

EXPLORATORY ADVANCED **RESEARCH**



# Sensors for the Highway Transportation System Today and in the Future

Passive Wireless Sensor Technology Workshop

May 4, 2015



U.S. Department of Transportation  
**Federal Highway Administration**

# Outline

- About Highway Transportation
- FHWA EAR Program Investments in Sensor Systems
- Interest in Passive Wireless Sensors for Highways



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# Highway Transportation

- Highway Infrastructure
  - Interconnected
  - Open access
  - Legacy elements
- Highway System Management
  - Multiple owners
  - Public & private responsibilities
  - Inspection routines
  - Maintenance routines



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# FHWA EAR Program

- Focus on high-risk, high payoff research
- Merit review is used to enhance the quality of research processes and results
- Research stakeholders are involved throughout
- Commitment to successful project handoff



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# Focus Areas

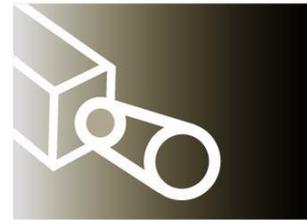
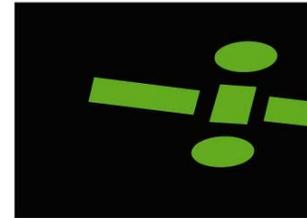
Breakthrough concepts in material science

Technology for assessing performance

Human behavior and travel choices

Connected highway system concepts

New technology and advanced policies for energy and resource conservation



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# Program Status

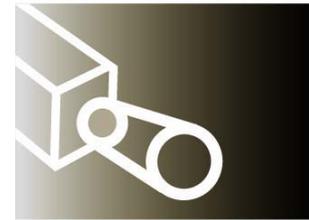
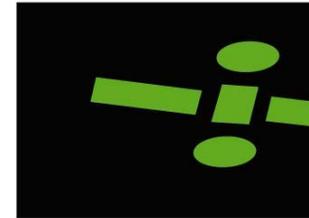
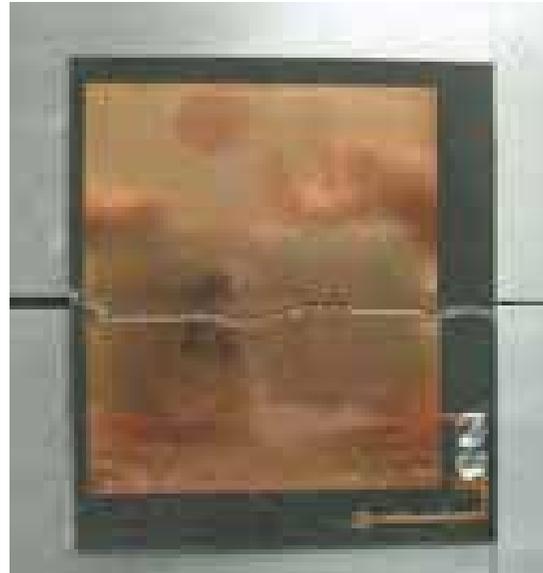
- 200+ Initial stage investigations
- Seven solicitations resulting in
  - 75 projects awarded; 36 ongoing
  - \$72M federal, \$26M match
- 8<sup>th</sup> closed April 2014
  - Topics: Structures NDE, Safety data, Freight data, Freight modeling
- 9<sup>th</sup> planned, not scheduled



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# Funded Research

- Very Low, Self-Powered Wireless Sensor Systems
  - Steel structures
  - Bridge bearings
  - Pavements
  - Water runoff quality



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# Future Systems

- From Asset Management to Resilient Systems
  - Construction, system management
  - Structures, pavements, geotechnical, hydrological, environment elements



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# Future Systems

- Highway Safety & Operations
  - Safety hardware
  - Geolocation
  - Infrastructure-vehicle communications



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# Thank You

David Kuehn  
Program Manager  
202-493-3414  
[david.kuehn@dot.gov](mailto:david.kuehn@dot.gov)



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