



NSF Engineering Research Center

Transportation Interim Committee

**SB 125: Statewide Transportation
Electrification Initiative**

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NSF Engineering Research Center

Advancing Sustainability through Powered Infrastructure for Roadway Electrification

<https://aspire.usu.edu/>



Equitable and Sustainable Electrification in Transportation

Widespread Electrification
Across Vehicle Classes
and Adoption Groups



Reduce GHG Emissions
Improve Human Health
Improve Human Prosperity
Improve Access



ASPIRE by the Numbers

FUNDING

*\$68M to date,
additional \$56M
committed*

OUTREACH

*11,500+
attendees reached
through events*

FACULTY, STUDENTS AND STAFF

400+

PEER REVIEWED PUBLICATIONS

140+

PATENTS AWARDED

14

INDUSTRY AND INNOVATION (IIB) MEMBERS

60+

ASPIRE's Research Expertise

Transportation

Transportation Systems
Transportation Infrastructure

Adoption

User Acceptance / Society
Public Policy / Economy
Techno-economics

Power

Power Systems / Grid Integ.
Charging Systems
Battery Systems

Equity

Social Equity
Environmental Justice
Technology & K-22 Education

Data

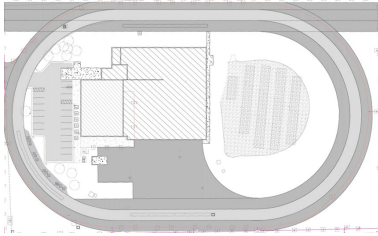
Data Analysis & Fusion
AI / Optimization / Co-sim
Cybersecurity / IoT / Networks

Testbeds and Pilots

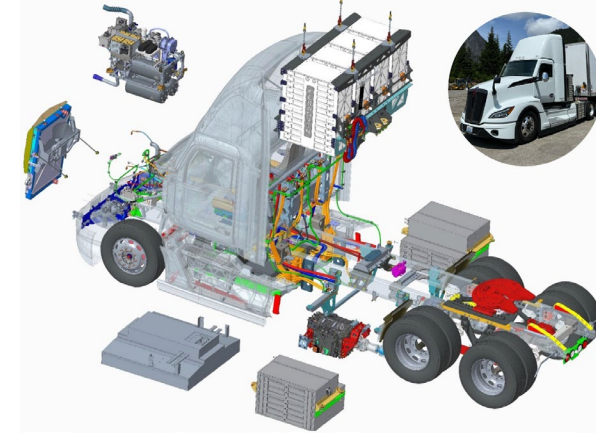
More than \$60M in funding across pilots in three states targeting 2024+ deployments

ASPIRE's Testbeds in Utah are becoming a national hub for electrified transportation and standards development

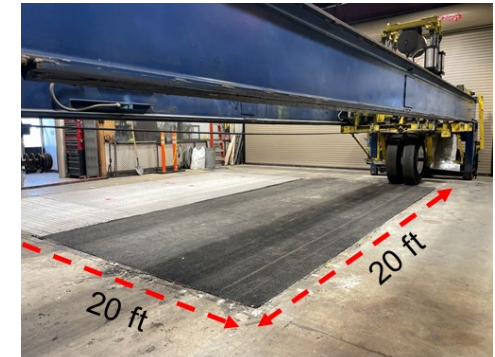
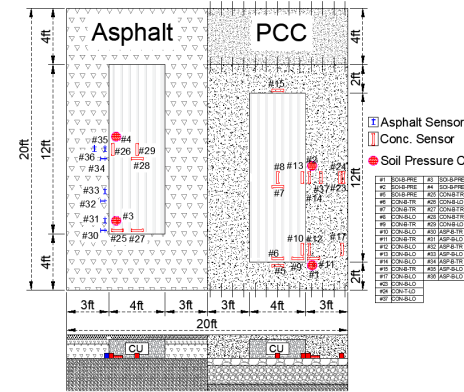
EVR Testbed Expansion and Pre-Pilots at USU



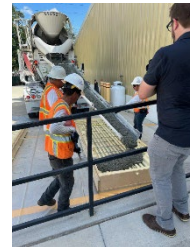
Megawatt Truck Charging in Utah



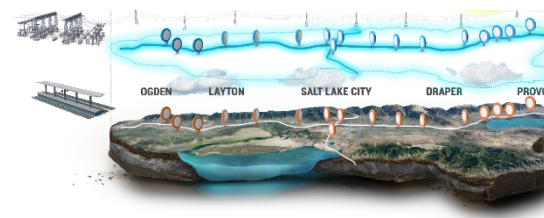
200+ kW In-motion Charging in Indiana



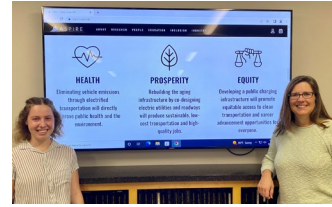
Partner In-motion Charging in Michigan and Florida



Battery Electric Heavy Commuter Rail in Utah



Workforce Development Pathways



**INTERMEDIATE
SKILLS**
**ASSOCIATE
DEGREE**
COMMUNITY &
JUNIOR COLLEGE

**UPPER LEVEL
SKILLS**
**BACHELOR'S
DEGREE**

**UPPER LEVEL
SKILLS +**
**MASTER'S
DEGREE**

**UPPER LEVEL
SKILLS ++**
**DOCTORATE
DEGREE**

**CERTIFICATE PROGRAMS
AND PROFESSIONAL
DEVELOPMENT**

WORKFORCE

ENGAGE AND
ENCOURAGE
STEM INTEREST
MIDDLE SCHOOL
& HIGH SCHOOL

TRADES
ON THE JOB
TRAINING
TRADE SKILLS

MILITARY
SERVICE

LIFE EVENTS



Utah Electrification Initiative Goals

SB125 launches a strategic planning and development initiative that will guide the transition to an electrified and intelligent transportation system in the State of Utah that improves air quality, reduces cost to move people and goods, and creates new jobs and economic growth

Coordination across state agencies and industry
Annual report and action plan to the state legislature
Secure federal funding and draw industry to Utah
Public outreach as Utah becomes the epicenter of building and transportation electrification

Committee Progress to Date

Set Priorities for a Unified Electrification Plan

Action Plan for Electrified Transportation System

- Develop an action plan describing the ideal electrified transportation system
- Outline incremental steps for implementation over 10-year, 20-year, and 30-year time horizons
- Elements include intelligent coordination, integration across modes, and improved air quality

Strategic Objectives

- Define strategic objectives within each element of the action plan
- Essential steps for realizing the vision of electrified transportation

Changes Across Ecosystem Sectors

- Detail changes needed across sectors like power generation, charging infrastructure, transportation modes, and workforce development
- Include considerations for different modes and vehicle classes

Identifying Gaps and Priorities

- Identify priority gaps within sectors that require innovation and investment
- Focus on driving immediate advancements in the electrification ecosystem

Risk Assessment and Supply Chains

- Evaluate risk and vulnerability in relevant supply chains and resources
- Ensure stability and availability for successful implementation

Workforce Development, Outreach and Promotional Efforts

- Build awareness among stakeholders, industry partners, federal agencies, and the state's congressional delegation of the state's efforts to be a national leader in electrifying the state's transportation system; and
- Attract industry partners and industry and federal investment to the state to design, develop, and deliver systems to promote and implement the initiative.

Reviewed & Approved Budget

Project director

Data modeling and analysis

- Electrified transportation systems infrastructure development
- Grid and charging system management, resiliency, reliability
- Impacts on air quality, economic development and equity
- Workforce development needs
- Market analysis and policy considerations

Industry advisory board and community outreach

- Engagement with industry and community partners
- Communications, web and social media, graphics and video
- Surveys and stakeholder feedback

Logistical and administrative support

- Report and grant writing
- Data management and dissemination
- Meeting coordination and management
- Travel, materials

	Total
Salaries	\$1,487,330
Interim Project Director, 75%	
Interim Executive Staff Support, 25%	
Data Analysts, electrified transportation, 200%	
Technical writer, 100%	
Communications Specialist, 75%	
Community Engagement Specialist, 75%	
Faculty support: surveys, data analysis (3x, 2 wks)	
Student interns and assistants (5x)	
Business Manager, 100%	
IT support, 20%	
Administrative Specialist, 90%	
Contract Services	
Web, social media, graphics, video	\$68,000
Transportation data, surveys	\$75,000
Materials and Other	
Events, food, shipping, participant support	\$53,000
Meeting and promotional materials, front office	\$15,000
Computing, IT supplies	\$8,500
Student tuition support	\$18,170
Travel	
In-state staff travel	\$20,000
Out-of-state stakeholder engagement	\$55,000
Subaward UoU	
Grid considerations, economic impact	\$300,000
Total FY24	\$2,100,000

Initiated Forming Advisory Board & Outreach

Electrical power providers;
 Electric bus manufacturers;
 Electric vehicle manufacturers;
 Electric passenger or freight rail manufacturers;
 Electric aircraft manufacturers;
 Electric freight truck manufacturers;
 High-capacity battery manufacturers;
 Large fiber-optic or high-speed Internet providers;
 Transportation infrastructure companies;
 Charging component, systems, or network providers;
 Smart or artificial intelligence-integrated infrastructure providers; and
 Any other sector that the research center determines is substantially necessary to fulfilling the initiative goals.

In Progress: Inventory Update

for Transportation & Electrification

Objective: *to establish a baseline of electrified transportation and associated sectors across the state*

- Section 1: Electric Vehicle Adoption
- Section 2: Charging Infrastructure
- Section 3: Electric Vehicle Incentives and Policy
- Section 4: Energy Production and Consumption
- Section 5: Environmental Baseline
- Section 6: Economic Impacts

