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NSF Engineering Research Center

Advancing Sustainability through Powered Infrastructure for Roadway Electrification

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NSF Engineering Research Centers

~$50M over 10 years

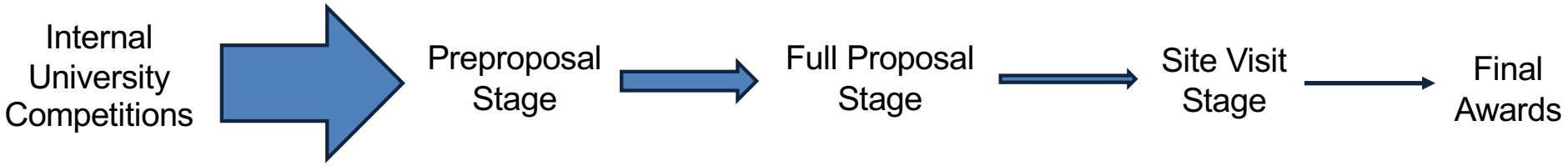
Catalyst for ~4x funding

Convergent Research

Strong Societal Impact

Spawn Whole New Industries / Radically Transform Existing

Value Creation to Outlast the NSF ERC



ASPIRE Mission

To improve health and quality of life for everyone by catalyzing sustainable and equitable electrification across the transportation industry

ASPIRE Vision

Widespread electrification of all vehicle classes, improved air quality, and public infrastructure that provides an inexpensive, seamless charging experience

Impact: Growth in domestic jobs and energy production; improved air quality & public health; reduce & stabilize transportation costs; inclusive pathways to diverse engineering workforce development to support cross-industry transformations

Rethink Industries and Boundaries

Maximize Infrastructure Utilization

More Connected More Managed Charging

Nation is at a Crossroads

Perspectives for Improving Impact

Grid

Flexible

Predictable

Managed

Vehicle

Smaller Battery

Lower C-rate

Longer Life

User

Reduced Cost

Seamless Experience

Equitable

Environment

Localized Emissions

Lifecycle Well-to-Wheel

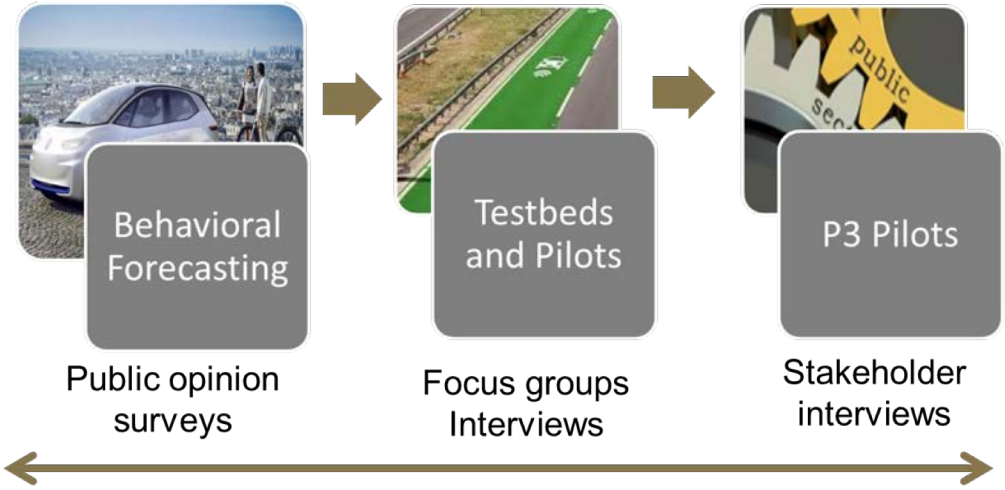
Vision: Ubiquitous Charging Systems

Adoption Research Thrust

Lead: Gkritza
Co-Lead: Graul

Sub-Areas of Adoption

- User Acceptance / Society
- Public Policy / Economy
- Techno-economic Systems / Environment / Society



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Sustainability-Related Research Projects

Baseline Estimates and Deployment Priorities

- Techno-Economic Analysis & GHG Life Cycle Assessment
- Air Quality, Health, and Environmental Justice Impacts at Neighborhood Scale

Transportation & Power Co-Simulation Tool

- Infrastructure Planning for Charging Stations/ Roadway Electrification
- Dynamic Simulation of Fast and/or Wireless Charging

Prioritize Deployment of Vehicles and Infrastructure to Advance Equity and Environmental Aims

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