rail in Europe**

**Read the Public Rail White Paper here:**

**Public Rail Now**  
 This research was supported by a fellowship from the Stone Foundation Initiative at Brown University's Watson Institute. I also received funding through a series of grants from Public Rail Now, via the National Workers Education & Legal Defense Foundation and the John L. Hammond Fund.

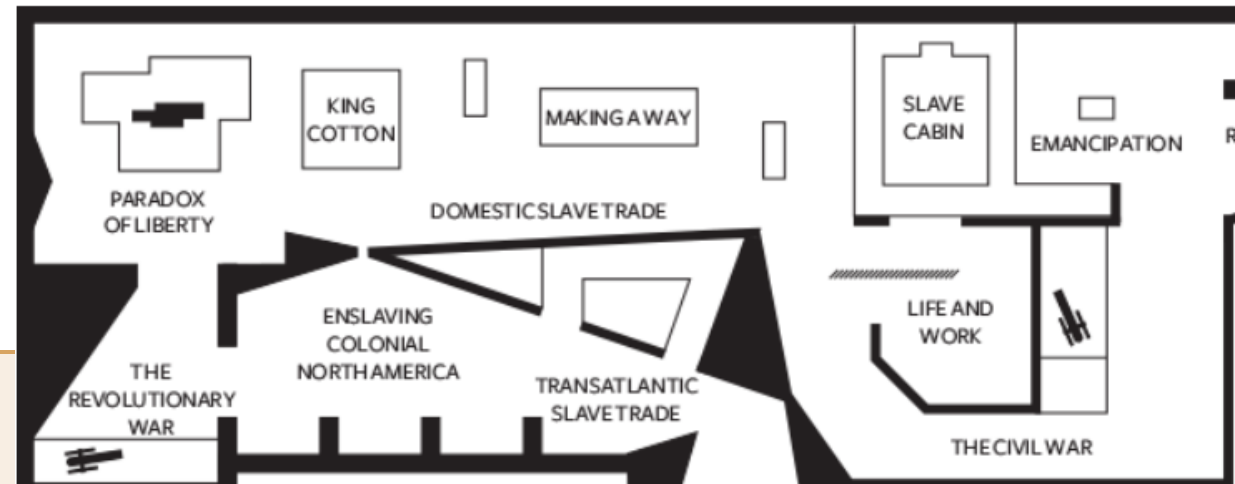
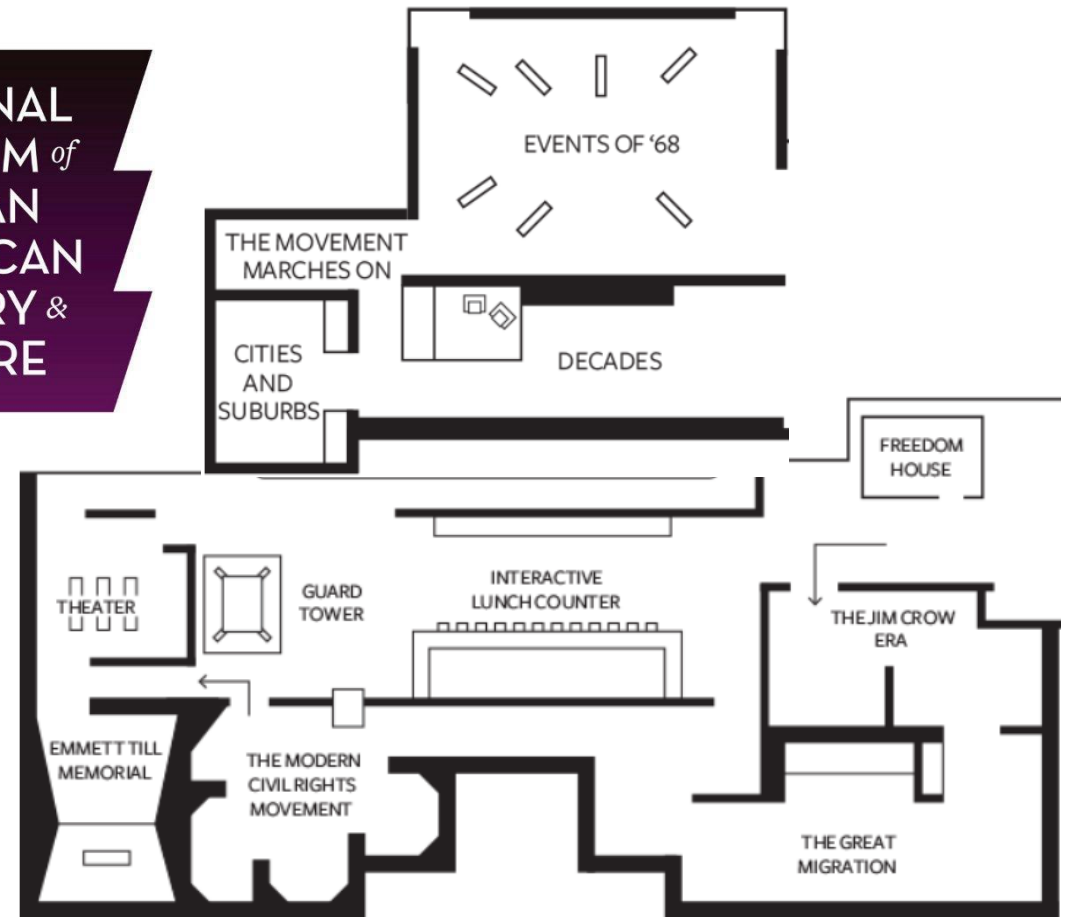
- Vermont Context
  - Freight rail might be more expensive than trucking for producers
  - Potential for derailments
  - Delays to passenger rail service
  - Increased cost to expand passenger rail service

# Highlights



Martin E. Red Bear (Oglala/Sicangu Lakota, b. 1947). *Red Bear's Winter Count*, 2004

## NATIONAL MUSEUM of AFRICAN AMERICAN HISTORY & CULTURE





# **Takeaways and Highlights**

Jayna Morse, Finance and Administration Director





# **Takeaways and Highlights**

Zoe Neaderland, Planning and Policy Coordinator

## Take-Away #1: Exciting Subcommittee (yes, really)

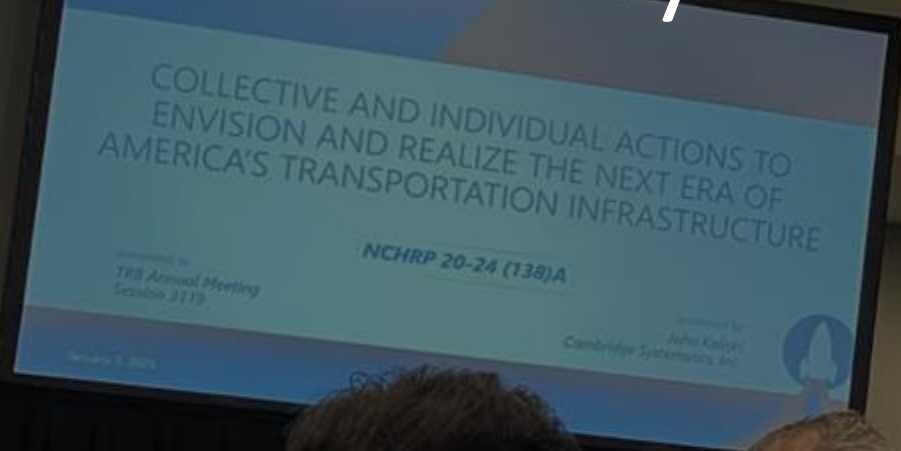
Approximately 15 smart, diverse people discussed matters spot-on to my work; I'll continue as a 'friend': Standing Committee on Visualization in Transportation (AED80) - Subcommittee on Data and Systems Performance

NCHRP 08-167 Guide for Creating Effective Transportation Visualizations –

Who wants to participate in a survey for it?

Do we want to participate in a one-hour interview?

# Take-Away #2: Inspiration



## Advancing Moonshots: Preparing Agencies for Change

*During the past few years, AASHTO and TRB have been collaborating to develop and advance a shared vision for the next generation of transportation in America. The AASHTO Board of Directors unanimously adopted a vision and seven "moonshot" concepts and invited state departments of transportation to serve as initial deployment states for one or more of these concepts. [Downloaded presentation](#)*



# Take-Away #3: Big Data Community

Decades of building knowledge and connections through The Eastern Transportation Coalition feels like it has worked.

Diverse, successful uses...and need to continue to communicate – Freight big data analysis helped Nebraska receive their only IIA award.

Spending time with Replica staff felt like meeting the next generation.





# Two Highlights

Sheer diversity of subjects and participants, brainpower, and good will

Standing in a hallway reflecting with people I esteem and hadn't seen in years



Table 1.1 Progressive transition of levels of uncertainty

	Complete determinism	Level 1	Level 2	Level 3	Level 4 (deep uncertainty)	Total ignorance
Context (C)		A clear enough future 	Alternate futures (with probabilities) 	A few plausible futures 	Many plausible futures 	Unknown future 
System model (R)	A single (deterministic) system model	A single (stochastic) system model	A few alternative system models	Many alternative system models	Unknown system model; know we don't know!	
System outcomes (O)	A point estimate for each outcome	A confidence interval for each outcome	A limited range of outcomes	A wide range of outcomes	Unknown outcomes; know we don't know!	
Weights (W)	A single set of weights	Several sets of weights, with a probability attached to each set	A limited range weights	A wide range of weights	Unknown weights; know we don't know!	

Marchau, V.A.W.J., Walker, W.E., Bloemen, P.J.T.M., Popper, S.W. (2019). Introduction. In: Marchau, V., Walker, W., Bloemen, P., Popper, S. (eds) *Decision Making under Deep Uncertainty*. Springer, Cham. [https://doi.org/10.1007/978-3-030-05252-2\\_1](https://doi.org/10.1007/978-3-030-05252-2_1)



# Takeaways and Highlights

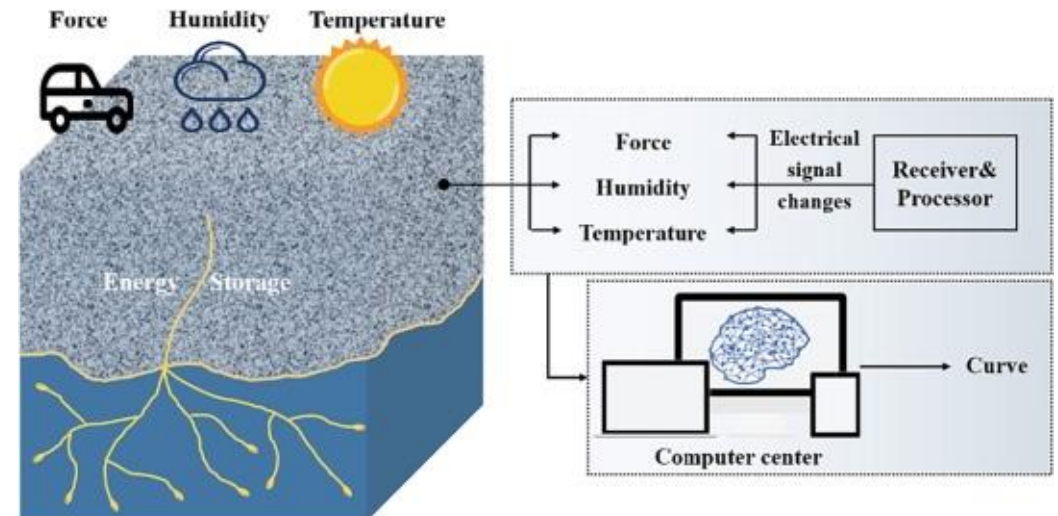
Emily Parkany, Research Manager



# AJE35 RIIM Implementation Sessions

- Emily is Chair of TRB's AJE35 Research Innovation Implementation Management (RIIM) Committee
- RIIM Organized two Implementation Sessions in 2025
  - Concrete Materials Papers
    - “Electrically Conductive Concrete: Properties and Applications”
  - Artificial Intelligence Papers

“TitanBot: Customizing LLMs for Enhanced Infrastructure Performance Analytics and Visualization in Transportation Agencies”



# Sessions/Workshops I Was Not Responsible For

- Workshop: Integrating Non-Destructive Evaluation Techniques for Structural Health Monitoring
- NSF Workshop: Advanced Sensing and Artificial Intelligence for Civil Infrastructure Monitoring
- Session: Creative Applications of Recycled Aggregates in Pavement Design



# Unexpected Encounters

- Two sidewalk interactions (everyone bundled against snow and cold)
  - I was complaining about cold and a random woman said “but you’re from Vermont”. She mentioned Ohio and I figured out who she was.
  - Two guys were going in opposite direction. One called out “Hey Emily who we see at TRB.” He provided his name and the other guy’s name.
- “TRB wouldn’t be the same without running into you” Roderick Diaz, Director of Planning and Development at Metrolink
- “It’s because of you that I have this job” Sarah Hernandez, University of Arkansas → Keep mentoring



# Wednesday Night







# Highlights and Takeaways

Nick Van Den Berg,  
Materials Manager

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# Highlights and Takeaways

1018/1050 – Toward Low-Carbon Concrete, Part 1 & 2

“It’s getting complicated on the playground”

**Summary**

- Reactivity: CCs (CC1, CC3) > VAs (VA1, VA2) > FBCs and GBAs;
- The best and poorly performing NNPs were identified;
- Early age (CCs) vs later age (VAs, GBAs)

All met all ASTM C618 limits (except high SO<sub>3</sub> in FBC2); VAs contain high amount of alkalis; FBCs showed high carbon content.

Assessment of the worst-case scenario

- Transport and strength properties: CC and VA – outperforming, FBC and GBA – comparable to plain OPC.
- Salt scaling: longer curing is needed.

Selected NNPs perform comparable or better than FAs; Curing compound shows a positive effect on N mixes.

Field trial

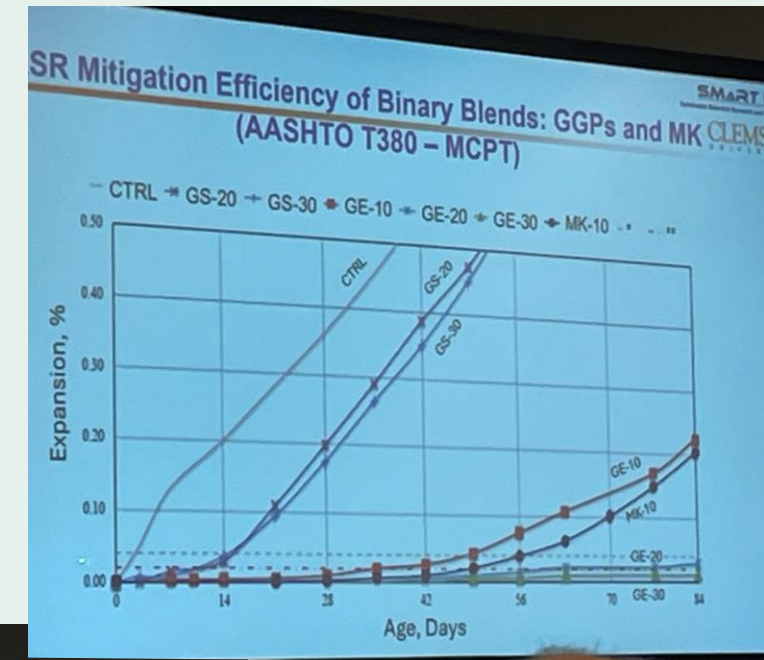
- Similar to traditional performance improves
- Some CC may need dosage of

Testing strength and durability performance at lab scale

Study of the reactivity

Characterization of the raw NNPs

TRB Workshop: Toward Low Carbon Concrete, January 9, 2025, Washington, DC



**Glass Production & Recycling Around the World**

Annual Production, Recycling Rates (2018 – 2021):

- European Union: 39.5 million tons, 52% (FEVE)
- United States: 12.3 million tons, 31% (GPI)
- China: 19 million tons, 28% (CRRA)
- India\*: 10.7 million tons, 35% (IMARC, AIGMF)
- South Africa: 1 million tons, 42% (TGRC)
- No centralized data readily available for other countries, but active programs exist in Brazil, e

Some facts about carbon footprint of glass:

- 460 – 690 kg CO<sub>2</sub> eq. per Metric Ton of glass production
- 85% to 92% - CO<sub>2</sub> emissions from fuel use
- 5% reduction in CO<sub>2</sub> in the production of new glass for every 10% recycled glass cullet used as raw material

Nature 599, 7



# Highlights and Takeaways

2010 – False Claims Act

**HEADLINES** Issue #10

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**Minnesota Transit Constructors to pay U.S. \$4.6 Million to Resolve False Claims Act Liability**

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<b>Mark Sand &amp; Gravel to Pay \$1.75 Million For Allegedly Using Substandard, Unauthorized Road Construction Materials In Violation Of Federal And State False Claims Acts</b>	<b>Dow to Pay \$456,000 for Former Subsidiary's Alleged Violations of Federal and Minnesota False Claims Acts</b>
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Some Minnesota Cases

		
Misrepresentation of non-DBE work as DBE	Use of aggregates from undisclosed source	Phony certifications of pavement striping materials

mn.dot.gov



# Highlights and Takeaways



2181 – SO YOU WANT TO BE AN  
EXPERT WITNESS?



AKG90 – STABILIZATION OF  
GEOMATERIALS AND RECYCLED  
MATERIALS COMMITTEE



4003 – NTSB INVESTIGATIONS



4086 – RECYCLING AGENTS: STATE  
OF THE PRACTICE AND WHERE THE  
RESEARCH IS TAKING US



# **Takeaways and Highlights**

Rachel Wassel, Continuous Improvement, BUILD



## THE ESSENCE OF DATA GOVERNANCE

Data governance establishes the policies, procedures, and accountabilities for managing an organization's data assets, ensuring data quality, security, and compliance.

## SUPPORTING KNOWLEDGE MANAGEMENT

Effective data governance enables organizations to effectively manage and leverage their knowledge assets, facilitating informed decision-making and enabling employees to access and utilize relevant data.

## ENABLING AI-DRIVEN INSIGHTS

With robust data governance in place, organizations can leverage the power of AI and machine learning to derive valuable insights from their data, driving innovation and improving business outcomes.

Presented by Lorri Economy, Utah Department of Transportation

From Workshop 1011: The Convergence of Data Governance, Knowledge Management, and Information Management

Data governance and knowledge management are critical infrastructure.

# Rachel Wassel Additional Takeaways

- Innovation is imperative. Failure is not something to fear **IF** we learn from it.
  - Innovation starts in the day-to-day work.
  - Develop a systems thinking perspective to help folks think about how their work is connected to bigger things.
  - Innovation can be working across silos and connecting with new parts of the agency or State Government
- AI is coming (*hint* its already here) and we have exciting opportunities. AI won't replace human decision making but can aggregate data and sense patterns at a grand scale.
  - What might you do with extra time? "Hours repurposed for higher value".